**APPENDIX A: OCCUPATIONAL HEALTH AND SAFETY AND ENVIRONMENTAL MANAGEMENT SPECIFICATIONS**

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| **Emfuleni Local Municipality**    **TENDER NO. 11/2016/07/NO7/2016**  **CONSTRUCTION OF KHAKETLA STREET**  **OHS SPECIFICATION AND ENVIRONMENTAL MANAGEMENT SPECIFICATION**   |  |  | | --- | --- | |  | | |  | | |  | | |  | | |  | | |  | | |  |  | |  | |  |  | |  | |

**General Notification**

This document forms an integral part of the **Contract Specification** and, in particular, shall be a part of the **HEALTH AND SAFETY SPECIFICATION AND ENVIRONMENTAL MANAGEMENT PLAN FOR CONSTRUCTION WORK**. The Contract Specification is contained in Volume 1 of the contract documents in **Part 3: Scope of Work.**

**Acknowledgements**

The Occupational Health and Safety Specification was originally developed by Mothei Consulting Engineers for sole use by Emfuleni Local Municipality. Much of the original text of that document has been retained in this document.

The Environmental Management Plan has been developed by Mothei Consulting Engineers for sole use by Emfuleni Local Municipality.

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**Occupational Health and Safety Specification**

**1. Definitions**

In this document unless the context otherwise indicates:

**1.1** **Client** means any person for whom construction work is being performed and/or undertaken [i.e. Emfuleni Local Municipality for purpose of this specification];

**1.2** **Construction Regulations** means Regulation GN No R1010, 18 July 2003, applicable under the Occupational Health and Safety Act, No 85 of 1993;

**1.3** **Employer** means any person who employs or provides work for any person and remunerates that person or expressly or tacitly undertakes to remunerate him, but excludes a labour broker as defined in Section 1(1) of the Labour Relations Act, 1956 (Act No 28 of 1956);

**1.4** **Mandatary** includes an agent, a contractor or a subcontractor for work, but without derogating from his status in his own right as an employer or **user**;

**1.5** **Occupational health and safety plan** means a documented plan which addresses hazards identified and includes safe working procedures to mitigate, reduce or control the hazards identified;

**1.6** **Occupational health and safety specification** means a documented specification of all health and safety requirements pertaining to the associated works on a construction site, so as to ensure the health and safety of persons working and/or visiting the site;

**1.7** **OHSACT** means the Occupational Health and Safety Act, No 85 of 1993, as amended; and

**1.8** **Principal Contractor** means an **employer** who performs construction work and is appointed by the Client to be in overall control and management of the construction works.

**1.9** **User**, in relation to plant or machinery, means the person who uses plant or machinery for his own benefit or who has the right of control over the use of plant or machinery, but does not include a lessor of, or any person employed in connection with that plant or machinery;

**1.10** **Work** means work as an employee or as a self-employed person, and for such purpose and employee is deemed to be at work during the time that he is in the course of his employment, and a self-employed person is deemed to be at work during such that as he devotes to work as a self-employed person.

**2. Introduction**

In terms of Construction Regulations 4 (1) (a), the Client is required to compile an occupational health and safety specification for any intended project and to provide the specification to prospective tenderers.

The objective of this specification is to ensure that the principal contractor entering into a contract with the Client achieves and maintains an acceptable level of occupational health and safety performance.

This document forms an integral part of the **Contract Specification** and, in particular, shall be a part of the **HEALTH AND SAFETY SPECIFICATION FOR CONSTRUCTION WORK**. The Contract Specification is contained in Volume 1 of the contract documents. The principal and other contractors shall ensure that this specification is included with any contract/s that they may have with other contractors and/or suppliers that are engaged for the provision of labour, goods or services for this project.

Compliance with this specification does not absolve the principal contractor from complying with any other minimum legal requirement and the principal contractor remains responsible for the health and safety of his employees, those of his mandataries as well as any persons on adjacent properties.

**3. Scope**

The scope of this occupational health and safety specification is to address the reasonable and foreseeable aspects of occupational health and safety which will be affected by the contract work.

The specification will provide the requirements that the principal contractor and other contractors shall comply with in order to reduce the risks associated with the contract work, and that may lead to incidents causing injury and/or ill health, to a level as low as reasonably practicable and possible.

Any contractor submitting a bid in response to the client’s formal tender for any construction project, shall prepare and include, in his tender submission, a draft occupational health and safety plan based on this specification and the OHSACT. The client will evaluate this plan as part of the formal tender adjudication processes to ensure compliance with Construction Regulation 4. And, in particular, the client will ensure that he shall not appoint any contractor unless he is reasonably satisfied that the contractor which he intends to appoint has the necessary competencies and resources to carry out the work for safely.

**4. General occupational health and safety provisions**

**4.1 Hazard identification and risk assessment (Construction Regulation 7)**

**4.1.1 Risk assessments**

The contract specification, in Volume 1, contains the health and safety specification for construction work. This includes an assessment of site specific health and safety issues and a list of risk assessment headings that have been identified by the client as possibly applicable to the contract work for this project. It is by no means exhaustive and is offered as assistance to the tenderers and contractors.

**4.1.2 Development of risk assessments**

Every contractor performing construction work shall, before the commencement of any construction work or work associated with the construction work, and during construction work, ensure that a risk assessment is undertaken by a competent person, appointed in writing, and the risk assessment shall form part of the health and safety plan to be applied on the site.

In terms of Regulation 5(1), a principal contractor shall provide and demonstrate to the client a suitable and sufficiently documented health and safety plan, based on the client’s documented health and safety specifications, which shall be applied from the date of commencement of and for the duration of the construction work.

The risk assessment shall include, at least:

* The identification of the risks and hazards to which persons may be exposed to;
* The analysis and evaluation of the risks and hazards identified;
* A documented plan of safe working procedures (SWP) and any method statements to mitigate, reduce or control the risks and hazards that have been identified;
* A plan to monitor the application of the SWPs; and
* A plan to review the risk assessments as the work progresses and changes are introduced.

Based on the risk assessments, the principal contractor must develop a set of site-specific occupational health and safety rules that will be applied to regulate the occupational health and safety aspects of the construction.

The risk assessments, together with the site-specific occupational health and safety rules, must be submitted to the client before mobilisation on site commences. These will be included in the health and safety plan.

Over and above the risk assessment based on the client’s identified site specific risks listed in the project specification, the principal contractor is required to conduct a total risk assessment. The total risk assessment will identify all possible risks and hazard identification associated with the construction works. The total risk assessment will include the risk assessment based on the client’s identified site specific risks and will include the SWPs and the applicable method statements developed from the risk assessments.

**4.1.3 Review of risk assessments**

The principal contractor is to review the hazards identified, the risk assessments and the SWPs at each production planning and progress meeting as the contract work develops and progresses and each time changes are made to the designs, plans and construction methods and/or processes.

The principal contractor must provide the client, other contractors and all other concerned or affected parties with copies of any changes, alterations or amendments to risk assessments and SWPs within 14 days of such changes.

**4.2 Legal Requirements**

All Contractors entering into a contract with the client shall, as a minimum, comply with the -

* OHSACT and a current, up-to-date copy of the OHSACT and its regulations must be available on site at all times;
* Compensation for Occupational Injuries and Diseases Act, No 130 of 1993 (COIDAct). The principal contractor will be required to submit a letter of registration and “good-standing” from the Compensation Commissioner or compensation insurer before being awarded the contract. A current, up-to-date copy of the COIDAct must be available on site at all times; and
* Where work is being carried out on mine premises, the contractor will comply with the Mine Health and Safety Act and Regulations (Act. 29 of 1996), the Minerals Act and Regulations (Act 50 of 1991) and any other occupational health and safety requirements that the mine may specify. Current, up-to-date copies of the latter two acts must be available on site at all times.

**4.3 Structure and responsibilities**

**4.3.1 Overall supervision and responsibility for occupational health and safety**

* The principal contractor, appointed in terms of Construction Regulation 4(1) (c), is responsible for implementing and maintaining the occupational health and safety plan approved by the client.
* The principal contractor’s Chief Executive Officer, in terms of Section 16(1) of the OHSACT, is to ensure that the Employer (the contractor, as defined in the OHSACT) complies with the OHSACT. Annexure 2 contains the “Legal Compliance Checklist” which may be used for this purpose.
* The principal contractor’s Chief Executive Officer may appoint any person reporting to him/her as a Designated Person in terms of Section 16(2) of the OHSACT. The Designated Person is responsible to assist the Chief Executive Officer to ensure that the Employer complies with the requirements of the OHSACT.
* The construction supervisor and assistant construction supervisor(s) appointed in terms of Construction Regulation 6 are responsible for supervising the construction work and especially are to ensure that all work undertaken complies with the requirements of the OHSACT and its Regulations.

**4.3.2 Operational responsibilities for occupational health and safety**

The principal contractor shall appoint designated competent employees and/or other competent persons to assist with the operational responsibilities for occupational health and safety. The following list highlights common construction activities where appointed competent persons are required. This list is given only as a minimum requirement and other activities may also require the appointment of competent persons.

|  |  |
| --- | --- |
| **Appointment description** | **Appointment required in terms of** |
| Asbestos stripper/demolishing supervisor | Asbestos regulations |
| Batch plant supervisor | Construction Regulation 6(1) |
| Blasting supervisor |  |
| Construction vehicle, mobile plant and machinery supervisor | Construction Regulation 21 |
| Construction supervisor | Construction Regulation 6(1) |
| Demolition supervisor | Construction Regulation 12 |
| Drivers of construction vehicles and operators or plant | Construction Regulation 21 |
| Electrical installation and appliances inspector | Construction Regulation 22 |
| Emergency, security and fire coordinator | Construction Regulation 27 |
| Excavation supervisor (including piling) | Construction Regulation 11 |
| Explosive powered tool supervisor | Construction Regulation 19 |
| Fall protection supervisor | Construction Regulation 8 |
| First-aiders | General Safety Regulation 3 |
| Fire fighting equipment inspector | Construction Regulation 27 |
| Formwork and support work supervisor | Construction Regulation 10 |
| Hazardous chemical substances supervisor | Hazardous Chemicals Substances Regulations |
| Incident investigator | General Administrative Regulation 29 |
| Ladder inspector | General Safety Regulation 13(a) |
| Lifting machines and equipment inspector | Construction Regulation 20 |
| Materials hoist inspector | Construction Regulation 17 |
| Occupational health and safety committee | OHSACT Section 19 |
| Occupational health and safety officer | Construction Regulation 6(6) |
| Occupational health and safety representatives | OHSACT Section 17 |
| Person responsible for machinery | General Machinery Regulation 2 |
| Risk assessor | Construction Regulation 7(1) |
| Scaffolding supervisor | Construction Regulation 14 |
| Stacking and storage supervisor | Construction Regulation 26 |
| Structures supervisor | Construction Regulation 9 |
| Suspended platform supervisor | Construction Regulation 15 |
| Traffic management supervisor | OHSACT Section 9(1) |
| Traffic safety officer | OHSACT Section 9(1) |
| Tunnelling supervisor | Construction Regulation 13 |
| Vessels under pressure supervisor | Vessels under Pressure Regulations |
| Working on or next to water supervisor | Construction Regulation 24 |
| Welding supervisor | General Safety Regulation 9 |

These appointments must be in writing and the responsibilities clearly stated together with the period for which each appointment is made. This information must be communicated to and agreed with by the appointees who will sign the appointment letter.

Copies of appointments must be submitted to the client together with concise CV’s of the appointees as part of the principal contractor’s health and safety plan. All appointments must be approved by the client and any changes in appointees or appointments must be communicated to the client and agreed upon before being implemented.

The principal contractor must provide the client with an organogram listing the staff, their designations and their responsibilities for all contractors that he has appointed or intends to appoint and keep this list updated on a weekly basis.

**4.3.3 Designation of occupational health and safety representatives (section 17 of the OHSACT)**

Where the principal contractor employs more that 20 persons, including the employees of other Contractors and sub-contractors, he shall appoint one occupational health and safety representative for every 50 employees or part thereof. General Administrative Regulation 6 requires that the election, appointment and subsequent designation of the occupational health and safety representatives be executed in consultation with employee representatives. (Section 17 of the OHSACT as well as General Administrative Regulation 6 and 7).

Occupational health and safety representatives must be designated in writing for a specified period. The designation must include the area of responsibility of the person.

**4.3.4 Duties and functions of the occupational health and safety representatives (Section 19 of the OHSACT)**

* The principal contractor must ensure that the designated occupational health and safety representatives conduct a weekly inspection of their respective areas of responsibility. For this inspection they will use a checklist, and report thereon to the principal contractor. Completed weekly checklists will be kept in the health and safety file.
* Occupational health and safety representatives must be included in accident and/or incident investigations.
* Occupational health and safety representatives must attend all occupational health and safety committee meetings.

**4.3.5 Appointment and functions of the occupational health and safety committee (Sections 19 & 20 of the OHSACT)**

The principal contractor must establish an occupational health and safety committee consisting of all the designated occupational health and safety representatives together with a number of management representatives. The management representatives shall not exceed the number of occupational health and safety representatives on the committee. A representative of the client will act as the chairperson without voting rights. The members of the occupational health and safety committee must be appointed in writing.

The occupational health and safety committee must meet at least once monthly and will consider, at least, the following agenda items:

**1.** Opening and welcome.

**2.** Members present, apologies and absent.

**3.** Minutes of previous meeting.

**4.** Matters arising from the previous meeting.

**5.** Occupational health and safety representatives’ reports.

**6.** Incident and/or accident reports and investigations.

**7.** Incident, accident and/or injury statistics.

**8.** Other matters.

**9.** Endorsement of registers and other statutory documents by a duly authorised representative of the principal contractor.

**10.** Close and next meeting.

* 1. **Mandataries**

Whenever the principal contractor appoints contractors or sub-contractors, It is a requirement that an OHSACT Section 37(2) agreement (i.e. Agreement with Mandatary) is included in his agreement with the contractor or sub-contractor. The principal contractor and contractor shall comply with the requirements of Construction Regulation 5.

**4.5 Administrative controls and the occupational health and safety file**

**4.5.1 The occupational health and safety file [Construction Regulation 5(7)]**

As required by Construction Regulation 5(7), the principal contractor and other contractors will each keep an occupational health and safety file on site containing the following minimum document:

1. Notification of construction work (Construction Regulation 3.).
2. Updated copy of the OHSACT and its Regulations (General Administrative Regulation 4.).
3. Proof of registration and good standing with the Compensation Commissioner or a COID Insurer [Construction Regulation 4(g)].
4. Occupational health and safety plan agreed with the client [Construction Regulation 5(1)] including the underpinning risk assessment(s) [Construction Regulation 7(2)] and method statements.
5. Copies of occupational health and safety committee meetings and other relevant minutes.
6. Designs and/or drawings [Construction Regulation 5(8) & 9(3)].
7. A list of contractors (sub-contractors) including copies of the agreements between the parties and the type of work being done by each contractor.
8. Appointment and designation forms required in terms of paragraphs 4.3.1 and 4.3.2 above.
9. The following registers:

* Accident and/or incident register (Annexure 1 of the General Administrative Regulations);
* Occupational health and safety representatives inspection register;
* Construction vehicles and mobile plan inspections by controller;
* Daily inspections of vehicles, plant and other equipment by the operator, driver and/or user;
* Daily inspections of excavations by competent person;
* Record of entry to confined space;
* Record of training;
* Record of toolbox talks;
* Designer’s inspections and structures record;
* Inspection and maintenance of explosive powered tools;
* Inspection of electrical installations (including inspection of portable electrical tools, electrical equipment and other electrical appliances);
* Fall protection inspections;
* First-aid box content;
* Record of first-aid treatment;
* Fire equipment inspection and maintenance;
* Record of hazardous chemical substances kept and used on site;
* Ladder inspection;
* Machine safety inspections (including machine guards, lock-outs etcetera);
* Inspection registers and logbooks for lifting machines and –tackle (including daily inspections by drivers/operators);
* Inspection of scaffolding;
* Inspection of stacking and storage;
* Inspections of structures;
* Vessels under pressure; and
* Inspection of welding equipment.

**10.** All other applicable records.

The client will conduct an inspection and evaluation of the principal contractor’s occupational health and safety file from time to time.

**4.6 Occupational health and safety goals and objectives and arrangements for monitoring and review of occupational health and safety performance**

The principal contractor is required to maintain a casualty incident frequency rate (CIFR) of at least 8. See Annexure 2 to this document which includes examples on measuring injury experience. The contractor will report his CIFR to the client on a monthly basis.

**4.7 Notification of construction work (Construction Regulation 3)**

The principal contractor shall, before carrying out any work, notify the Department of Labour of the intention to carry out construction work and use the form (Annexure A in the Construction Regulations) for this purpose. A copy must be held on the occupational health and safety file and a copy must also be forwarded to the client for record keeping purposes. A copy stamped by the Department of Labour will be acceptable. No faxed or emailed notifications will be accepted.

**4.8 Training, awareness and competence**

Training is to be carried out as required by the OSHACT and the Regulations. The contents and syllabi of all training courses required and attended are to be included in the principal contractor’s occupational health and safety plan.

**4.8.1 General induction training**

All members of contractor’s site management as well as all the persons appointed as responsible for occupational health and safety in terms of the Construction and other Regulations will be required to attend a general induction session.

