Health and Safety Specification

Project Name: Replace Water Pipelines and Billing System Project in the Port of Durban XDN.E0028-SP0001

SIGNATORIES:

Prepared by:		02/10/2023
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1. Purpose

This health and safety specification identifies and outlines the working behaviours and safe work practices that are expected of the contractors, consultant, visitors and suppliers, that will be undertaking activities associated with the Port of Durban – Replace Water Pipelines and Billing System Project.

The specification has been developed in accordance with the requirements of the Occupational Health and Safety Act and its Regulations, mainly Construction Regulation 5(1)(b) as well as any other applicable legislation.
The Contractor must comply with this Client's health and safety specification and related legislation and address it in their site specific health and safety plan. It is the principal contractor's responsibility to ensure that all sub-contractors comply fully with all legal requirements as well as the requirements of this specification.

This Health and Safety Specification will be reviewed and updated periodically and/or as and when necessary) to address and / or include:

- Changes in legislation;
- Client requirements;
- Leading practices; and
- Lessons learnt from incidents.

2. Scope

The requirements specified in this Health and Safety Specification are applicable to the Contractor as well as any contractors, suppliers, Consultants, Vendors and Visitors that may be appointed by or on behalf of Transnet as an Employer at the Port of Durban Replacement or Water Pipelines and Billing System Project. It is the Principal Contractor's responsibility to ensure that all contractors and suppliers fully comply with all legal requirements as well as the requirements of this health and safety specification.

The Scope of Work for this Contract includes the following:

- Laying of approximately 45.5km of new uPVC and HDPE pipes with varying diameters from 40mm to 315mm, including excavation and backfilling.
- Replacement of all meters at buildings and supply points with AMR technology, approximately 176 meters from with sizes from 25mm to 200mm.
- Installation of the AMR network together with repeaters.
- Installation of approximately 300 gate valves from sizes 32mm to 315mm diameter
- Installation of approximately 300 new landing valves for ship water supply
- Installation of approximately 30 new fire hydrants
- Bridge attachments
- Horizontal Directional Drilling
- Road re-surfacing when excavating installing within road reserves.

3. Definitions

Acceptable Risk
A risk that has been reduced to a level that can be tolerated having regard for the applicable legal requirements and the Health and Safety Policy adopted for the project.

ALARP (As Low As Reasonably Practicable)
The concept of weighing a risk against the sacrifice needed to implement the measures necessary to avoid the risk. With respect to health and safety, it is assumed that the measures should be implemented unless it can be shown that the sacrifice is grossly disproportionate to the benefit.

Applicant (Permit to Work)
A person requesting permission to perform work for which a Permit to Work is required. Applicants must be authorised (in writing) to receive (or accept) Permits to Work and must be competent to do so by virtue of their training, experience and knowledge of the area or plant in which the work is to be performed.

Authorised Person (Permit to Work)
A person (typically a Project employee or an employee of the client) who has been authorised (in writing) by the client representative to issue Permits to Work within the scope of his designation. A person may only be appointed to issue Permits to Work if he has undergone training and has been assessed and found competent in systems, plant and equipment operation within the scope of his designation.

Authorised Person
A person whether an employee of the network operator or not, who has been specially authorised to undertake specific duties in terms of Transnet' publication Electrical Safety Instructions, and who holds a certificate or letter of authority to that effect.

Barricade
A temporary structure that is erected as a physical barrier to prevent persons from inadvertently coming into contact with an identified hazard.

Benching
The creation of a series of steps in the sides of an excavation to prevent collapse.

Consequence
The outcome of an event expressed qualitatively or quantitatively.

Principal Contractor
An employer performing construction work, or providing related or supporting services, on a project site.

Competent Person
A person who has in respect of the work or task to be performed the required knowledge, training, experience and as per act cr2014.

Construction Supervisor
A competent person responsible for supervising construction activities on a construction site.

Clearance Certificate
A signed declaration by an Isolation Officer that a specified hazardous energy source associated with a particular system, plant or item of equipment has been isolated in accordance with an approved Isolation and Lockout Procedure.

Electrical Officer

The person appointed in writing by the Project Manager in terms of this specification as the person who shall be consulted by the Contractor in all electrical matters to ensure that adequate safety precautions are taken by the Contractor.

Excavation
Any man-made cut, cavity, pit, trench, or depression in the earth's surface formed by removing rock, sand, soil or other material using tools, machinery, and / or explosives. Tunnels, caissons and cofferdams are specifically excluded and are not addressed in this standard.