All employees of the principal and other contractors are to be in possession of proof of general induction training.

**4.8.2 Site-specific induction training**

The principal contractor will be required to develop a project specific induction training course based on the risk assessments for the contract work. He will ensure that all his employees and other contractors and their employees have received this training course.

All employees of the principal and other contractors are to be in possession of proof that they have attended a site-specific occupational health and safety induction training course.

**4.8.3 Other training**

**1.** All operators, drivers and users of construction vehicles, mobile plant and other equipment are to be in possession of valid proof of training and, where applicable, valid licenses.

**2.** All employees in jobs requiring training in terms of the OHSACT and Regulations are to be in possession of valid proof of training.

**3.** Other occupational health and safety training requirements of the OHSACT and Construction Regulations include:

1. General induction (Section 8 of the OHSACT);
2. Site and job specific induction, including visitors (Sections 8 and 9 of the Act);
3. Site and project manager;
4. Construction supervisor;
5. Occupational health and safety representatives [Section 18 (3) of the Act];
6. Training of the appointees indicated in paragraphs 4.3.1 and 4.3.2;
7. Operators and drivers of construction vehicles and mobile plant (Construction Regulation 21);
8. Basic fire prevention and protection (Environmental Regulations 9 and Construction Regulation 27);
9. Basic first-aid (General Safety Regulations 3);
10. Storekeeping methods and safe stacking (Construction Regulation 26); and
11. Emergency, security and fire coordinator.

**4.8.4 Awareness and promotion**

The principal contractor is required to have a promotion and awareness programme in place to create an occupational health and safety culture within employees. The following are some of the methods that may be used:

* Toolbox talks
* Posters
* Videos
* Competitions
* Suggestion schemes
* Participative employee activities such as “occupational health and safety circles”.

**4.8.5 Competence**

The principal contractor shall ensure that his personnel and other contractors’ personnel are competent and that all training required to carry out work safely and without risk to health has been completed before work commences.

The principal contractor shall ensure that follow-up and refresher training is conducted as the work progresses and whenever the scope or nature of the work changes.

Records of all training must be kept in the occupational health and safety file. The contents of the file will be audited from time to time.

**4.9 Consultation, communication and liaison**

The following arrangements with respect to communication and liaison shell apply:

**4.9.1** Occupational health and safety liaison between the client, the principal contractor, the other contractors, the designer and other concerned parties will be through the occupational health and safety committee. In the absence of a health and safety committee, the client and principal contractor will agree on an alternative communication forum to be implemented.

**4.9.2** In addition to the above, communication may be directly to the client or contractor or their appointed Agents, verbally (followed up in writing within 7 days) or in writing, as and when the need arises.

**4.9.3** Consultation with the workforce on occupational health and safety matters will be through their supervisors, occupational health and safety representatives, the occupational health and safety committee and their elected trade union representatives, if any. Any such communication will be followed up in writing within 7 days.

**4.9.4** The principal contractor will be responsible for the dissemination of all relevant occupational health and safety information to the other contractors. The transfer of information must take place before the contractor or other contractors commence work, for example, on design changes agreed with the client and the designer, instructions by the client and/or his agent, exchange of information between contractors, the reporting of hazardous and/or dangerous conditions and/or situations etc.

**4.9.5** The principal contractor will be required to do site safety walks with the client and/or his agent at times and frequencies to be agreed between the parties. A record of the safety walks and the findings and recommendations derived from the walks will be kept in the health and safety file.

**4.9.6** The principal and other contractors will be required to conduct toolbox talks with their employees on a weekly basis and records of these must be kept in the occupational health and safety file. Employees must acknowledge the receipt of toolbox talks and this record must also be kept in the occupational health and safety file.

**4.9.7** The principal contractor’s most senior manager on site will be required to attend all the client’s occupational health and safety meetings.

**4.9.8** The client or his agent and the principal contractor will mutually agree on the dates, times and venues of the occupational health and safety meetings.

**4.10 Checking, reporting and corrective actions**

**4.10.1 Monthly compliance assessment by client [Construction Regulation 4(1)(d)]**

The client will conduct a monthly assessment in terms of Construction Regulation 4(1)(*d*) to confirm that the principal contractor has implemented and is maintaining the agreed and approved occupational health and safety plan.

**4.10.2 Other assessments and inspections by the client**

The client reserves the right to conduct other ad-hoc assessments and inspections as deemed necessary. This may include, amongst other measures, site safety walks.

**4.10.3. Conducting an assessment**

A representative of the principal contractor must accompany the client on all assessments and inspections and may conduct his own inspection at the same time. Each party will process the results of their own assessment or inspection through their normal channels.

**4.10.4 Contractor’s assessments and inspections**

The principal contractor is to conduct his own internal assessments and inspections to verify compliance with his own occupational health and safety plan and management system as well as compliance with the requirements of this specification He will also assess and inspect the compliance of other contractors under his control.

**4.10.5 Inspections by occupational health and safety representatives and other appointees**

Occupational health and safety representatives must conduct weekly inspections of their areas of responsibility and report thereon to their foreman or supervisor. Other appointees must conduct inspections and report thereon as specified in their appointments. For example, vehicle, plant and machinery drivers, operators and users must conduct daily inspections before start-up.

**4.10.6 Recording and review of inspection results**

All the results of inspections shall to be in writing, reviewed at occupational health and safety committee meetings, endorsed by the chairperson of the meeting and placed on the occupational health and safety file.**4.10.7 Reporting of inspection results**

The principal contractor is required to provide the client with a monthly report in the format described in Annexure 2.

**4.11 Incident reporting and investigation**

**4.11.1 Reporting of accidents and incidents (Section 24 and General Administrative Regulation 8 of the OHSACT)**

The principal contractor must report all incidents where an employee is injured on duty to the extent that he:

* dies
* becomes unconscious
* loses a limb or part of a limb
* is injured or becomes ill to such a degree that he is likely either to die or to suffer a permanent physical defect or likely to be unable for a period of at least 14 days either to work or continue with the activity for which he was usually employed

or where -

* a major incident occurred
* the health or safety of any person was endangered
* where a dangerous substance was spilled
* the uncontrolled release of any substance under pressure took place
* machinery or any part of machinery fractured or failed resulting in flying, falling or uncontrolled moving objects
* machinery ran out of control

to the client within two days and to the Provincial Director of the Department of Labour within seven days from date of incident (Section 24 of the OHSACT and General Administrative Regulation 8), **except** that, where a person has died, has become unconscious for any reason or has lost a limb or part of a limb or may die or suffer a permanent physical defect, the incident must be reported to both the client and the Provincial Director of the Department of Labour forthwith by telephone, telefax or e-mail. All other reports required by this specification must also be completed.

The principal contractor is required to provide the client with copies of all statutory reports required in terms of the OHSACT within 7 days of the incident occurring.

The principal contractor is required to provide the client with copies of all internal and external accident/incident investigation reports, including the reports required in 4.11.2 (3) and (4) below, within 7 days of the incident occurring.

**4.11.2 Accident and incident investigation (General Administrative Regulation 9)**

**1.** The principal contractor is responsible for the investigation of all accidents and/or incidents where employees and non-employees were injured to the extent that they had to receive medical treatment other than first aid.

**2.** The results of the investigation are to be entered into the accident and/or incident register.

**3.** The principal contractor is responsible for the investigation of all minor and non-injury incidents as described in Section 24 (1) (b) and (c) of the OHSACT and for keeping a record of the results of the investigations including the steps taken to prevent similar accidents in future.

**4.** The principal contractor is responsible for the investigation of all road traffic accidents, related to the construction activities, and for keeping a record of the results of the investigations including the steps taken to prevent similar accidents in future.

**5.** The client reserves the right to hold its own investigation into an incident or call for an independent external investigation.

**5.0 Operational control**

**5.1 Emergency preparedness, contingency planning and response**

**5.1.1** The principal contractor must appoint a competent person to act as emergency controller and/or coordinator.

**5.1.2** The principal contractor must conduct an emergency identification exercise and establish what emergencies could possibly develop. He must then develop detailed contingency plans and emergency procedures, taking into account any emergency plan that the client may have in place.

**5.1.3** 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.

**5.2 First-aid (General Safety Regulation 3)**

**5.2.1** The principal contractor must provide first-aid equipment (including a stretcher) and have qualified first-aider(s) on site as required by General Safety Regulation 3 of the OHSACT.

**5.2.2** The contingency plan of the principal contractor must include arrangements for the speedy and timeous transporting of injured and/or ill person(s) to a medical facility or of getting emergency medical aid to person(s) who may require it.

**5.2.3** The principal contractor must have written arrangements in place with his other contractors regarding the responsibility of the other contractors towards their own injured and/or ill employees.

**5.3 Security**

**5.3.1** The principal contractor must establish site access rules and implement and maintain these throughout the construction period. Access control must, amongst other, include the rule that non-employees will not be allowed on site unaccompanied.

* + 1. The principal contractor must develop a set of security rules and procedures and maintain these throughout the construction period.

**5.4. Fall protection [Working in elevated positions (Construction Regulation 8)]**

**5.4.1** A pre-emptive risk assessment will be required for any work to be carried out above two metres from the ground or any floor level. This work will be classified as “work in elevated positions”.

**5.4.2** As far as is practicable, any person working in an elevated position will work from a platform, ladder or other device that is at least as safe as if he is working at ground level. Whilst working in this position he shall be wearing a single belt with lanyard to prevent the person falling from the platform, ladder or other device. This safety belt will be, as far as is possible, secured to a point away from the edge over which the person might fall and the lanyard must be of such a length and strength that the person will not be able to move over the edge.

Alternatively, any platform, slab, deck or surface forming an edge over which a person may fall may be fitted with suitable guard rails at two different heights as prescribed in sabs 085 code of practice for the design, erection, use and inspection of access scaffolding.

**5.4.3** Where the requirement in paragraph 5.4.2 is not practicable, the person will be provided with a full body harness that will be worn at all times and shall be attached above the wearer’s head at all times. The lanyard must be fitted with a shock absorbing device or the person must be attached to a fall arrest system approved by the client.

**5.4.4** Where the requirements in paragraph 5.4.3 are not practicable, a suitable catch net must be erected.

* + 1. Employees working in elevated positions must be trained to work without risk to their health and safety or to the health and safety of others.
    2. Where work on roofs is carried out, the risk assessment must take into account the possibility of persons falling through fragile material, i.e. skylights and openings in the roof.

**5.5 Structures (Construction Regulation 9)**

The principal contractor must ensure that:

**5.5.1** Only skilled employees are allowed to erect structures and that the skills of these employees are verified at regular intervals.

**5.5.2** Steps are taken to ensure that no structure becomes unstable or collapses due to construction work being performed on it or in the vicinity of it.

**5.5.3** No structure is overloaded to the extent that it becomes unsafe.

**5.5.4** He has received from the designer the following information:

* Information on known or anticipated hazards relating to the construction work and the relevant information required for the safe execution of the construction work.
* A geo-scientific report (where applicable).
* The loading the structure is designed to bear.
* The methods and sequence of the construction process.

**5.5.5** All drawings relating to the design are on site and available for inspection.

**5.6 Access scaffolding (Construction Regulation 14)**

Access scaffolding must be erected, used and maintained safely in accordance with Construction Regulation 14 and SA Bureau of Standards Code of Practice, SABS 085 entitled, “The Design, Erection, Use and Inspection of Access Scaffolding.

Detailed consideration must be given to all scaffolding to ensure that it is properly planned to meet the working requirements, designed to carry the necessary loadings and maintained in a sound condition. Sufficient material must be available to erect the scaffolding properly.

Scaffolding must only be erected, altered or dismantled by persons who have adequate training and experience and are competent in this type of work and under the continuous supervision of such a person.

**5.7 Explosive powered tools (Construction Regulation 19)**

Every explosive powered tool must be:

1. Provided with a guard around the muzzle to confine flying fragments or particles; and
2. Must be fitted with a firing mechanism that will prevent the explosive powered tool from firing unless it is pushed against the surface and at the right angle. Where the explosive powered tool is fitted with an intermediate piston between the charge and the nail this requirement is waived.

The contractor or user must ensure that:

1. Only the correct type of cartridge is used;
2. The explosive powered tool is cleaned and inspected daily before use by an appointed competent person. The competent person will keep a register with the findings of his inspection and the details of cleaning, service and repairs;
3. The safety devices are in good working order before the explosive powered tool is used;
4. When the explosive powered tool is not being used it is stored in an unloaded condition together with the cartridges in a safe and secure place inaccessible to unauthorised persons;
5. A warning notice is displayed at the point where the explosive powered tool is in use;
6. The issue and return of cartridges must be by issue/returns register signed by both issuer and user and empty cartridge cases must be returned with unspent cartridges;
7. Users and operators of the explosive powered tool have received the necessary training and has been authorised as competent to use/operate the explosive powered tool; and
8. Users and operators must wear the prescribed personal protective equipment whilst using and/or operating the tool.

**5.8 Lifting equipment (Construction Regulation 20)**

### Lifting equipment must be designed and constructed in accordance with the manufactures/designers specifications as well as generally accepted technical standards and operated, used, inspected and maintained in accordance with the manufactures requirements as well as that of the of Driven Machinery Regulation 18 of the OHSACT:

The Driven Machinery Regulation 18 requires that:

### Lifting equipment be clearly and conspicuously marked with the maximum mass load (MML) that it is designed to carry safely. When the MML varies with the conditions of use a table showing the maximum mass load with respect to every variable condition shall be posted up by the user in a conspicuous, place easily visible to the operator and the table shall be used by the driver/operator;

### Each winch on a lifting machine must al all time have, at least, three full turns of rope on the drum when the winch has been run to its lowest limit;

### Lifting equipment shall be fitted with a brake or other device capable of holding the MML. This brake or device shall automatically prevent the downward movement of the load when the lifting power is interrupted;

### Lifting equipment shall be fitted with a load limiting device that automatically arrest the lift when the load reaches its highest safe position or when the mass of the load is greater than the MML;

1. Every chain or rope on a lifting machine that forms an integral part of the machine must have a factor of safety as prescribed by the manufacturer of the machine. Where no standard is available the factor of safety must be:

* chains – 4 (four)
* steel wire ropes - 5 (five)
* fibre ropes- 10 (ten)

1. Every hook or load attaching device must be designed to prevent the load from slipping off or disconnecting;
2. Every lifting machine must be inspected and load tested by a competent person every time it has been dismantled and re-erected and every 12 months after that. The load test must be in accordance with the manufacturer’s requirements or to 110% of the MML. In addition, all ropes, chains, hooks or other attaching devices, sheaves, brakes and safety devices forming an integral part of a lifting machine must be inspected every 6 months by a competent person;
3. All maintenance, repairs, alterations and inspection results must be recorded in a log book and each lifting machine must have its own log book; and
4. No person may be lifted by a lifting machine not designed for lifting persons unless in a cradle approved by the inspector of the Department of Labour.

**5.9 Lifting tackle**

The following requirements will apply to lifting tackle:

1. Manufactured of sound material, well constructed and free from patent defects;
2. Clearly and conspicuously marked with an identity number;
3. MML factor of safety:
   * Natural fibre ropes - 10(ten)
   * Man-made fibre ropes and woven webbing - 06(six)
   * Steel wire ropes – single rope - 06(six)
   * Steel wire ropes – combination slings - 08(eight)
   * Mild Steel chains - 05(five)
   * High tensile/alloy steel chains - 04(four)

**d.** Steel wire ropes must be examined by a competent person every three months and the results recorded in a designated log book. The ropes must be discarded (not used any further for lifting purposes) when wear and corrosion is evident.

#### 5.10 Machine operators

The following requirements will apply to machine operators:

1. Every lifting machine operator must be trained specifically for the type of lifting machine that he is operating.
2. Operators of Jib cranes with a MML of 500 kg or more must be in possession of a certificate of training issued by a training provider accredited by The Department of Labour.

**5.11 Construction vehicles and mobile plant (Construction Regulation 21)**

Construction vehicles and mobile plant will be inspected by the client prior to being allowed on a project site. Suppliers of hired vehicles, plant and equipment will be required to comply with this specification as well as the OHSACT and Regulations.

Construction vehicles and mobile plant to be:

1. Of acceptable design and construction;
2. Maintained in good working order;
3. Used in accordance with their design and intention for which they were designed;
4. Operated and/or driven by trained, competent and authorised operators/drivers. No unauthorised persons are to be allowed to drive construction vehicles and mobile plant;
5. Provided with safe and suitable means of access;
6. Fitted with adequate signaling devices to make movement safe including reversing;
7. Provided with roll-over protection;
8. Inspected daily before start-up by the driver, operator and/or user and the findings recorded in a register/log book;
9. Fitted with two head and two tail lights that are in good working condition and must be used whilst operating under poor visibility conditions;
10. When used for transporting persons must have seats firmly secured and sufficient for the number of persons being transported.

Excavations and other openings must be provided with sufficient barriers to prevent construction vehicles and mobile plant from falling into them.

Operators and drivers of construction vehicles and mobile plant must be in possession of a valid medical certificate declaring the operator and/or driver physically and psychologically fit to operate or drive construction vehicles and mobile plant.

No loose tools, material etc. are allowed in the driver and/or operators compartment/cabin nor in the compartment in which any other persons are transported.

No person may ride on construction vehicles and mobile plant except when in a safe place designed and provided for this purpose.

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 must to be suitable, sufficient in number and adequately demarcated.

Construction vehicles and mobile plant left unattended after hours adjacent to roads and areas where there is traffic movement must be fitted with lights, reflectors or barricades to prevent moving traffic from coming into contact with the parked construction vehicles and mobile plant.

In addition, construction vehicles and mobile plant left unattended after hours must be parked with all buckets, booms etc. full lowered, the emergency brakes engaged and, where necessary, the wheels chocked, the transmission in neutral and the motor switched off and the ignition key removed and stored safely.

Workers employed adjacent to or on public roads must wear reflective safety vests.

All construction vehicles and mobile plant inspection records must be kept in the occupational health and safety file.

**5.12 Electrical installations (Construction Regulation 22)**

The installation of temporary electricity for construction shall be in accordance with Construction Regulation 22 and the Electrical Installation Regulations.

The principal contractor must ensure that:

1. Existing services are located and marked before construction commences and the markings maintained during construction;
2. Where this is not possible, workers with jackhammers etc. are protected against electric shock by the use of suitable protective equipment e.g. rubber mats, insulated handles etc;
3. Electrical installations and -machinery are sufficiently robust to withstand normal working conditions on site;
4. Temporary electrical installations must be inspected at least once a week by a competent person and a record of the inspections kept in the occupational health and safety file;
5. Electrical machinery used on a construction site must be inspected daily before start-up by the competent driver/operator or any other competent person and a record of the inspections kept in the occupational health and safety file; and
6. A competent person appointed in writing must control and be responsible for all temporary electrical installations.

**5.13 Electrical and mechanical lockout**

An electrical and mechanical lockout procedure must be developed by the principal contractor and submitted to the client for approval before construction commences. All contractors on site must adhere to this lockout procedure.

**5.14 Use and storage of flammables(Construction Regulation 23)**

The principal contractor to ensure that:

1. 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 are taken;
2. No flammable material is used or applied e.g. in spay painting, unless in a room or cabinet or other enclosure specially designed and constructed for the purpose unless there is no danger of fire or explosion due to the application of adequate ventilation;
3. The workplace is effectively ventilated. Where this cannot be achieved:

* Employees must wear suitable respiratory equipment
* No smoking or other source of ignition is allowed in the area
* The area is conspicuously demarcated as “flammable”

1. Flammables stored on a construction site are stored in a well-ventilated, reasonably fire-resistant container, cage or room that is kept locked with access control measures in place. Sufficient fire fighting equipment is installed and fire prevention methods practiced. Proper housekeeping may achieve this;
2. Flammables stored in a permanent flammable store are stored so that no fire or explosion is caused.:

* Stored in a locked and well-ventilated reasonably fire resistant container, cage or room conspicuously demarcated as “Flammable Store – No Smoking or Naked Lights”
* The flammables store to be constructed of two-hour fire retardant walls and roof and separated from adjoining rooms or workplaces by means of a two-hour fire retardant fire wall
* Adequate and suitable fire fighting equipment installed around the flammables store and marked with the prescribed signs
* All electrical switches and fittings to be of a flameproof design
* Any work done with tools in a flammable store or work areas to be of a non-sparking nature
* No Class A combustibles such as paper, cardboard, wood, plastic, straw and the like to be stored together with flammables
* The flammable store to be designed and constructed such that in the event of spillage of liquids the store is able to contain the full quantity + 10% of the liquids stored
* A sign indicating the capacity of the store to be displayed on the door

1. Only one day’s quantity of flammable is to be kept in the workplace;
2. Containers (including empty containers) to be kept closed to prevent fumes/vapors from escaping and accumulating in low lying areas;
3. Metal containers to be bonded to earth whilst decanting to prevent build-up of static forces; and
4. Welding and other flammable gases to be stored segregated according to the type of gas and empty and full cylinders.

**5.15 Housekeeping(Construction Regulation 25)**

The principal contractor to ensure that:

1. Housekeeping is continuously implemented and maintained;
2. Materials and equipment are properly stored;
3. Scrap, waste and debris is removed regularly;
4. Materials placed for use are placed safely and not allowed to accumulate or cause obstruction to the free-flow of pedestrians and vehicular traffic;
5. Waste and debris not to be removed from heights by throwing but rather by chute or crane;
6. Where practicable, construction sites are fenced off to prevent entry of unauthorised persons;
7. Catch platforms or nets are erected over entry and exit ways or over places where persons are working to prevent them being struck by falling objects;
8. An unimpeded work space is maintained for every employee;
9. Every workplace is kept clean, orderly and free of tools, materials and the like that are not required for the work being done;
10. As far as is practicable, every floor, walkway, stair, passage and gangway is kept in good state of repair, skid-free and free of obstruction, waste and materials;
11. The walls and roof of every indoors workplace sound and leak-free; and
12. Openings in floors, hatchways, stairways and open sides of floors or buildings are barricaded, fenced, boarded over or provided with protection to prevent persons from falling.

**5.16 Stacking and storage(Construction Regulation 26)**

The principal contractor must ensure that:

1. A competent person is appointed in writing to supervise all stacking and storage on a construction site;
2. Adequate storage areas are provided and demarcated;
3. The storage areas are kept neat and under control;
4. The base of any stack is level and capable of sustaining the weight exerted on it by the stack;
5. The items in the lower layers can support the weight exerted by the top layers;
6. Cartons and other containers that may become unstable due to wet conditions are kept dry;
7. Pallets and containers are in good condition and no material is allowed to spill out;
8. The height of any stack does not exceed 3 times the base unless stepped back at least half the depth of a single container at least every fifth tier or the approval of an inspector has been obtained to build the stacks higher with the aid of a machine. The operator of the machine must be protected against items falling from overhead off the stack and no items may overhang;
9. The articles that make up a single tier are consistently of the same size, shape and mass;
10. Structures for supporting stacks are structurally sound and able to support the mass of the stack;
11. No articles are removed from the bottom of the stack first but from the top tier first;
12. Anybody climbing onto a stack can and does do it safely and that the stack is sufficiently stable to support him or her;
13. Stacks that are in danger of collapsing are broken down and restacked;
14. Stability of stacks are not threatened by vehicles or other moving plant and machinery;
15. Stacks are built in a header and stretcher fashion and that corners are securely bonded;
16. Stacks are stepped back at least half the depth of a single container at least every fifth tier; and
17. Persons climbing onto stacks do not approach unguarded moving machinery or electrical installations.

**5.17 Storage of flammable and hazardous chemicals(Hazardous Chemical Substances Regulations)**

See paragraphs 5.18 and 5.24 below.

**5.18 Fire prevention and protection (Construction Regulation 27)**

The principal contractor must ensure that:

1. The risk of fire is avoided;
2. Sufficient and suitable storage for flammables is provided;
3. Sources of ignition are removed wherever flammable or highly combustible material is present in the workplace, for example:

* Notices prohibiting smoking are displayed and enforced
* Welding and flame cutting is only allowed under controlled conditions that includes written hot work permits
* Only spark-free hand and power tools are used
* No grinding, cutting and shaping of ferrous metals is allowed using electrically driven power tools that produce sparks
* Flameproof switches and fittings are to be used in the flammable atmosphere
* Good housekeeping is maintained to prevent the accumulation of unnecessary combustibles
* Adequate ventilation is maintained
* Adequate and suitable fixed and portable fire fighting equipment is provided and maintained in good working order.

1. Maintenance must include:

* Regular inspection by a competent person appointed in writing and keeping a register
* Annual inspection and service by an accredited service provider

1. All employees are instructed in the use of the fire fighting equipment and know how to attempt to extinguish a fire;
2. A sufficient number of employees are appointed and trained to act as an emergency team to deal with fires and other emergencies;
3. Employees are informed regarding emergency evacuation procedures and escape routes;
4. Emergency escape routes are kept clear at all times and clearly marked;
5. Evacuation assembly points are demarcated;
6. Evacuation is practiced to ensure that all persons are evacuated timeously;
7. Roll call is held after evacuation to account for all personnel and ensure that no-one has been left behind; and
8. A siren or alarm is fitted which is clearly audible to all persons on site.

**5.19 Eating, changing, washing and toilet facilities (Construction Regulation 28)**

**5.19.1 Toilets**

1. The provision of toilets for each sex is required in terms of the National Building Regulations and Construction Regulation 28.
2. Chemical toilets are allowed instead of the water borne sewerage type. Toilets have to be provided at a ratio of 1 toilet per 30 workers.

**5.19.2 Showers**

At least cold-water showers for each sex have to be provided at a ratio of 1 shower per 15 workers.

**5.19.3 Change rooms**

Some form of screened off changing facility must be provided separately for each sex.

**5.19.4 Eating facility**

Some form of eating facility sheltered from the sun, wind and rain must be provided.

# 5.19.5 Living accommodation

Where the site is in a remote location and transport to home is not readily available, reasonable and suitable living accommodation must be provided.

**5.20 Personal and other protective equipment (Sections 8, 15 and 23 or the OHSACT)**

The principal contractor is required continuously to identify the hazards in the workplace and deal with them. He must either remove them or, where impracticable take steps to protect workers and make it possible for them to work safely and without risk to health under the hazardous conditions.

Personal protective equipment should, however, be the last resort and there should always first be an attempt to apply engineering and other solutions to mitigating hazardous situations before the issuing of personal protective equipment is considered.

Where it is not possible to create an absolutely safe and healthy workplace the principal contractor is required to inform employees regarding this and issue, free of charge, suitable equipment to protect them from any hazards being present and that allows them to work safely and without risk to health in the hazardous environment.

It is a further requirement that the principal contractor maintains the equipment, instructs and trains the employees in the use of the equipment and ensures that the prescribed equipment is used by the employees.

Employees do not have the right to refuse to use and/or wear the equipment prescribed by the employer and, if it is impossible for an employee to use or wear the prescribed protective equipment through health or any other reason, the employee cannot be allowed to continue working under the hazardous condition(s) for which the equipment was prescribed. An alternative solution has to be found that may include relocating the employee.

The principal contractor may **not charge any fee** for protective equipment prescribed by him **but may charge for equipment under the following conditions:**

* Where the employee requests additional issue in excess of what is prescribed;
* Where the employee has patently abused or neglected the equipment leading to early failure; and
* Where the employee has lost the equipment.

All employees shall, as a minimum, be required to wear the following personal protective equipment on any of the client’s projects:

* Protective overalls;
* Protective footwear;
* Protective headwear; and
* Eye, face and ear protection.

**5.21 Portable electrical tools and equipment (Electrical Machinery Regulation 9)**

Portable electrical tools and equipment includes every unit that takes electrical power from a 15 ampere plug point and is moved around for use in the workplace fro example; drills, saws, grindstones, portable lights, etcetera.

Other electrical appliances such as fridges, hotplates, heaters, etcetera must be inspected and maintained to the same standards as portable electrical tools and appliances.

The use, inspection and maintenance of portable electrical tools and equipment shall be as follows:

* Regular inspections must be carried out by a competent person appointed in writing;
* Inspection results must be recorded in a register;
* Only competent authorised persons are allowed to use portable electrical tools and equipment; and
* The correct protective equipment must be worn or used whilst operating portable electrical tools and equipment.

This equipment -

* Must be maintained in good condition at all times to prevent an electrical shock to the user;
* The main power source should incorporate an earth leakage protection device or receive power through a double wound transformer or be double insulated and clearly marked as such; and
* All equipment must be fitted with a switch to allow for safe and easy starting and stopping.

**5.22 Portable lights**

The following requirements apply to portable lights:

1. Must be fitted with a robust non-hygroscopic non-conducting handle;
2. Live metal parts or parts which may become live must be protected against contact;
3. The lamp must be protected by a strong guard;
4. The cable lead-in must withstand rough handling;
5. Inspections must be undertaken that concentrate on plug, cord, switch and any obvious faults;
6. A register be kept for each piece of equipment with findings of regular inspections undertaken to evaluate the condition of these lights; and
7. When used in wet/damp/metal container conditions, the lamp must be protected.

**5.23 Public health and safety (Section 9 of the OHSACT)**

The principal contractor is responsible for ensuring that non-employees affected by the construction work are made aware of the dangers likely to arise from the construction work as well as the precautionary measures to be observed to avoid or minimize those dangers. This includes:

1. Non- employees entering the site for whatever reason;
2. The surrounding community; and
3. Passers by the site.

Appropriate signage must be posted to this effect and all employees on site must be instructed to ensure that non-employees are protected at all times

All non-employees entering the site must receive induction into the hazards and risks of the site and the control measures to be observed.

**5.24 Hazardous chemical substances (Hazardous Chemical Substances regulation 3)**

The principal contractor must ensure that:

1. Employees receive the necessary information and training to be able to use and store hazardous chemical substances safely;
2. Employees obey lawful instructions regarding:

* The wearing and use of protective equipment
* The use and storage of hazardous chemical substances
* The prevention of the release of hazardous chemical substances
* The wearing of exposure monitoring and measuring equipment
* The cleaning up and disposal of materials containing hazardous chemical substances
* Housekeeping, personal hygiene and the protection of the environment

1. The risk assessments required in terms of Construction Regulation 7 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;
2. Suppliers provide the necessary information in the form of a material safety data sheet regarding a hazardous chemical substances required to ensure the safe use and storage of that substances;
3. 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 hazardous chemical substances;
4. Hazardous chemical substances containers be clearly marked with the contents and main hazardous category e.g. “Flammable” or “Corrosive” and the reference number of the hazardous chemical substances on the list indicated above;
5. Hazardous chemical substances, for example asbestos dust, are not cleared by using compressed air but should be vacuumed;
6. No person eats or drinks in a hazardous chemical substances workplace; and
7. Hazardous chemical substances waste is disposed of safely in terms of hazardous waste disposal requirements.

**5.25 Excavations (including piling) (Construction Regulation 11)**

Where excavations will exceed 1,5 m in depth the contractor will be required to submit a method statement to the client for approval before commencing with the excavation and the client will issue a permit to proceed once the risk assessment and method statement is approved.

**5.25.1** Excavation work must be carried out under the supervision of a competent person, who has been appointed in writing, with at least two years experience in excavation work.

**5.25.2** Before excavation work begins the stability of the ground must be evaluated.

**5.25.3** Whilst excavation work is being performed, the contractor must take suitable and sufficient steps to prevent any person from being buried or trapped by a fall or dislodgement of material.

**5.25.4** No person may be required or permitted to work in an excavation that has not been adequately shored or braced.

**2.25.5** Where the excavation is in stable material and where the sides of the excavation are sloped back to at least the angle of repose of the excavated material, shoring or bracing may be left out **but only after** written permission has been obtained from the appointed competent person.

**5.25.6** Shoring and bracing must be designed and constructed to safely support the sides of the excavation.

**5.25.7** Where uncertainty exists regarding the stability of the soil the opinion of a competent professional engineer or professional technologist must be obtained whose opinion will be decisive. The opinion must be in writing and signed by the engineer or technologist as well as the appointed competent person.

**5.25.8** No load or material may be placed near the edge of an excavation unless suitable shoring has been installed to be able to carry the additional load.

**5.25.9** Neighboring/adjoining buildings, structures or roads that may be affected or endangered by the excavation must be suitably protected.

**5.25.10** Every excavation must be provided with means of access that must be within 6 metres of any worker within the excavation.

**5.25.11** The location and nature of any existing services such as water, electricity, gas etc. must be established before any excavation is commenced with and any service that may be affected by the excavation must be protected and made safe for workers in the excavation.

**5.25.12** Every excavation, including the shoring and bracing or any other method to prevent collapse, must be inspected by the appointed competent person as follows:

* Daily before work commences
* After every blasting operation
* After an unexpected collapse of the excavation
* After substantial damage to any supports
* After rain

**5.25.13** The results of any inspections must be recorded in a register kept on site and in the safety file.

**5.25.14** Every excavation accessible to the public or that is adjacent to a public road or thoroughfare or that threatens the safety of persons, must be adequately barricaded or fenced to at least one meter high and as close to the excavation as practicable, regardless of the depth of the excavation.

**5.25.15** Every excavation must be provided with warning lights or visible boundary indicators after dark or when visibility is poor.

**5.25.16** Upon entering an excavation the requirements of General Safety Regulation 5, work in confined spaces, must be observed:

* Any confined space may only be entered after the air quality has been tested to ensure that it is safe to breathe and does not contain any flammable or noxious air mixture.
* The confined space must be purged and ventilated of any hazardous or flammable gas, vapour, dust or fumes.
* The safe atmosphere must be maintained and, where necessary.
* Employees are to be provided with breathing apparatus and must wear a safety harness with a rope with the free end of the rope being continuously attended to by a person outside the confined space.
* Furthermore, an additional person, trained in resuscitation, to be in full-time attendance immediately outside the confined space.
* Additional serviceable breathing and rescue apparatus is kept immediately outside the confined space for rescue purposes.
* All pipes, ducts etc. that may leak into the confined space to be blanked off sufficiently to prevent any leakage or seepage.
* The employer must ensure that all employees have left the confined space after the completion of work.
* Where flammable gas is present in a confined space no work may be performed in close proximity to the flammable atmosphere.

**5.26 Demolition work (Construction Regulation 12)**

* + 1. Demolition work must be carried out under the supervision of a competent person, who has been appointed in writing. This person will also be required to check the structural integrity of the structure at intervals determined by the below mentioned method statement.
    2. The contractor must ensure a detailed structural engineering survey of the structure to be demolished is carried out by a competent person and a method statement on the procedure to be followed in demolishing the structure is developed.
    3. The contractor undertaking demolition work shall:

1. With regard to a structure being demolished, take steps to ensure that:
   * no floor, roof or other part of the structure is overloaded with debris or material in a manner which would render it unsafe;
   * all reasonably practicable precautions are taken to avoid the danger of the structure collapsing when any part of the framing of a framed or partly framed building is removed, or when reinforced concrete is cut; and
   * precautions are taken in the form of adequate shoring or such other means as may be necessary to prevent the accidental collapse of any part of the structure or adjoining structure;
2. Not require or permit any person to work under overhanging material or structure, which had not been adequately supported, shored or braced. This supports, shoring or bracing must also be designed and constructed to be strong enough to support the overhanging material;
3. Where the stability of an adjoining building, structure or road is likely to be affected by demolition work on a structure, take such steps as may be necessary to ensure the stability of such structure or road and the safety of persons;
4. The contractor must identify all possible existing services before demolition work commences and take the necessary steps that may be necessary to render circumstances safe for all persons involved;
5. The contractor must ensure for adequate illumination at every area where demolition work is undertaken, either by natural or artificial means.
6. The contractor must ensure convenient and safe means of access to be provided to every part of the demolition site in which persons are required to work; and
7. The contractor must erect a catch platform or net above an entrance or passageway or above a place where persons work or pass under, or fence off the danger area if work is being performed above such entrance, passageway, or place so as to ensure that all persons are kept safe where there is a danger or possibility of persons being struck by falling objects.
   * 1. The contractor shall ensure that no material is dropped to any point, which falls outside the exterior walls of the structure, unless the area is effectively protected.
     2. Waste and debris shall not be disposed from a high place by a chute unless the chute:
8. is adequately constructed and rigidly fastened;
9. if inclined at an angle of more than 45 degrees to the horizontal, is enclosed on its four sides;
10. if of the open type, is inclined at an angle of less than 45 degrees to the horizontal;
11. where necessary, is fitted with a gate at the bottom end to control the flow of material; and
12. is discharged into a container or an enclosed area surrounded by barriers.
    * 1. A contractor shall ensure that every chute used to dispose of rubble is designed in such a manner that rubble does not free-fall and that the chute is strong enough to withstand the force of the debris traveling along the chute.
      2. Where the risk assessment indicates the presence of asbestos, a contractor shall ensure that all asbestos related work is conducted in accordance with the provisions of the Asbestos Regulations promulgated by Government Notice No R.155 of 10 February 2002, as amended.
      3. A contractor shall ensure that all waste and debris is as soon as reasonably practicable removed and disposed of from the site in accordance with the applicable legislation.

**5.27 Working in confined spaces (such as sewer manholes) (General Safety Regulation 5)**

**5.27.1 Sewer manholes (excl. Outfall sewers)**

1. **Ventilation**

The manhole cover and two adjacent covers must be opened (i.e. a total of three manholes) and the sewer allowed to ventilate for 15 (fifteen) minutes. All open manholes must be barricaded and manned at all times.

Lower the gas monitor to the bottom of the manhole with a rope to test for the presence of any toxic/flammable gas. If any toxic/flammable gas is detected, the line must be force ventilated by means of a blower for 15 (fifteen) minutes where after the air must be tested again. Under no circumstances may any manhole be entered while there is a toxic/flammable gas present. Ensure that fumes from the blower motor do not enter the confined space.

A register must be kept in which the principal contractor’s competent person (trained by the supplier of the gas monitoring equipment) certifies that the atmosphere in the confined space was tested and that the space is fit to work in. The principal contractor’s construction supervisor must check and co-sign this register each time he visits a site to ensure that the atmosphere is regularly checked.

1. **Entering manhole**

When entering a manhole the person entering the manhole must wear the safety harness, gas detector as well as a self-rescuer. A lifeline must be attached to the safety harness and a person on the surface must be in continuous contact with the person in the manhole. At least one person on the surface must be trained in basic first aid and CPR.

In no circumstances shall any person remain within a sewer manhole for a period of more than one hour at a time. A five-minute rest on the surface must be taken after this period before re-entering.

Should the alarm sound on the gas monitor, the area must be evacuated immediately. The area must be properly ventilated and re-tested before re-entering the confined space.

1. **Special precautions**

Employees must be provided with flameproof lighting when entering deep manholes or manholes with flammable gases present. No naked lights, smoking or unprotected electrical apparatus which may cause sparks, shall be permitted in any manhole or in their vicinity.

**5.27.2 Outfall sewers**

1. **Ventilation**

Open one manhole upstream and downstream of manhole identified to work in. All open manholes must be barricaded and manned at all times.

Force-ventilate line for 10 (ten) to 15 (fifteen minutes).

Lower the gas monitor to the bottom of the manhole with a rope to test for the presence of any toxic/flammable gas. If any toxic/flammable gas is detected, the manhole may not be entered.

The line must be mechanically ventilated at all times.

A register must be kept in which the principal contractor’s competent person (trained by the supplier of the gas monitoring equipment) certifies that the atmosphere in the confined space was tested and that the space is fit to work in. The principal contractor’s construction supervisor must check and co-sign this register each time he visits a site to ensure that the atmosphere is regularly checked.

1. **Entering manhole**

When entering a manhole the employee must wear a safety harness, gas detector as well as a self-rescuer.

No person shall enter a manhole unless at least two people are present on the surface keeping continuous contact with the person in the manhole.

The safety rope must be attached to a winch on an A-frame in order to rescue the employee should he be overcome by gas or swept away. At least one person on the surface must be trained in basic first aid and CPR.

In no circumstance shall any person remain within a sewer manhole for a period of more than one hour at a time. A five-minute rest on the surface must be taken after this period before re-entering.

No naked lights, smoking or unprotected electrical apparatus which may cause sparks, shall be permitted in any manhole or in their vicinity.

**5.27.3 PUMP SUMPS, VALVE CHAMBERS**

1. **Ventilation**

All available manholes or ventilation covers must be removed and the compartment ventilated for 10 (ten) to 15 (fifteen) minutes, using compressed air or a portable blower. Such ventilation must be continued while personnel are in the compartment. Ensure that exhaust fumes from blower do not enter the confined space.

Before entering any sump or compartment, the atmosphere must be tested by the principal contractor’s competent person (trained by the supplier of the gas monitoring equipment) by lowering the gas monitoring equipment to the bottom of the sump or compartment by means of a rope. A register must be kept indicating that the atmosphere has been tested and that the sump or compartment is fit to work in. The principal contractor’s construction supervisor must check and co-sign this register each time he visits a site to ensure that the atmosphere is continuously being monitored.

1. **Entering sump**

When entering a sump the person entering the sump must wear the safety harness, gas detector as well as a self-rescuer. A lifeline must be attached to the safety harness and a person on the surface must be in continuous contact with the person in the sump. At least one person on the surface must be trained in basic first aid and CPR.

Should the alarm sound when a person is in the confined space, the area must be evacuated immediately and the atmosphere re-tested and certified safe before re-entry into the confined space.

In no circumstance shall any person remain within a sump for a period of more than one hour at a time. A five-minute rest on the surface must be taken after this period before re-entering.

No naked lights, smoking or unprotected electrical apparatus which may cause sparks, shall be permitted in any sump or in their vicinity.

**5.27.4 UNDERGROUND TANKS, DIGESTERS**

1. **Lock-out**

The electrical switch must be locked out in the MCC room when emptying and filling a digester. No work shall be done in any digester or closed tank without the necessary permit issued by the Maintenance Manager of the facility. The principal contractor’s construction supervisor must check and co-sign the permit.

1. **Ventilation**

All available manhole or ventilation covers, and in the case of a digester, the “Varig” (pressure relief) valve must be removed and the compartment force ventilated for at least 4 (four) hours. Such ventilation must be continued while there are people in the confined space.

Before entering the confined space, the atmosphere must be tested by lowering the gas monitoring equipment to the bottom of the confined space by means of a rope. The compartment may only be entered if it has been certified safe by a competent person (certified competent by supplier of gas monitoring equipment).

The first person to enter the confined space must wear the gas monitoring equipment on his person while inside the confined space. A person trained in the use thereof, inside the digester, must also wear an emergency oxygen kit. Another emergency oxygen kit must be available on the surface.

No person may enter any digester or closed tank unaccompanied and at least two other persons must be present on the surface to make continuous contact with the persons in the confined space.

1. **Entering closed tank or digester**

The first person to enter a closed tank or digester must wear a safety harness with a safety rope, long enough to reach the point of exit. This safety rope must be monitored at all times. All persons subsequently entering the closed tank/digester must wear a safety harness as well as a self-rescuer. No person is allowed to enter the tank or digester without a safety harness or self-rescuer.

In no circumstances shall any person remain within the enclosure for a period of more than one hour at a time. A fifteen-minute rest on the surface must be taken before re-entry,

No naked lights, smoking or unprotected electrical apparatus which may cause sparks shall be permitted in any confined space or in their vicinity.

**5.27.5 WATER CHAMBERS**

1. **Ventilation**

All available manholes or ventilation covers must be removed and the chamber ventilated for 10 (ten) to 15 (fifteen) minutes, using compressed air or a portable blower. Such ventilation must be continued while personnel are in the chamber. Ensure that exhaust fumes from blower do not enter the confined space.

Before entering any chamber, the atmosphere must be tested by the principal contractor’s competent person (trained by the supplier of the gas monitoring equipment) by lowering the gas monitoring equipment to the bottom of the chamber by means of a rope. A register must be kept indicating that the atmosphere has been tested and that the area is fit to work in. The principal contractor’s construction supervisor must check and co-sign this register every time he visits the site to ensure that the atmosphere is continuously being monitored.

Fumes must be extracted from the chamber while welding.

1. **Entering chamber**

When entering a chamber the person entering the chamber must wear a safety harness as well as the gas detector. A lifeline must be attached to the safety harness and a person on the surface must be in continuous contact with the person in the manhole. At least one person on the surface must be trained in basic first aid and CPR.

In no circumstances shall any person remain within a chamber for a period of more than one hour at a time. A five-minute rest on the surface must be taken after this period before re-entering.

Should the alarm sound when a person is in the confined space, the area must be evacuated immediately and the atmosphere re-tested and certified safe before re-entry into the confined space.

**5.27.6 General**

All employees working in confined spaces or sewer manholes must be issued with gas monitoring equipment and safety harnesses and self- rescuers where applicable. All these employees must be trained in their use.

Where over pumping between manholes is involved, only leakage free pumping machines and conveyance tubes will be allowed.

Under no circumstances may any confined space be entered unless it has been certified safe to work in.

Safety harnesses and attachments must be checked for damage to webbing, metal fittings and ropes on a monthly basis and the findings recorded in a register. Should a harness be damaged, it must be reported to the construction supervisor immediately.

The following records shall be taken and maintained by the principal contractor:

* + - 1. Confined space entry permits
      2. Confined space entry registers
      3. Safety harness registers

**5.27.7 Safety equipment**

All teams must be issued with gas monitoring equipment and safety harnesses and self-rescuers where applicable. All employees must be trained in the use thereof.

**5.27.8 Traffic precautions**

No open manhole in streets, lanes or any place where the public or other persons have access shall be left unguarded. One person with a red flag, 300mm square attached to a vertical staff at least 1 m long, must be present at all such open covers. The necessary road signs and speed limitation boards must also be in place.

**5.27.9 Training**

1. All employees who have to enter a confined space must be formally trained before being required to enter such areas (new employees to complete this training before working in a confined space).
2. Refresher courses must be attended every 2 years.
3. Continuous on site training by supervisory staff should be undertaken.

**6. Cost for health and safety measures during the construction process**

To enable the Client to comply with Construction Regulation 4 (1) (h), all potential contractors submitting tenders must demonstrate to the Client that sufficient provision has been allowed for the cost of implementing the health and health and safety plan proposed by the principal contractor. The health and safety plan must meet the requirements of this health and safety specification as well as that of the OHSACT and its Regulations.

A detailed schedule of available or proposed resources must be included in the health and safety plan submitted as part of the potential principal contractor’s tender document. Failure by the principal contractor to demonstrate that he has the necessary competences and resources to carry out the works safely will force the Client to reject the tender in terms of Construction Regulation 4 (4).

Sufficient items will be included in the schedule of quantities for the tenderer to recover the costs of complying with this health and safety specification.

**7. Overview of Annexures**

**Annexure 1: Specified framework for the principal contractor’s occupational health and safety plan.**

The specified framework consists of guidelines which are presented to assist the principal contractor in preparing his health and safety plan. The principal contractor’s health and safety plan must follow the framework specified in this guideline. This will produce a heath and safety plan which complies with this specification as a minimum requirement.

**Annexure 2: Safety, Health and Environment: Contractor’s Monthly Safety Report and Risk Assessment Checklist**

The contractor will be required to submit a monthly SHE report which will include the CIFR for that month.

Pro forma examples are included to assist the principal contractor in compiling monthly SHE reports.

Schedule 2 describes how injury experience is to be measured.

The annexure also contains the Occupational health, safety and environment: Risk assessment checklist which will be used by to Client to assess the principal contractor and prospective contractors who tender for work.

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| **Emfuleni Local Municipality**  **Annexure 1**  **Specified framework for the principal contractor’s occupational health and safety plan** |

**Specified framework for the principal contractor’s occupational health and safety plan**

**1. Definitions**

In this document the following expressions shall bear the meanings assigned to them below:

1.1 **Client** means any person for whom construction work is being performed and/or undertaken [i.e. Emfuleni Local Municipality for purposes of this specification];

1.2 **Construction Regulations** means the Occupational Health and Safety Act’s, No 85 of 1993, Construction Regulations that came into effect on 18 July 2003;

1.3 **Occupational health and safety plan** means a documented plan which addresses hazards identified and includes safe working procedures to mitigate, reduce or control the hazards identified;

1.4 **Occupational health and safety specification** means a documented specification of all health and safety requirements pertaining to the associated works on a construction site, so as to ensure the health and safety of persons working and/or visiting the site;

1.5 **OHSACT** means the Occupational Health and Safety Act, No 85 of 1993, as amended; and

1.6 **Principal Contractor** means an employer, as defined by section 1 of the OHSACT who performs construction work and is appointed by the Client to be in overall control and management of the construction works.

**2. Introduction**

In terms of the Construction Regulations [Regulation 4 (1) (a)] of the OHSACT, the Client is required to compile an occupational health and safety specification for each of its projects and the principle contractor, appointed by the Client in terms of Regulation 4 (1) (c), is required to prepare an occupational health and safety plan.

This plan has to be prepared in terms of Regulation 5 (1) as well as the Client’s occupational health and safety specification. In terms of Regulation 4 (2), the Client and the principle contractor are required to agree on the occupational health and safety plan before any work may commence.

The principal contractor’s health and safety plan has to follow the framework specified in this annexure as a minimum.

**3. Specified framework for the Occupational Health and Safety Plan**

**3.1 Introduction**

The principal contractor has to demonstrate to the Client that it has developed a suitable and sufficiently documented occupational health and safety plan for the specific project appointed as well as the necessary competencies, experience and resources to perform the construction work safely. The principle contractor should submit the following documentation for perusal and verification by the client:

1. Management structure.
2. Quality plan.
3. Human resources plan.
4. Registered workplace skills plan.
5. “Letter of good standing” from the Compensation Commissioner or licensed compensation insurer.
6. Proof of induction and other training of employees.
7. Copy of minutes as an example of other project’s occupational health and safety committee meetings and copies of incident investigation reports.

**3.2 Contents of the occupational health and safety plan**

**3.2.1 Occupational health and safety management programme**

The occupational health and safety management programme should at least provide a detailed overview of the following matters:

1. Management of occupational health and safety risks.
2. Occupational health and safety structures and appointments.
3. Programme of occupational health and safety inspections.
4. Occupational health and safety representatives.
5. Occupational health and safety committee.

**3.2.2 Communication principles and management of work**

The communication and management principles to be applied should at least cover the following:

1. Management structure and responsibilities.
2. Occupational health and safety goals for the project and arrangements for monitoring and reviewing occupational health and safety performance.
3. Arrangements for:
   * Regular liaison between parties on site; and
   * Consultation with the workforce.
4. The exchange of design information between the client, designers, supervisors and contractors on site.
5. Handling of design changes during the project.
6. Selection and control of contractors.
7. The exchange of occupational health and safety information between all contractors on matter such as:

* Security;
* Site induction and onsite training;
* Facilities and first-aid;
* The reporting and investigation of accidents and incidents;
* The production and approval of risk assessments and method statements;
* OHSACT site rules; and
* Fire and emergency procedures.

1. Reporting to the client i.e. results of occupational health and safety inspections, incidents, incident investigations and committee meetings.
2. Reporting of incidents to the Department of Labour and compensation insurer where appropriate.

**3.2.3 Arrangements for controlling significant site risks and exposures**

The following are some examples of the arrangements for controlling the most significant site risks/exposures:

**3.2.3.1 Safety risks**

* + - * 1. Services, including temporary electrical installations.
        2. Preventing employees from falling into excavations, from trucks etcetera.
        3. Work with, on or near fragile materials.
        4. Control of lifting operations.
        5. The maintenance of plant and equipment.
        6. Poor ground conditions.
        7. Traffic routes and segregation of vehicles and pedestrians.
        8. Storage of hazardous materials.
        9. Dealing with existing unstable structures and/or land.
        10. Accommodating adjacent land use.
        11. Other significant safety risks as and when identified.

**3.2.3.2 Health risks**

1. Storage and use of hazardous chemical substances.
2. Dealing with contaminated land or material.
3. Manual handling.
4. Reducing noise and vibration.
5. Provision of adequate lighting.
6. Ventilation considerations.
7. Extreme heat and cold temperature considerations.
8. Dealing with HIV/Aids and other illnesses.
9. Provision of and maintaining ablution and eating facilities.
10. Other significant health risks as and when identified.

**3.3 Preparation of an occupational health and safety operational reference file and/or manual**

The following are some of the minimum requirements to be addressed:

1. Layout, format and content requirements.
2. Arrangement for the collection and gathering of information.
3. Storage and archiving of all the information.
4. Copy to the client at completion of project.

**3.3.1 Minimum contents of an occupational health and safety file and/or manual**

1. Occupational health and safety policy.
2. Notice of new projects.
3. Relevant site start-up documentation.

Security measures.

Copies of written designations and appointments.

Arrangements with contractors and/or mandataries.

Occupational health and safety rules and procedures.

Induction training details.

Occupational health and safety training.

Occupational health and safety promotion.

Occupational health and safety representatives.

Occupational health and safety committees.

Workplace facilities, for example ablution, sheltered eating areas etcetera.

Personal protective equipment.

Workplace inspections and assessments.

Investigation and reporting of incidents and/or accidents.

Mechanical safeguarding.

Electrical safeguarding.

Safeguarding against hazardous substances.

Lifting machinery and equipment.

Construction vehicles and mobile plant.

Welding, heating and flame cutting.

Excavations.

Protection of the environment affected by construction activities.

Keeping of records in terms of the OHSACT.

**3.4 Risk assessments (refer to specification sub-clause 4.1: Hazard identification and risk assessment for a guide to risk assessments)**

Every principle contractor performing construction work shall, before the commencement of any construction work or work associated with the aforesaid construction work and during such work, ensure that a risk assessment is undertaken by a competent person, appointed in writing, and the risk assessment shall form part of the occupational health and safety plan and be implemented and maintained as contemplated in Construction Regulation 5 (1).

The risk assessment shall include, at least:

1. The identification of the risks and hazards to which persons may be exposed to;
2. The analysis and evaluation of the risks and hazards identified;
3. A documented plan of safe working procedures (SWP) and any method statements to mitigate, reduce or control the risks and hazards that have been identified;
4. A plan to monitor the application of the SWPs; and
5. A plan to review the risk assessments as the work progresses and changes are introduced.

In order to ensure compliance with the Construction Regulations, the principal contractor will be required to carry out the following three forms of risk assessment:

**3.4.1 Baseline or datum risk assessments**

The principal contractor will be required carry out a risk assessment before the commencement of construction activities. This "baseline" or 'datum" risk assessment will form part of the principal contractor’s health and safety plan. The risks and hazards to which persons, plant, vehicles and facilities may be exposed during the construction should be identified and evaluated. Measures to reduce or control these risks or hazards should be defined during this assessment. The effectiveness of the measures defined and the baseline risk assessment prepared shall be monitored and reviewed from time to time to ensure that it remains relevant and accurate

**3.4.2 Issue based risk assessments**

The Contractor will be required to carry out separate risk assessments during construction of the Works when methods and procedures are varied, for example when:

Designs are amended,

New machines are introduced,

Plant is periodically cleaned and maintained,

Plant is started-up or shut-down,

Systems of work change or operations alter,

Indents or near-misses occur, or

Technological developments invalidate prior risk assessments

**3.4.3 Continuous risk assessments**

The OHSACT specifically requires that employers shall provide and maintain working environments that are safe and without risk to health. The general awareness of hazards needs to be raised as work ethic to maintain a safe and risk free environment on an ongoing basis. This is achieved by continuous risk assessments, the most important form of risk assessment that takes place as an integral part of day-to-day management. Examples of continuous risk assessments include:

1. Regular audits,
2. Maintaining general hazard awareness, and
3. Pre-work risk assessment

The principal contractor’s health and safety plan should include a comprehensive list (based on Annexure 7 of the client’s occupational health and safety specification) to be carried out as well as the methodology to be followed. The plan should also include detailed site-specific occupational health and safety rules to be applied during the project.

**3.5 Cost for health and safety measures during the construction process**

To enable the Client to comply with Construction Regulation 4 (1) (h), all potential contractors submitting tenders have to demonstrate to the Client that sufficient provision has been for the cost to implement the health and health and safety plan proposed by the principal contractor to meet the requirements of this health and safety specification as well as that of the OHSACT and its Regulations.

A detailed schedule of costs has to be included in the health and safety plan submitted as part of the potential principal contractor’s tender document. Failure by the principal contractor to adhere to this requirement will force the Client to reject the tender in terms of Construction Regulation 4 (4).

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| **Emfuleni Local Municipality**  **Annexure 2**  **Safety, Health and Environment: Contractor’s Monthly Safety Report and Risk Assessment Checklist** |

**Safety, Health and Environment (SHE): Example of risk management report**

##### Please note that this is an example only and all information is fictitious.

#### XYZ Construction

**SHE risk management report for the period January 2004 to March 2004**

## 1. Introduction

We trust that this quarterly SHE Risk Management report will provide a clear picture of the company’s performance as far as occupational health, safety and environment is concerned.

The first quarter of 2004 generally reflected an improvement in injury experience and indicates a decline in the number of injuries. Although Building was the only division where there was an increase in compensation claims, figures are still well down from the average 2003 figures. A sub-contractor experienced one fatality.

All divisions are eagerly awaiting the final implementation during May 2004 of the new electronic SHE Management system that will provide the tools to implement the SHE programme and make it available to all management and supervisory staff.

**2. Incident statistics (See Schedule 2 for definition)**

**2.1 Compensation Incident Frequency Rate (CIFR)**

CIFR = No of compensation claims X 200 000

220 person hours X No of employees



**2.2 Disabling Injury Incidence Rate (DIIR)**

DIIR = No disabling injuries X 200 000

Person hours worked



**2.3. Other major incidents**

Three other major incidents were experienced in the period under review:

* + 1. A major trench collapsed at Job. 00123: XYZ Head Office, Braamfontein: No personnel injured, extensive damage to foundations: 3 days delay.
    2. A concrete dumper ran away when its brakes failed. It smashed into the glass façade of the building on Job 00332: McDonalds, Randburg. The driver jumped off and was not injured. Cost of damage to façade: R45 000.
    3. A storage hut on Job 00567: BP Petrol Station, Swartruggens was demolished by fire when the night watchman made a fire inside the storage hut which contained concrete vibrators and leveling machines. Cost of replacing the hut and machines: R30 000.

1. **Risk areas**

The following items of concern need priority consideration by management:

3.1. New employees must undergo pre-employment medical examinations to:

* protect XYZ from possible claims at a later stage
* ensure that only capable persons are employed
* prevent injuries and illness in the workplace
* enhance XYZ image
  1. Vehicle drivers and plant operators must be instructed to inspect their vehicles daily before start-up using the prescribed checklists to ensure that these are safe to operate and in good condition.

1. **Risk assessments**

Three SHE risk assessments were conducted in February and March:

Job 00432: Gillooly’s Mall Compliance: 56%

Job 00786: Cullinan Head Office Compliance: 83%

Job 00589: Cleveland Station Compliance: 76%

**5. Training**

One hundred and forty two employees, representing 7% of employees, attended nine training courses. \*Our objective is to train 5,5% of employees on a quarterly basis.

|  |  |  |  |
| --- | --- | --- | --- |
| **Month** | **No. of Employees Trained** | **Course** | **Source** |
| January | 26  15  3 | Induction  OH&S Reps  Crane Drivers | Internal  Consultant  External |
| February | 23  17 | Induction  OH&S Reps | Internal  Consultant |
| March | 43  9  3  3 | Induction  OH&S Reps  Bomag Rollers  First Aiders | Internal  Consultant  Supplier  St. John’s |

**6. Legal matters**

6.1. An inspector of the Department of Labour issued an improvement notice on Job 00987: Gilooly’s Mall. The notice requires that all scaffolding comply with the SABS standards for the Erection and Maintenance of Access Scaffolding (SANS 085). This is currently being attended to and the inspector will return on 15 April 2004 to ascertain if the notice has been complied with.

**7. Occupational health matters**

**7.1 HIV Aids**

The proposed clinic will soon be operational and we will then be able to send our employees who have tested positive for HIV/Aids to the clinic for counseling and eventual treatment when necessary.

The mobile clinic attended to and tested fifty employees on a voluntary basis at 3 sites this month. Eighteen of them tested positive.

**7.2 Tuberculosis (TB)**

The mobile clinic will be calling at Gillooly’s Mall and Cleveland Station on 15 and 16 April 2004 respectively to screen employees for TB.

**7.3 Noise**

All suspected noise pollution areas have been identified and tested and the results are awaited. Employees working in areas testing over 85dBa will be issued with suitable hearing protectors.

**8. Environmental measures**

Inspectors from the Botswana Department of Environment visited Djwaneng and inspected the site and yard. They gave it a “clean bill of health” and advised that we should increase the dust control measures by spraying roads three times per day with water instead of the present twice per day.

**9**. **Achievements and awards**

9.1 The client at Djwaneng (Job 00786) awarded the XYZ site first position in the housekeeping competition conducted bi-monthly by the client’s SHE managers. The project manager and his team are to be congratulated for this sterling effort.

9.2 Job 0987: Refurbishment of Pretoria Main Railway Station has just completed 1 million compensation claim free days. This was no easy achievement if we consider the conditions being worked under after the extensive fire that caused major damage.

**SHE Risk Manager**

2004-03-31

**Source:** SAFCEC Occupational Health and Safety Committee

**SCHEDULE 2**

**1. Measuring injury experience**

**1.1. Background**

Injury experience has traditionally been measured by the use of a disabling injury frequency rate, the so-called “DIFR”. The DIFR is calculated by multiplying the number of disabling injuries by 1 million and dividing by the number of person-hours worked.

The DIFR has recently been replaced internationally with a disabling injury incidence rate (DIIR). The only difference between the two rates are that the 1 million in the calculation is replaced with 200 000 (200 000 purported to be the number of hours and average person works in a lifetime).

The use of the two rates above has proved to be somewhat problematical as they are open to manipulation and disabling injuries are often “hidden” by returning the injured employee to the workplace so as not to lose a shift and therefore having to register a disabling injury.

The construction industry recently decided to promote the use of a new frequency rate based on the number of compensation injury claims, as these are more difficult to hide or manipulate because the reporting of compensationable injuries is a legal requirement.

The industry is hoping that adoption of this new measurement of injury experience will enable the industry to monitor itself as far as work related injuries are concerned.

# 1.2. Compensation Incidence Frequency Rate (CIFR)

**1.2.1 Formula**

No of compensation claims X 200 000

\*220 person hours X No of employees

**1.2.2 Definitions**

### No of compensation claims: The number of claims lodged with the Commissioner or COID insurer for the period under review.

**200 000:** The fixed factor to align the rate with other rates used internationally.

**Person hours worked Include:** Hourly paid employees

Sub-contactors (No of employees X \*220 each)

Staff (No of employees X \*220 hours each)

**220 person-hours:** The \*average number of hours worked by one employee in one month in the construction industry.

**Note:** \* Overtime, absence on leave or sick leave, unrecorded after hours time worked by senior and middle management factored into this average.

**No of employees:** The actual or average number of employees employed for the period under review.

**Occupational health, safety and environment: Risk assessment checklist**

**(Based on the Construction Regulations of the Occupational Health and Safety Act)**

## \* Denotes items applicable to both construction sites, contractor plant and storage yards

|  |  |
| --- | --- |
| ELEMENT | REMARKS |
| 1. Administrative and legal requirements |  |
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**1. Administrative and Legal Requirements**

| OHSACT Section or Regulation | Subject | Requirements | Yes/No |
| --- | --- | --- | --- |
| Construction Regulation 3 | **Notice of carrying out Construction work** | Department of Labour notified.  Copy of notice available on site. |  |
| General Admin. Regulation 4 | **\*Copy of OHSACT** | Updated copy of the OHSACT and Regulations on site.  Readily available for perusal by all employees. |  |
| COID Act  Section 80 | **\*Registration** **with Compensation Com­missioner or other approved compen­sation insurer** | Written proof of registration/Letter of good standing available on site. |  |
| Construction Regulation 4 & 5(1) | OHSACT specification, plans and programme | OHSACT spec received from JW.  OHSACT plan developed.  OHSACT programme implemented.  Plans and programme updated regularly. |  |
| Section 8(2)(d)  Construction Regulation 7 | \*Hazard identification and risk assessment | Hazard identification carried out and recorded.  Risk assessment and –plan drawn up and updated.  Employees and sub-contractors informed and trained. |  |
| Section 16(2) | **\*Assigned duties (Managers)** | Responsibility of complying with the OHSACT assigned to other person/s by CEO. |  |
| Construction Regulation 6(1) | **Designation of person responsible on site** | Competent person appointed in writing as construction supervisor. |  |
| Construction Regulation 6(2) | **Designation of assistant for responsible person** | Competent person appointed in writing as assistant construction supervisor. |  |
| Section 17 & 18 and General Administrative Regulations 6 & 7 | **\*Election and designa­tion of** **occupational health and safety** **representatives** | More than 20 employees - one representative and one additional representative for each 50 employees or part thereof.  Designation in writing, period and area of responsibility specified.  Meaningful reports.  Reports actioned by management. |  |
| Section 19 & 20 and General Administrative Regulations 5 | **\*Occupational health and safety** **committee/s** | Committee/s established.  Members appointed in writing.  Meetings held monthly.  Minutes kept.  Actioned by management. |  |
| Section 37(1) & (2) | **\*Agreement** **with** **mandataries, contractors and sub-contractors** | Written agreement with contractors and sub-contractors.  List of contractors and sub-contractors displayed.  Proof of Registration with Compensation Commissioner or Compensation Insurer as well as Letter of Good Standing.  Construction Supervisor designated.  Written arrangements regarding represen­tatives and committee.  Written arrangements regarding first-aid. |  |
| Section 24 and General Administrative Regulation 8  COID Act Section 38, 39 and 41 | **\*Reporting** **of incidents (Department of Labour)** | Incident reporting procedure displayed.  All incidents in terms of section 24 reported to the Provincial Director, Department of Labour, within 3 days (Annexure 1 and/or WCL 1 or 2).  Cases of occupational disease reported.  Copies of reports available on site.  Record of first-aid injuries kept. |  |
| General Administrative Regulation 9 | **\*Investigation** **and recording of incidents** | All injuries which resulted in the person receiving medical treatment other than first aid, recorded and investigated by investigator designated in writing.  Copies of reports (Annexure 1) available on site.  Tabled at committee meeting.  Action taken by site management. |  |
| Construction Regulation 8 | **Fall prevention and protection** | Competent person appointed to draw up and supervise the fall protection plan.  Proof of appointees’ competence available on site.  Risk assessment carried out for work at heights.  Fall protection plan drawn up and updated.  Plan available on site. |  |
| Construction Regulation 8(5) | Roof work | Competent person appointed to plan & supervise roof work.  Proof of appointees’ competence available on site.  Risk assessment carried out.  Roof work plan drawn up and updated.  Roof work inspect before each shift and inspection register kept.  Employees medically examined for physical and psychological fitness and written proof on site. |  |
| Construction Regulation 9 | **Structures** | Information regarding the structure being erected received from the designer including:   * geo-science technical report where relevant; * the design loading of the structure; * the methods and sequence of construction; and * anticipated dangers, hazards and/or special measures to construct safely.   Risk assessment carried out.  Method statement drawn up.  All above available on site.  Structures inspected before each shift.  Inspections register kept. |  |
| Construction Regulation 10 | **Formwork and support work** | Competent person appointed in writing to supervise erection, maintenance, use and dismantling of support and formwork.  Design drawings available on site.  Risk assessment carried out.  Support and formwork inspected:   * before use and inspection; * before pouring of concrete; * weekly whilst in place; and * before stripping or dismantling and inspection register kept. |  |
| Construction Regulation 14 | Scaffolding | Competent persons appointed in writing to:   * erect scaffolding (scaffold erector/s); * act as scaffold team leaders; and * inspect scaffolding weekly and after inclement weather (scaffold inspector/s).   Written proof of competence of above appointees.  Appointees available on site.  Copy of SANS 085 available on site.  Risk assessment carried out.  Inspected weekly and/or after bad weather. Inspection register/s kept. |  |
| Construction Regulation 15 | Suspended platforms | Competent persons appointed in writing to:   * control the erection of suspended platforms; * act as suspended platform team leaders; and * inspect suspended scaffolding weekly and after inclement weather.   Risk assessment conducted.  Certificate of authorisation issued by a registered professional engineer available on site and copy forwarded to the Department of Labour.  The following inspections of the whole installation carried out by a competent person   * after erection and before use; * daily prior to use; and * inspection register kept.   The following tests to be conducted by a competent person:   * load test of whole installation and working parts every 12 months; and * hoisting ropes, hooks and load attaching devices quarterly; and * tests log book kept.   Employees working on suspended platforms should be medically examined for physical and psychological fitness. Written proof available. |  |
| Construction Regulation 11 | Excavations | Competent person/s appointed in writing to supervise and inspect excavation work.  Written proof of competence of above appointee/s available on site.  Risk assessment carried out.  Excavations inspected:   * before every shift; * after any blasting; * after an unexpected fall of ground; * after any substantial damage to the shoring; and * after rain.   Inspections register kept.  Method statement developed where explosives will be and/or are used. |  |
| Construction Regulation 12 | Demolition work | Competent person/s appointed in writing to supervise and control demolition work.  Written proof of competence of above appointee/s available on site.  Risk assessment carried out.  Engineering survey and method statement available on site.  Inspections to prevent premature collapse carried out by competent person before each shift.  Inspection register kept. |  |
| Construction Regulation 17 | Materials hoist | Competent person appointed in writing to inspect the material hoist.  Written proof of competence of above appointee available on site.  Materials hoist to be inspected weekly by a competent person.  Inspection register kept. |  |
| Construction Regulation 24 | Water environments (including caissons and cofferdams) | Competent person appointed in writing to supervise, control and inspect work on or over water and the construction, installation, and dismantling of caissons and/or cofferdams.  Written proof of competence of above appointee available on site.  Risk assessment carried by a competent person on a daily basis.  Inspection register kept. |  |
| Construction Regulation 19 | Explosive powered tools | Competent person appointed to control the issue of the explosive powered tools and cartridges as well as the service, maintenance and cleaning.  Register kept of above.  Empty cartridge cases, nails and fixing bolts returns recorded.  Cleaned daily after use. |  |
| Construction Regulation 18 | Batch plants | Competent person appointed to control the operation of the batch plant as well as the service, maintenance and cleaning of this plant.  Register kept of above.  Risk assessment carried out.  Batch plant to be inspected weekly by a competent person and inspections register kept. |  |
| Construction Regulation13 and  Mine Health and Safety Act | Tunneling | Complying with Mines Health and Safety Act (29 of 1996).  Risk Assessment carried out. |  |
| Construction Regulation 20  Driven Machinery Regulations 18 and 19 | Cranes and lifting machines equipment | Competent person appointed in writing to inspect cranes, lifting machines and equipment.  Written proof of competence of above appointee available on site.  Cranes and lifting tackle identified and numbered.  Register kept for lifting tackle.  Logbook kept for each individual crane.  Inspection:   * **All cranes:** Daily by operator. * **Tower cranes:** After erection and thereafter 6 monthly. * **Other cranes:** Annually by competent person. * **Lifting tackle (slings, ropes, chain slings etcetera):** Three monthly. |  |
| Construction Regulation 22  Electrical Machinery Regulations 9 and 10  Electrical Installation Regulations | **\*Inspection and maintenance of electrical installation and equipment (including portable electrical tools)** | Competent person appointed in writing to inspect/test the installation and equipment.  Written proof of competence of above appointee available on site.  Inspections:   * Electrical installation and equipment inspected after installation, alterations and quarterly thereafter. Inspection registers kept. * Portable electric tools and -lights and extension leads identified/numbered. * Monthly visual inspection by user, issuer or storeman. Register kept. |  |
| Diving Regulations | Diving operations | Competent person appointed in writing to supervise diving operations and ensure maintenance, statutory inspection and testing by an approved inspection authority of equipment used.  Written proof of competence of above appointee available on site.  Proof of registration of all divers present on site available.  Risk assessment carried out.  Diving manual produced and available on site.  Record of voice communications kept.  Diving operations record kept.  Each diver keeps a personal logbook and entries countersigned by the diving supervisor.  Decompression tables available on site.  Records of any decompression illness kept.  Certificate of manufacture of any compression chamber or diving bell in use available on site. |  |
| Construction Regulation 26  General Safety Regulation 8(1)(a) | **\*Designation of** **stacking and storage supervisor** | Competent persons with specific knowledge and experience designated to supervise all stacking and storage.  Written proof of competence of above appointee available on site. |  |
| Construction Regulation 27  Environmental Regulation 9 | \*Designation of a person to coordinate emergency planning and fire protection | Person/s with specific knowledge and experience designated to coordinate emergency contingency planning and execution and fire prevention measures.  Emergency evacuation plan:   * Developed and available on site; * Drilled and practiced; and * Records of drills and practices available on site.   Fire risk assessment carried out.  All fire extinguishing equipment:   * Identified and on register; * Inspected weekly and inspection registers kept; * Replaced after use; and * Serviced annually. |  |
| General Safety Regulation 3 | **\*First-aid** | Every workplace provided with sufficient number of first-aid boxes (required where 5 persons or more are employed).  First-aid boxes freely available.  Content of boxes as per the minimum requirements of the OHSACT.  One qualified First-aider appointed for every 50 employees (required where more than 10 persons are employed).  List of First-aiders and competency certificates available on site.  Name and contact details of person in charge of first-aid box clearly displayed.  Location of first-aid boxes clearly demarcated.  Signs instructing employees to report all injuries and/or illness including first-aid injuries. |  |
| General Safety Regulation 2 | **Personal protective equipment (PPE)** | PPE risk assessment carried out.  Items of PPE prescribed and use enforced.  Records of issue kept.  Undertaking by employee to use and/or wear PPE. |  |
| General Safety Regulation 9 | **\*Inspection and use of welding and/or flame cutting equipment** | Competent person/s with specific knowledge and experience designated to inspect electric arc, gas welding and flame cutting equipment.  Written proof of competence of above appointee available on site.  Equipment identified/numbered and entered into a register.  Equipment inspected monthly.  Inspection register kept. |  |
| Hazardous Chemical Substances (HCS)  Regulations  Construction Regulation 23 | **\*Control of storage and usage of HCS and other flammables** | Competent person/s with specific knowledge and experience designated to control the storage and usage of HCS(including flammables).  Written proof of competence of above appointee available on site.  Risk assessment carried out.  Register of HCS kept and/or used on site. |  |
| Vessels under Pressure Regulations | **Vessels under pressure (VUP)** | Competent Person/s with specific knowledge and experience designated to supervise the use, storage, maintenance, statutory inspections and testing of VUPs.  Written proof of competence of above appointee available on site.  Risk assessment carried out.  Certificates of manufacture available on site.  Register of VUPs on site.  Inspections and testing by approved inspection authority (AIA):   * after installation, re-erection or repairs; * every 36 months; and * register or log kept of inspections, tests, modifications and repair on site. |  |
| Construction Regulation 21 | **Construction vehicles and earth moving equipment** | Operators or drivers appointed to:   * Carry out a daily inspection prior to use; and * Drive the vehicle or plant that he/she is competent to drive or operate.   Written proof of competence of above appointee available on site.  Record of daily inspections kept on site. |  |
| General Safety Regulation 13A | **\*Inspection of Ladders** | Competent person appointed in writing to inspect ladders.  Ladders inspected at arrival on site and monthly thereafter.  Inspections register kept on site. |  |
| General Safety regulation 13B | Ramps | Competent person appointed in writing to supervise the erection and inspection of ramps.  Inspection register kept on site. |  |

**2. Education, training and promotion**

| OHSACT Section or Regulation | Subject | Requirements | Yes/No |
| --- | --- | --- | --- |
| OHSACT Section 7(1) | **\*Occupational Health and Safety Policy** | Policy signed by CEO and published and communicated to employees.  Policy displayed on employee notice boards.  Management and employees committed. |  |
| OHSACT Section 13(a) | **\*Company and site health and safety rules** | Rules published.  Rules displayed on employee notice boards.  Rules issued and explained to employees with written proof hereof.  Follow-up to ensure employees understand and adhere to the rules. |  |
| OHSACT Section 13(a) | **\*Induction and task safety training** | All new employees receive health and safety induction training.  Training includes task safety instructions.  Employees acknowledge receipt of training.  Follow-up to ensure employees understand and adhere to instructions. |  |
| OHSACT Section 13(a) | **\*General health and safety training** | All employees receive basic health and safety training.  Written proof kept.  Operators of plant and equipment receive specialised training.  Follow-up to ensure employees understand and adhere to instructions. |  |
|  | **\*Occupational health and safety promotion** | Incident experience board indicating among others -   * Number of hours worked without an injury; and * Number of days worked without an injury.   Safety grading - Board kept up to date.  Relevant safety posters displayed and changed regularly.  Employee notice board for health and safety notices.  Site health and safety competitions.  Company health and safety competition.  Participation in regional health and safety competitions. Suggestion scheme. |  |

**3. Public safety, security measures and emergency preparedness**

| Subject | Requirement | Yes/No |
| --- | --- | --- |
| **\*Notices and signs** | Notices and signs at entrances along perimeters indicating **“No unauthorised entry”** and **“Entry at own risk”**.  Notices and signs at entrance instructing visitors and non-employees what to do, where to go and where to report on entering the site or yard with directional signs for example **“Visitors to report to office”**.  Notices and signs posted to warn of overhead work and other hazardous activities for example **General Warning Signs**. |  |
| **Site safeguarding** | Nets, canopies, stills, fans etcetera to protect members of the public passing and/or entering the site. |  |
| **\*Security measures** | Access control measures and register in operation.  Security patrols after hours and weekends.  Sufficient lighting after dark.  Guard has access to telephone or other means of emergency communication. |  |
| **\*Emergency preparedness** | Emergency contact numbers displayed near telephone.  Emergency evacuation instructions posted up on all notice boards (including employees’ notice boards).  Emergency contingency plan available on site or in yard.  Doors open outwards and unobstructed.  Emergency alarm audible all over (including in toilets). |  |
| **\*Emergency drill and evacuation** | Adequate number of employees trained to use fire equipment.  Emergency evacuation plan available, displayed and practiced.  **(See Section 1 for designation and register)**. |  |

**4. Personal protective equipment (PPE)**

| Subject | Requirement | Yes/No |
| --- | --- | --- |
| **\*PPE needs analysis** | Need for PPE identified and prescribed in writing. |  |
| **\*Head protection** | It is compulsory for all persons on site to wear safety helmets including sub-contractors and visitors (where prescribed). |  |
| **\*Foot protection** | All persons on site have to wear safety footwear including gumboots for concrete or wet work and non-slip shoes for roof work. |  |
| **\*Eye and face protection** | Eye and face protection (such as goggles, face shields, welding helmets) to be used when operating the following:   * Jack or kango hammers; * Angle or bench grinders; * Electric drills (overhead work into concrete, cement and bricks); * Explosive powered tools; * Concrete vibrators or pokers; * Hammers and chisels; * Cutting or welding torches; * Arc welding equipment; * Skill or bench saws; and * Spray-painting equipment etcetera. |  |
| **\*Hearing protection** | Hearing Protectors (such as muffs, plugs) used when operating the following:   * Jack or kango hammers; * Explosive powered tools; and * Wood or aluminum working machines such as saws, planers, routers. |  |
| **\*Hand protection** | Protective gloves to be worn by employees handling or using:   * Cement, bricks, steel or chemicals; * Welding equipment; * Hammers and chisels; and   Jack or kango hammers etcetera. |  |
| **\*Respiratory protection** | Suitable and efficient respirators to be worn correctly by employees handling or using:   * Dry cement; * Dusty areas; * Hazardous chemicals; * Angle grinders; and * Spray-painting etcetera. |  |
| **\*Fall Prevention Equipment** | Suitable safety belts or fall arrest equipment correctly used by persons working on or in unguarded, elevated positions such as:   * Scaffolding; * Riggers; * Lift shafts; * Edge work; and * Ring beam edges etcetera.   Other applicable methods of fall prevention should al be applied such as catch nets. |  |
| **\*Protective clothing** | All jobs requiring protective clothing (such as overalls, rain wear, welding aprons etcetera) to be identified and clothing worn. |  |
| **\*PPE issue and control** | Identified equipment to be issued free of charge.  All PPE should be maintained in good condition (i.e. regular checks).  Workers instructed in the proper use and maintenance of PPE.  Commitment obtained from wearer accepting conditions and to wear the PPE.  Record of PPE issued kept on file. |  |

**5. Housekeeping**

| Subject | Requirement | Yes/No |
| --- | --- | --- |
| **\*Scrap removal system** | All items of scrap, unusable off cuts, rubble and redundant material removed from working areas on a regular basis.  Scrap and/or waste removal from heights by chute, hoist or crane (i.e. nothing thrown or swept over sides).  Scrap disposed of in designated containers or areas.  Removal from site or yard on a regular basis. |  |
| **Stacking and storage**  **(See Section 1 for designation and register)** | Stacking:   * Stable; * On firm level surface or base; * Not leaning and/or collapsing; * Irregular shapes bonded; * Not exceeding 3 times the base; * Stacks accessible; and * Removal from top only.   Storage:   * Adequate storage areas provided; * Functional for example demarcated storage areas, racks, bins etcetera; * Special areas identified and demarcated for example flammable gas, cement etcetera: * Neat, safe, stable and square: * Store and storage areas clear of superfluous material; * Storage behind sheds etcetera should be neat and under control; and * Storage areas free from weeds, litter etcetera. |  |
| **\*Waste control or reclamation** | Re-usable off cuts and other re-useable material removed daily and kept to a minimum in the work areas.  All re-useable materials neatly stacked or stored in designated areas (i.e. nails removed or bent over in re-useable timber).  Issue of hardware, nails, screws and cartridges etcetera should be controlled and return of unused items monitored. |  |
| **Sub-contractors** | Sub-contractors required to comply with the site or yard’s housekeeping requirements. |  |

**6. Working at heights (including roof work)**

| Subject | Requirement | Yes/No |
| --- | --- | --- |
| Openings | Unprotected openings adequately guarded, fenced and barricaded with catch nets installed where necessary.  Covers over openings in roof of robust construction and secured against displacement. |  |
| General requirements | Roof work discontinued when bad or hazardous weather prevails.  Fall protection measures (including warning notices) when working close to edges or on fragile roofing material. |  |

**7. Scaffolding, formwork and support work**

| Subject | Requirement | Yes/No |
| --- | --- | --- |
| **Access and system scaffolding**  **(See Section 1 for designation and register)** | Foundation firm and stable.  Sufficient bracing.  Tied to structure and secured from side or cross movement.  Platform boards in good condition and secured.  Sufficient platform boards to be used.  Handrails and toe boards provided.  Access ladders or stairs provided.  Area/s under scaffolding tidy.  Safe and unsafe for use signs to be used.  Complying with OHSACT and SANS 085. |  |
| **Free Standing Scaffolding** | Foundation firm and stable.  Sufficient bracing.  Platform boards in good condition and secured.  Sufficient platform boards to be used.  Handrails and toe boards provided.  Access ladders or stairs provided.  Area/s under scaffolding tidy.  Safe or unsafe for use signs to be used.  Height and base ratio correct.  Outriggers used and tied to structure where necessary.  Complying with OHSACT and SANS 085. |  |
| **\*Mobile scaffolding** | Foundation firm and stable.  Sufficient bracing.  Platform boards in good condition and secured.  Sufficient platform boards to be used.  Handrails and toe boards provided.  Access ladders or stairs provided.  Area/s under scaffolding tidy.  Safe and unsafe for use signs to be used.  Wheels and swivels in good condition  Brakes working and applied.  Height to base ratio correct.  Outriggers used where necessary.  Complying with OHSACT and SANS 085. |  |
| **Suspended scaffolding** | Outriggers securely supported and anchored.  Correct number of steel wire ropes used.  Platform as close as possible to the structure.  Handrails on all sides.  All winches, ropes, cables and brakes inspected regularly.  Inspection registers kept on site.  Scaffolding complies with OHSACT.  Winches maintained by competent person. |  |
| **Formwork and support work** | All components in good condition.  Foundation firm and stable.  Adequate bracing and stability ensured.  Good workmanship, uprights straight and plum.  Good cantilever construction.  Safe access provided.  Areas under support work tidy.  Same standards as for system scaffolding. |  |
| **Special scaffolding** | Special scaffolding for example cantilever, jib and truss-out scaffolds erected to an acceptable standard and inspected by specialists.  Inspection registers to be kept on site. |  |
| **Edges and openings** | Edges barricaded to acceptable standards.  Manhole openings covered and/or barricaded.  Openings in floor and other openings covered, barricaded or fenced.  Stairs provided with handrails.  Lift shafts barricaded or fenced off. |  |

**8. Ladders**

| Subject | Requirement | Yes/No |
| --- | --- | --- |
| **\*Physical condition, use and storage**  **(See Section 1 for designation and register)** | Stepladders – hinges, stays, braces and stiles in order.  Extension ladders – ropes, rungs, stiles, safety latch and hook in order.  Extension or straight ladders secured or tied at the bottom or top.  No joined ladders used.  All ladders stored on hooks or racks and not on ground.  Ladders protrude 900 mm above landings, platforms or roof.  Fixed ladders higher than 5 m have cages or fall arrest system. |  |

**9. Electrical safeguarding**

| Subject | Requirement | Yes/No |
| --- | --- | --- |
| **\*Electrical distribution boards and earth leakage** | Colour coded, numbered and symbolic sign displayed.  Area in front kept clear and unobstructed.  Fitted with inside cover plate, openings blanked off and no exposed “live” conductors or terminals.  Door kept close.  Switches and/or circuit breakers identified.  Earth leakage protection unit fitted and operating.  Tested with instrument - test results within 15 – 30 milli-amps.  Aperture openings provided for the plugging in and removal of extension leads without the need to open the door. |  |
| **\*Electrical installations and wiring** | Temporary wiring or extension leads in good condition with no bare or exposed wires.  Earthing continuity and polarity correct:  **“Brown is live, Blue is neutral, Green and Yellow earth the lot”**  Cables protected from mechanical damage and moisture.  Correct loading observed for example no heating appliance used from lighting circuit etcetera.  Light fittings and lamps protected from mechanical damage/moisture. |  |
| **\*Physical condition of electrical appliances and tools** | Electrical Equipment and Tools (includes all items plugging in to a 15 Amp supply socket):   * Insulation and casing in good condition. * Earth wire connected or intact where not of double insulated design. * Double insulation mark where no earth wire. * Cord in good condition/no bare wires/secured to machine & plug. * Plug in good condition, connected correctly and correct polarity |  |

**10. Emergency, fire prevention and protection**

| Subject | Requirement | Yes/No |
| --- | --- | --- |
| **\*Fire extinguishing equipment**  **(See Section 1 for designation and register)** | Fire Risks Identified and on record.  Fire Extinguishing Equipment available for:   * Offices; * General stores; * Flammable store; * Fuel storage tanks; * Gas welding or cutting operations; and * Where flammable substances are being used or applied. |  |
| **\*Maintenance** | Fire equipment serviced minimum annually, but preferably 6 monthly. |  |
| **\*Location & Signs** | Fire Extinguishing Equipment:   * Clearly visible; * Unobstructed; and * Sign posted including “No Smoking” and “No Naked Lights” where required i.e. (flammable store, gas store, fuel tanks etc.). |  |
| **\* Storage issue and control of flammables (incl. gas cylinders)** | Storage area provided for flammables with suitable doors, ventilation, bund etcetera.  Flammable store neat and tidy with no Class A combustibles.  Decanting of flammable substances carried out in ignition free and adequately ventilated area.  Container bonding principles applied.  Only sufficient quantities issued for one day’s use.  Special gas cylinder store or storage area.  Gas cylinders stored, used and transported upright and secured in trolley, cradle or structure that is well ventilated.  Types of gas cylinders identified and stored separately.  Full cylinders stored separately from empty cylinders. |  |
| **\*Storage, issue and control of Hazardous Chemical Substances (HCS)**  **(See Section 1 for designation and register)** | HCS storage principles applied i.e. products segregated.  Provision made for leakage and spillage containment.  Emergency (serviceable) showers and eye wash facilities provided.  HCS under lock and key as well as controlled by designated person.  Decanted or issued in containers with information and warning labels.  Disposal of unwanted HCS by recognised disposal agent. |  |

**11. Excavations and demolition**

| Subject | Requirement | Yes/No |
| --- | --- | --- |
| **Excavations deeper than 1.5 m.**  **(See Section 1 for designation and register)** | Shored or braced to prevent caving or falling in.  Provided with an access ladder.  Excavations guarded, barricaded or lighted after dark in public areas.  Soil dumped at least 1 m away from edge of excavation.  On sloping ground soil dumped on lower side of excavation. |  |

**12. Tools**

| Subject | Requirement | Yes/No |
| --- | --- | --- |
| **\*Hand tools** | Shovels, Spades and Picks:   * Handles free from cracks and splinters; * Handles fit securely; and * Working end sharp and true.   Hammers:   * Good quality handles, no pipe or reinforcing steel handles; * Handles free from cracks and splinters; and * Handles fit securely.   Chisels:   * No mushroomed heads or heads chamfered; * Not hardened; and * Cutting edge sharp and square.   Saws:   * Teeth sharp and set correctly; and * Correct saw used for the job. |  |
| **\*Explosive powered tools**  **(See Section 1 for designation and register)** | Only used by trained and authorised personnel.  Prescribed warning signs placed or displayed where tool is in use.  Inspected at least monthly by competent person and results recorded in on site register.  Issue and return recorded including cartridges or nails and unused cartridges, nails, empty shells recorded.  Cleaned daily after use in on site register. |  |

**13. Cranes**

|  |  |  |
| --- | --- | --- |
| Subject | Requirement | Yes/No |
| **Tower crane (See Section 1 for designation and register)** | Only operated by trained authorised operator with valid certificate of training.  Certificate available on site.  Structure - no visible defects.  Electrical installation good and safe.  Crane hook - throat pop marked, safety latch fitted and functional.  SWL/MML displayed.  Limit switches fitted and operational.  Access ladder fitted with backrests or fall arrest system installed.  Lifting tackle in good condition and inspection colour coding current. |  |
| **\*Mobile crane (See Section 1 for designation and register)** | Only operated by trained authorised operator with valid certificate of training.  Certificate available on site.  Rear view mirrors and windscreen visibility good.  Windscreen wipers operating effectively.  Indicators operational.  Hooter working.  Tyres safe with sufficient tread and pressure visibly sufficient.  No missing wheel nuts.  Headlights, taillights operational.  Grease nipples and grease on all joints.  No visible oil leaks.  Hydraulic pipes visibly sound with no leaks.  No undue corrosion on battery terminals.  Boom visibly in good condition with no apparent damage.  Cable and sheaves greased with no visible damage, split wires or corrosion.  Brakes working properly.  Crane hook - throat pop marked, safety latch fitted and functional.  SWL/MML displayed.  By-pass valves operational.  Deflection chart displayed and visible to operator or driver.  Outriggers functional used. |  |
| **\*Gantry crane** | Only operated by trained authorised persons.  Correct slinging techniques used.  Recognised displayed on chart signals used.  Log book kept up to date.  Prescribed inspections conducted on crane and lifting tackle.  “Crane overhead” signage, where applicable.  Crane hook - throat pop marked, safety latch fitted and functional.  SWL/MML displayed and load limiting switches fitted and operational. |  |

**14. Builder’s hoist**

|  |  |  |
| --- | --- | --- |
| Subject | Requirement | Yes/No |
| **Builder’s hoist (See Section 1 for designation and register)** | **“Hoist in operation”** - sign displayed.  General construction strong and free from latent defects.  Tower:   * Adequately secured and braced. * At least 900 mm available for over travel. * Barricaded at least 2 100 mm high at ground level and floors. * Landing place provided with gate at least 1 800 high.   Platform:   * No persons conveyed on platform. * Steel wire ropes with breaking strain of six times maximum weight. * Signal systems used. * Goods prevented from moving/falling off.   Effective brake capable of holding maximum weight. |  |

**15. Transport and materials handling equipment**

|  |  |  |
| --- | --- | --- |
| Subject | Requirement | Yes/No |
| **\*Site vehicles** | All site vehicles, dumpers, bobcats, loaders etcetera checked daily before used by driver or operator.  Inventory of vehicles used/operated on site.  Inspection by means of a checklist and results recorded.  No persons riding on equipment not designed for passengers.  Site speed limit posted and not exceeded.  Drivers and operators trained and licensed.  Licenses available on site.  No unauthorised persons allowed to drive or operate equipment. |  |
| **Conveyors** | Conveyor belt nip points and drive guarded.  Emergency stop and lever brake fitted, clearly marked and accessible. |  |

**16. Site plant and machinery**

|  |  |  |
| --- | --- | --- |
| Subject | Requirement | Yes/No |
| **Brick cutting machine** | Operator trained and only authorised persons use the machine.  Emergency stop switch clearly marked and accessible.  Area around the machine dry and slip or trip free as well as clear of off cuts.  All moving drive parts guarded.  Electrical supply cable protected.  Operator using correct PPE i.e. eye, face, hearing, foot, hands and body. |  |
| **\*Electric arc welder** | Welder trained.  Only authorised and trained persons use welder.  Adequately earthed.  Electrode holder in good condition and safe.  Cables, clamps, lugs and connectors in good condition.  Area in which welding machine is used is dry and protected from wet.  Welder using correct PPE i.e. eye, face, foot, body and respiratory.  Screens and warning signs placed. |  |
| **\*Woodworking machines** | Operator’s trained and only authorised persons use machines.  Provided with guards and guards used.  Operators using correct PPE i.e. eye, face, foot and hearing. |  |
| **\*Compressors** | Relief valves set, locked and sealed.  Maximum safe working pressure (MSWP) indicated on face of pressure gauge face and not on glass cover.  All drives adequately guarded.  Receiver and lines drained daily.  Hoses good condition and clamped, not wired. |  |
| **Concrete mixer and batch plant** | Top platform provided with guardrails.  Dust abatement methods in use.  Operators using correct PPE i.e. eye, hands and respiratory.  All moving drive parts guarded.  Emergency stops identified, indicated and accessible.  Area kept clean, dry and free from tripping and slipping hazards.  Banksman identified and crane signals displayed and used. |  |
| **\*Gas welding and flame cutting equipment** | Only authorised and trained persons use the equipment.  Torches and gauges in good condition.  Flashback arrestors fitted at cylinders and gauges.  Hoses in good condition, correct type and all connections with clamps.  Cylinders stored, used and transported in upright position, secured in trolley or cradle.  Fire prevention control methods applied.  Hot work permits. |  |

**17. Plant and storage yard or site workshop specifics**

|  |  |  |  |
| --- | --- | --- | --- |
| OHSACT Section or Regulation | Subject | Requirements | Yes/No |
| OHSACT, Section 8(2)(1)  General Machinery Regulation 2(1) | Supervision of the use and maintenance of machinery | Persons with specific knowledge and experience designated to supervise the use and maintenance of machinery.  Critical items of machinery identified, numbered and placed on register or inventory.  Inspection or maintenance schedules for abovementioned.  Inspections or maintenance carried out to above schedules.  Results recorded. |  |
| General Machinery Regulation 9(2) | Notices regarding operation of machinery | Schedule D notice posted in work areas. |  |
| Vessels under Pressure Regulation 13(1)(b) | Supervision of the use and maintenance of vessels under pressure (VUP) | Persons with specific knowledge and experience designated to Supervise the use and maintenance of VUPs.  VUPs identified, numbered and placed on register.  Manufacturers plate intact.  Inspection or maintenance schedules for abovementioned.  Inspections or maintenance carried out to above schedules. Results recorded and test certificates available. |  |
|  | Lock-out procedure | Lock-out procedure in operation. |  |
|  | Ergonomics | Ergonomics survey conducted.  Results on record.  Survey results applied. |  |
|  | Demarcation and colour coding | Demarcation principles applied.  All services, pipes, electrical installation, stop-start controls, emergency controls etcetera colour coded to own published or SABS standard.  Employees trained to identify colour coding. |  |
|  | Portable and bench grinders | Area around grinder clear and trip/slip free.  Bench grinders mounted securely and grinder generally in good condition.  No excessive vibration.  On and off switch or button clearly demarcated and accessible.  Adequate guards in place.  Tool rest – secure, square and maximum 2 mm gap.  Stone or disk - correct type and size, mounted correctly and dressed.  Use of eye protection enforced. |  |
|  | Battery storage and charging | Adequately ventilated, ignition free room or area.  No smoking signs.  Batteries placed on rubber or wooden surface.  Emergency shower or eye wash provided.  No acid storage in area. |  |
|  | Ancillary lifting equipment | Chain blocks, tirfors, jacks and mobile gantries etcetera identified and numbered on register.  Chains in good condition and links no excessive wear.  Lifting hooks – throat pop marked and safety latch fitted. SWL/MML marked or displayed. |  |
|  | Presses, guillotines and shears | Only operated by trained and authorised persons.  PPE used by operators Interlocks or lockouts fitted. |  |

**18. Workplace environment, health and hygiene**

| Subject | Requirement | Yes/No |
| --- | --- | --- |
| **\*Lighting** | Adequate lighting in places where work is being executed for example stairwells and basements or after sunset.  Light fittings placed and installed causing no irritating or blinding glare. |  |
| **\*Ventilation** | Adequate ventilation, extraction and exhausting in hazardous areas for example where chemicals and adhesives are stored, welding takes place and where petrol or diesel motors are running in confined spaces or basements. |  |
| **\*Noise** | Tasks identified where noise exceeds 85 dBa.  All reasonable steps taken to reduce noise levels at the source.  Hearing protection used where noise levels could not be reduced to below 85 dBa.  **\*Heat stress** Measures in place to prevent heat exhaustion in heat stress problem areas e.g. steel decks, when the WBGT index reaches 30 (see Environmental Regulation 4).  Cold drinking water readily available when extreme temperatures are experienced. |  |
| **\*Ablution facilities** | Sufficient toilets provided for men and women separately i.e. 1 per 30 employees (National Building Regulations prescribe chemical toilets for Construction sites).  Toilet paper available.  Sufficient showers provided for men and women separately.  Facilities for washing hands provided.  Soap available for washing hands.  Means of drying hands available.  Changing facilities or area provided for men and women separately.  Ablution facilities hygienic and clean. |  |
| **\*Eating and cooking facilities** | Adequate storage facilities provided.  Weather protected eating area provided, separate from changing area.  Refuse bins with lids provided.  Facilities clean and hygienic. |  |
| **\*Pollution of environment** | Measures in place to minimize dust generation.  Accumulation of empty cement pockets, plastic wrapping or bags, packing materials etcetera prevented.  Spillage or discarding of oil, chemicals and dieseline into storm water and other drains prevented. |  |
| **\*Hazardous chemical substances (See Section 1 for designation and register)** | All substances identified and list available e.g. acids, flammables, poisons etc.  Material Safety Data Sheets (MSDS) indicating hazardous properties and emergency procedures in case of incident on file and readily available.  Substances stored safely. |  |

|  |  |
| --- | --- |
| Name of person who has undertaken the assessment |  |
| Signature |  |
| Date |  |
| Received by |  |
| Designation |  |
| Date |  |
| Tabled at health and safety committee |  |

SPECIFICATION EMP: ENVIRONMENTAL MANAGEMENT PLAN

**ENVIRONMENTAL MANAGEMENT PLAN (EMP) FOR EMFULENI LOCAL MUNICIPALITYCAPEX PROJECTS**

This document forms an integral part of the **Contract Specification** and, in particular, shall be a part of the **ENVIRONMENTAL MANAGEMENT PLAN FOR CONSTRUCTION WORK**. The Contract Specification is contained in Volume 1 of the contract documents. The Contractor shall comply with the requirements of the following specification:

# 1. Introduction

The following is a generic EMP to mitigate against “generally occurring impacts” associated with the construction phase of Emfuleni Local Municipality’s activities. "Generally occurring impacts" refers to potential impacts typical of Johannesburg Water’s activities, and are not restricted to a single or specific site. The findings of this EMP will be implemented at all sites.

The management of impacts associated with various categories of concern is discussed as separate topics, as indicated in Table 1(a) below.

#### TABLE 1(a): Category of Concerns

|  |  |
| --- | --- |
| Paragraph number | Category of concern |
| 1.1 | Soil |
| 1.2 | Water |
| 1.3 | Air |
| 1.4 | Social and Cultural |
| 1.5 | Aesthetics |
| 1.6 | Archaeological and Cultural sites. |
| 1.7 | Flora |
| 1.8 | Fauna |
| 1.9 | Infrastructure |
| 1.10 | Safety |
| 1.11 | Waste |
| 1.12 | Rehabilitation and Site clearance. |

## 1.1 Soil

1. Topsoil should be temporarily stockpiled, separately from (clay) subsoil and rocky material, when areas are cleared. If mixed with clay sub-soil the usefulness of the topsoil for rehabilitation of the site will be lost.
2. Stockpiled topsoil should not be compacted and should be replaced as the final soil layer. No vehicles are allowed access onto the stockpiles after they have been placed.
3. Stockpiled soil should be protected by erosion-control berms if exposed for a period of greater than 14 days during the wet season. The need for such measures will be indicated in the site-specific report.
4. Topsoil stripped from different sites must be stockpiled separately and clearly identified as such. Topsoil obtained from sites with different soil types must not be mixed.
5. Topsoil stockpiles must not be contaminated with oil, diesel, petrol, waste or any other foreign matter, which may inhibit the later growth of vegetation and micro-organisms in the soil.
6. Soil must not be stockpiled on drainage lines or near watercourses without prior consent from the Project Manager.
7. Soil should be exposed for the minimum time possible once cleared of invasive vegetation, that is the timing of clearing and grubbing should be co-ordinated as much as possible to avoid prolonged exposure of soils to wind and water erosion. Stockpiled topsoil must be either vegetated with indigenous grasses or covered with a suitable fabric to prevent erosion and invasion by weeds.
8. Limited vehicular access is allowed across rocky outcrops and ridges.
9. All cut and fill surfaces need to be stabilized with appropriate material or measures when major civil works are complete.
10. Erosion and donga crossingsmust be dealt with as river crossings. Appropriate soil erosion and control procedures must be applied to all embankments that are disturbed and destabilized.
11. All equipment must be inspected regularly for oil or fuel leaks before it is operated. Leakages must be repaired on mobile equipment or containment trays placed underneath immobile equipment until such leakage has been repaired.
12. Soil contaminated with oil must be appropriately treated and disposed of at a permitted landfill site or the soil can be regenerated using bio-remediation methods.
13. Runoff must be reduced by channelling water into existing surface drainage system.

## 1.2 Water

1. Adequate sedimentation control measures must be instituted at any river crossings when excavations or disturbance of a riverbanks or riverbeds takes place.
2. Adequate sedimentation control measures must be implemented where excavations or disturbance of drainage lines of a wetland may take place.
3. All fuel, chemical, oil, etc spills must be confined to areas where the drainage of water can be controlled. Use appropriate structures and methods to confine spillages such as the construction of berms and pans, or through the application of surface treatments that neutralise the toxic effects prior to the entry into a water course.
4. Oil absorbent fibres must be used to contain oil spilt in water.
5. During construction through a wetland, the majority of the flow of the wetland should be allowed to pass down stream.
6. Vehicular traffic across wetland areas must be avoided.
7. No dumping of foreign material in streams, rivers and/or wetland areas is allowed.
8. The wetland area and/or river must not be drained, filled or altered in any way including alteration of a bed and/or, banks, without prior consent from the DWAF. The necessary licenses must be obtained in terms of Section 21 and 22 of the National Water Act, 36 of 1998 from DWAF.
9. No fires or open flames are allowed in the vicinity of the wetland, especially during the dry season.
10. No swimming, washing (including vehicles and equipment), fishing or related activity is permitted in a wetland or river without written permission from the Project Manager.
11. Disturbances to nesting, breeding and roaming sites of animals in or adjacent to wetland areas must be minimized.

## 1.3 Air

1. Speed limits must be implemented in all areas, including public roads and private property to limit the levels of dust pollution.
2. Dust must be suppressed on access roads and construction sites during dry periods by the regular application of water or a biodegradable soil stabilisation agent. Water used for this purpose must be used in quantities that must not result in the generation of run-off.
3. The site-specific investigation will quantify the impact of dust on nearby wetlands, rivers and dams in terms of sedimentation. Mitigation measures identified during the site specific study must be implemented.
4. The Contractor must notify the Principal of all schools within 50m of the site of proposed activities. The Principal must in turn ensure that children with allergies and respiratory ailments take the necessary precautionary measures during the construction period. The Contractor must ensure that construction activities do not disturb school activities e.g. dust clouds may reduce visibility affecting sports activities.
5. Waste must be disposed of, as soon as possible at a municipal transfer station, skip or on a permitted landfill site. Waste must not be allowed to stand on site to decay, resulting in malodours.
6. Noise control measures must be implemented. All noise levels must be controlled at the source. All employees must be given the necessary ear protection gear. IAP’s must be informed of the excessive noise factors.
7. The Contractor must inform all adjacent landowners of any after-hour construction activities and any other activity that could cause a nuisance e.g. the application of chemicals to the work surface. Normal working hours must be clearly indicated to adjacent land owners.
8. No loud music is allowed on site and in construction camps.
9. No fires are allowed if smoke from such fires will cause a nuisance to IAPs.

## 1.4 Social and Cultural

1. Access by non-construction people onto any construction sites must be restricted. The Contractors activities and movement of staff must be restricted to designated construction areas only.
2. The Contractors crew must be easily identifiable due to clothing, identification cards or other methods.
3. Rapid migration of job seekers could lead to squatting and social conflict with resident communities and increase in social pathologies if not properly addressed. The Contractor must ensure that signs indicating the availability of jobs are installed.
4. Criteria for selection and appointment (by the Contractor) of construction labour must be established to allow for preferential employment of local communities. The Local Authority must be actively involved in the process of appointing temporary labourers.
5. Sub-Contractors and their employees must comply with all the requirements of this document and supporting documents e.g. the Contract document that applies to the Contractor. Absence of specific reference to the sub-contractor in any specification does not imply that the sub-contractor is not bound by this document.
6. No member of the construction workforce is allowed to wander around private property, except within the immediate surrounding of the site.
7. The Contractor must provide suitable sanitation facilities for site staff. Sanitation provided during the construction phase should be managed so that it does not cause environmental health problems. The use of the surrounding veld for toilet purposes is not permitted under any circumstance.
8. The Contractor must arrange for all his employees and those of his sub-contractors to be informed of the findings of the environmental report before the commencement of construction to ensure:

* A basic understanding of the key environmental features of the work site and environments, and
* Familiarity with the requirements of this document and the site specific report.

1. Supervisory staff of the Contractor or his sub-contractors must not direct any person to undertake any activities which would place such person in contravention of the specifications of this document, endanger his/her life or cause him/her to damage the environment.
2. The demand for construction materials and supplies will have an effect on the local economy. This impact can be optimised by sourcing and purchasing materials locally and regionally wherever possible, insofar as the material complies with the design specification.
3. The Contractor must maintain a detailed complaints register. This must be forwarded, together with solutions, to the authorities when requested.

## 1.5 Aesthetics

* 1. Scenic Quality
* Damage to the natural environment must be minimized.
* Trees and tall woody shrubs must be protected from damage to provide a natural visual shield. Excavated material must not be placed on such plants and movement across them must not be allowed, as far as practical.
* The clearing of all sites must be kept to a minimum and surrounding vegetation must, as far as possible, be left intact as a natural shield.
* No painting or marking of natural features must be allowed.
  1. Above-ground Structures (reservoirs, water hammer tanks, valve chambers, pump stations etc)
* All above ground structures should be located in areas where the visual impact from roads, houses etc is minimised.
* All above ground structures could be treated or painted to blend in with the natural environment.
  1. Cut and fill areas, river and stream crossings and other soil stabilisation works must be constructed to blend inwith the natural environment.
  2. Natural outcrops, rocky ridges and other natural linear features, must not be bisected. Vegetation on such features must, as far as possible, not be cut unless absolutely necessary for construction.
  3. Excavated material must be flattened (not compacted) or removed from site. No heaps of spoil material must be left on site once the Contractor has moved to a new construction site.
  4. Any complaints from interest groups regarding the appearance of the construction site must be recorded and addressed promptly by the Contractor.

## 1.6 Archaeology and Cultural Sites

1. All finds of human remains must be reported to the nearest police station.
2. Human remains from the graves of victims of conflict, or any burial ground or part thereof which contains such graves and any other graves that are deemed to be of cultural significance may not be destroyed, damaged, altered, exhumed or removed from their original positions without a permit from the South African Heritage and Resource Agency (SAHRA).
3. Work in areas where artefacts are found must cease immediately.
4. Under no circumstances must the Contractor, his/her employees, his/her sub-contractors or his/her sub-contractors’ employees remove, destroy or interfere with archaeological artefacts. Any person who causes intentional damage to archaeological or historical sites and/or artefacts could be penalised or legally prosecuted in terms of the National Heritage Resources Act, 25 of 1999.
5. A fence at least 2m outside the extremities of the site must be erected to protect archaeological sites.
6. All known and identified archaeological and historical sites must be left untouched.
7. Work in the area can only be resumed once the site has been completely investigated. The Project Manager will inform the Contractor when work can resume.

## 1.7 Flora

1. All suitable and rare flora and seeds must be rescued and removed from the site. They must be suitably stored, for future use in rehabilitation.
2. The felling and/or cutting of trees and clearing of bush must be minimised.
3. Bush must only be cleared to provide essential access for construction purposes.
4. The spread of alien vegetation must be minimized.
5. Any incident of unauthorised removal of plant material, as well as accidental damage to priority plants, must be documented by the Contractor.
6. Woody vegetative matter stripped during construction must either be spread randomly throughout the surrounding veld so as to provide biomass for other micro-organisms and habitats for small mammals and birds, or it may be stockpiled for later redistribution over the reinstated topsoiled surface. No vegetative matter must be burnt or removed for firewood other than those removed during the grubbing and clearing phase. Such vegetation can be made available to the local inhabitants to be used as firewood.
7. No tree outside the footprint of the Works area must be damaged.

## 1.8 Fauna

1. No species of animal may be poached, snared, hunted, captured or wilfully damaged or destroyed.
2. Snakes and other reptiles that may be encountered on the construction site must not be killed unless the animal endangers the life of an employee.
3. Anthills and/or termite nests that occur must not be disturbed unless it is unavoidable for construction purposes.
4. Disturbances to nesting sites of birds must be minimized.
5. The Contractor must ensure that the work site is kept clean and free from rubbish, which could attract pests.

## 1.9 Infrastructure

1. The relevant authorities must be notified of any interruptions of services, especially the Local Municipality, National Road Agency, Spoornet, TELKOM and ESKOM. In addition, care must be taken to avoid damaging major and minor pipelines and other services.
2. The integrity of property fences must be maintained.
3. No telephone lines must be dropped during the construction operations, except were prior agreement by relevant parties is obtained. All crossings must be protected, raised or relocated as necessary.
4. All complaints and/or problems related to impacts on man-made facilities and activities must be promptly addressed by the Contractor and documented.
5. Storage Facilities

* Proper storage facilities should be provided for the storage of oils, grease, fuels, chemicals and hazardous materials.
* The Contractor must ensure that accidental spillage does not pollute soil and water resources.
* Fuel stock reconciliation must be done on all underground tanks to ensure no loss of oil, which could pollute groundwater resources.
* Cement must be stored and mixed on an impermeable substratum.

1. Traffic Control

* All reasonable precautions must be taken during construction to avoid severely interrupting the traffic flow on existing roads, especially during peak periods.
* Before any work can start the Local Traffic Department must be consulted about measures to be taken regarding pedestrian and vehicular traffic control.

1. Access Roads

* The Contractor and the affected landowner must collaborate on the planning and construction of new access routes and the repair or upgrading of existing routes.
* Access to the site must be controlled such that only vehicles and persons directly associated with the work gains access to the site.
* Temporary access roads must not be opened until required and must be restored to its former state as soon as the road is no longer needed.

1. Batching Plants

* Concrete must be mixed only in an area demarcated for this purpose. All concrete spilled outside this area, must be promptly removed by the Contractor and taken to a permitted waste disposal site. After all concrete mixing is complete, all waste concrete must be removed from the batching area and disposed of at an approved dumpsite. Stormwater must not be allowed to flow through the batching area. Water laden with cement must be collected in a retention area for evaporation and not allowed to escape the batching area. Operators must wear suitable safety clothing.

1. Chemical toilet facilities should be managed and serviced by a qualified company. No disposal or leakage of sewerage should occur on or near the site.
2. Blasting

* Blasting must not endanger public or private property.
* Noise mufflers and/or soft explosives must be used to minimize the impact on animals.
* All the provisions of the Explosives Act, 26 of 1956 and the Minerals Act, 50 of 1991 must be complied with.
* The Contractor must take measures to limit flyrock.

## 1.10 Safety

1. Measures must be taken to prevent any interference that could result in flashover of power lines due to breaching of clearances or the collapse of power lines due to collisions by vehicles and equipment.
2. Measures must be taken during thunderstorms to protect workers and equipment from lightning strikes.
3. All tall structures must be properly earthed and protected against lightning strikes.
4. Fire prevention

The Contractor must take all the necessary precautions to protect the materials on site and to avoid veld fires.

* No fires or open flames are allowed on site unless directly used for construction purposes, e.g. acetylene blowtorch.
* Review all SABS standards relating to fire precautions and fire control namely, SABS 0131-3 Section 8 and SABS 089-1 or as amended.
* The Contractor must have fire-fighting equipment and a first aid box available on site and on all vehicles working on site.
* All waste bins must be kept away from fuel tank installations.
* All fuel tanks must be installed above ground, depending on the volume of stored fuel, for easy detection of fuel leaks.
* Any welding or other sources of heating of materials must be done in a controlled environment, wherever possible and under appropriate supervision, in such a manner as to minimise the risk of veld fires and/or injury to staff.
* Fires lit for comfort (warmth) must be actively discouraged by the Contractor, due to the risk of veld fires and the risk to adjacent properties. Also, no waste material must be burnt.

1. The process of excavation and back filling must be carried out as a sequential process following one another as quickly as possible. Excavations must only remain open for a minimum period of time and during this time they must be clearly demarcated. If excavations place the public at risk these sites must be fenced.
2. The residents directly affected by open trenches must be notified of the dangers. This will be done during the site-specific phase.

## 1.11 Waste

Solid Waste

1. Littering on site and the surrounding areas is prohibited.
2. Clearly marked litterbins must be provided on site. The Contractor must monitor the presence of litter on the work sites as well as the construction campsite.
3. All bins must be cleaned of litter regularly.
4. All waste removed from site must be disposed at a municipal/permitted waste disposal site.
5. Excess concrete, building rubble or other material must be disposed of in areas designated specifically for this purpose and not indiscriminately over the construction site.
6. The entire works area and all construction sites must be swept of all pieces of wire, metal, wood or other material foreign to the natural environment.
7. Contaminated soil must be treated and disposed of at a permitted waste disposal site, or be removed and the area rehabilitated immediately.
8. Waste must be recycled wherever possible.

## 1.12 Liquid Waste

1. The Contractor must install and maintain mobile toilets at work sites.
2. The Contractor must provide adequate and approved facilities for the storage and recycling of used oil and contaminated hydrocarbons. Such facilities must be designed and sited with the intention of preventing pollution of the surrounding area and environment.
3. All vehicles must be regularly serviced in designated area within the Contractors camp such that they do not drip oil.
4. All chemical spills must be contained and cleaned up by the supplier or professional pollution control personnel. Run-off from wash bays must be intercepted.

## 1.13 Hazardous Waste

1. No hazardous materials must be disposed of in the veld or anyplace other than a registered landfill for hazardous material. Hazardous waste must be stored in containers with tight lids that must be sealed and must be disposed at an appropriately permitted hazardous waste disposal site. Such containers must not be used for purposes other than those originally designed for.
2. The Contractor must maintain a hazardous material register.

## Rehabilitation

1. When all major construction activities are completed, the site must be inspected to determine site-specific rehabilitation measures. This may be considered as unplanned work e.g. soil rehabilitation due to oil spills.
2. All temporary buildings and foundations, equipment, lumber, refuse, surplus materials, waste, construction rubble fencing and other materials foreign to the area must be removed.
3. If waste products cannot be recycled they must be disposed of at a permitted landfill site.
4. All drainage deficiencies including abandoned pit latrines and waste pits must be corrected.
5. Cut and fill areas must be restored and re-shaped.
6. The area must be restored to its natural vegetation condition using indigenous trees, shrubs and grasses as directed by a grassland and/or rehabilitation expert.
7. Borrow pits must be re-shaped into even slopes and surfaces to blend with the natural terrain and topsoil must be replaced.
8. The grass mix, shrubs and trees used for rehabilitation must be compatible with the species identified in the site-specific investigation.
9. Areas compacted by vehicles during construction must be scarified to allow penetration of plant roots and the regrowth of natural vegetation.

# 2. Monitoring

The correct and successful implementation of environmental management measures, to reduce negative impact on environmental conditions, is ensured by proper monitoring based on a firm programme.

## 2.1 Construction Phase

The Contractor, Resident Engineer and the Independent Environmental Consultant (IEC) must monitor the implementation of these management measures.

Monitoring should be focused on on-site conditions during the establishment of the site and for the full duration of the construction period when the site is operational.

The following Environmental Monitoring Programme is recommended:

|  |  |  |
| --- | --- | --- |
| **ISSUE** | **FREQUENCIES OF MONITORING** | **RESPONSIBLE PERSON** |
| WATER | | |
| Prevention of water pollution  Prevention of stagnant water on site.  Proper functioning of sanitation facilities | Weekly in rainy season  Weekly in rainy season  Weekly | Contractor’s Representative (CR) |
| SOIL | | |
| Surface or gully erosion on site  Soil contamination with oils  If small, clean up. If large, appoint a suitable contractor for clean up. | Weekly in rainy season  Monthly  Immediately | CR  CR  CR |
| Air | | |
| Control domestic fires.  Heavy vehicle emission control.  Dust control of access roads. Wetting when required. | Weekly  Monthly  Weekly inspection | CR  CR  CR |
| WASTE | | |
| Efficiency of domestic waste collection.  Prevention of burning of solid/liquid wastes on site.  Proper collection and containment of liquid wastes (petroleum, oils, paints, resins & cooking oils)  The recycling and/or disposal thereof.  The collection and disposal of construction waste (concrete, wood, steel)  Collection of hazardous waste. | Bi Weekly  Weekly  Monthly  Bi Weekly  Monthly  Bi Weekly | CR  CR  CR  CR  CR  CR |
| WILDLIFE | | |
| Weed Control  Control of illegal hunting or snaring of game, birds or other wild animals. | Weekly  Weekly | CR  CR |
| SOCIAL | | |
| Inspect overall appearance of site.  (paint work, cleanliness & housekeeping)  Resolve complaints  Monitor behaviour of labourers | Weekly  Daily  Daily | CR  CR and IEC  CR |
| SAFETY | | |
| Inspect road signs, pedestrian and vehicle behaviour | At least once a week | CR |

**3. Forms for Completion**

The following page contain a pro-forma for completion by the Contractor to assist with the implementation of the Environmental Management Plan. The style and content may be easily amended to suit al other identified environmental affects.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **IDENTIFICATION OF ENVIRONMENTAL AFFECTS** | **SITE:** | **CONTROLLED AND UNCONTROLLED EMISSIONS TO THE ATMOSPHERE** | **TYPE OF EMISSION IN CASE OF INCIDENT, ACCIDENT OR POTENTIAL EMERGENCY SITUATIONS** |  |  |  |  |  | **Contractor’s Representative** |
| **TYPE OF EMISSION UNDER ABNORMAL OPERATING CONDITIONS** |  |  |  |  |  |
| **DATE:** | **TYPE OF EMISSION UNDER NORMAL OPERATING CONDITIONS** |  |  |  |  |  | **Project Manager** |
| **LOCATION** |  |  |  |  |  |