First-Aid Injury (FA)
A first-aid injury is any one time treatment and any follow up visit for observation of minor scratches, cuts, burns, splinters and the like which do not normally require medical care. Such treatment is considered to be first aid even if administered or supervised by a medical practitioner.
First aid includes any hands on treatment given by a first aider. (E.g. Band-Aid, washing, cleansing, pain, relief). The following procedures are generally considered first aid treatment:

- Application of Antiseptics.
- Application of Butterfly adhesive dressing or sterile strips for cuts and lacerations.
- Administration of tetanus shot(s) or booster(s). However, these shots are often given in conjunction with more serious injuries, consequently injuries requiring these shots may be recordable for other reasons.
- Application of bandages during any visit to medical personnel.
- Application of ointments to abrasions to prevent drying or cracking.
- Inhalation of toxic or corrosive gas, limited to the removal of the employee to fresh air or the one time administration of oxygen for several minutes.
- Negative X-Ray diagnosis.
- Removal of foreign bodies not embedded in the eye if only irrigation is required.
- Removal of foreign bodies from a wound if procedure is uncomplicated, for example by tweezers or other simple technique.
- Treatment for first degree burns.
- Use of non-prescription medications and administration of single dose of prescription medication on first visit for any minor injury or discomfort.

Hazard
A source of potential harm in terms of human injury or ill health, or a combination of these.

Hierarchy of Controls
A sequence of control measures, arranged in order of decreasing effectiveness, used to eliminate or minimise exposure to workplace health and safety hazards:

- Elimination – Completely removing a hazard or risk scenario from the workplace.
- Substitution – Replacing an activity, process or substance with a less hazardous alternative.
- Isolation (Engineering) Controls – Isolating a hazard from persons through the provision of mechanical aids, barriers, machine guarding, interlocks, extraction, ventilation or insulation.
- Administrative Controls – Establishing appropriate policies, procedures and work practices to reduce the exposure of persons to a hazard. This may include the provision of specific training and supervision.
- Personal Protective Equipment – Providing suitable and properly maintained PPE to cover and protect persons from a hazard (i.e. Prevent contact with the hazard).

Incident (Occurrence)
An event (or a continuous or repetitive series of events) that results or has the potential to result in a negative impact on people (employees, Principal contractors and visitors), the environment, operational integrity, assets, community, process, product, legal liability and / or reputation.

Likelihood
A description of probability or frequency, in relation to the chance that an event will occur.

Lost Time Injury (LTI)

Any occurrence that resulted in a permanent disability or time lost from work of one day/shift or more.

If an employee is injured and cannot return to work in the next shift (will ordinarily miss one whole shift), and the department brings the employee in to only receive treatment by the Supervisor/ Return to Work Coordinator in that shift, this is still considered an LTI.

Lost Time Injury Frequency Rate (LTIFR) - Number of LTI's multiplied by 1 million or 200,000 and divided by labour hours worked.

Light Vehicle

A vehicle that:

- Can be licensed and registered for use on a public road;
- Has four or more wheels, and seats a maximum of 12 adults (including the driver);
- Requires the driver to hold only a standard civil driving licence; and
- Does not exceed 4.5 tonnes gross vehicle mass (GVM), which is the maximum loaded mass of the motor vehicle as specified by:
  - The vehicle's manufacturer; or
  - An approved and accredited automotive engineer, if the vehicle has been modified to the extent that the manufacturer's specification is no longer appropriate.

Examples of light vehicles include passenger cars, four-wheel drive vehicles, sports utility vehicles (suvs), pick-ups, minibuses, and light trucks.

Any vehicle falling outside of this definition must be considered mobile equipment.

Medical Treatment Injury (MTI)

A work injury requiring treatment by a Medical Practitioner and which is beyond the scope of normal first aid including initial treatment given for more serious injuries. The procedure is to be of an invasive nature (e.g. Stitches, removal of foreign body).

The following procedures are generally considered medical treatment:

- Application of sutures (stitches).
- Cutting away dead skin (surgical debridement).
- Loss of consciousness due to an injury or exposure in the work environment.
- Positive X-Ray diagnosis (fractures, broken bones etc.).
- Removal of foreign bodies embedded in the eye.
- Removal of foreign bodies from the wound by a physician due to the depth of embedment, size or shape of object or the location wound.
- Reaction to a preventative shot administered because of an occupational injury.
- Sprains and strains - series (more than one) of hot and cold soaks, use of whirlpools, diathermy treatment or other professional treatment.
- Treatment of infection.
- Treatment for second or third degree burns
- Use of prescription medications (except a single dose administered on first visit for minor injury or discomfort.)

Mobile Equipment

A vehicle (wheeled or tracked) that generally requires:

- The driver to hold a specific state or civil license; or
- The operator to hold a nationally recognized certificate of competency.

Examples of mobile equipment include, but are not limited to, dump trucks, water trucks, graders, dozers, loaders, excavators, forklifts, tractors, back-actors, bobcats, mobile cranes, tele-handlers, drill rigs, buses and road-going trucks.

Near Hit

An incident that has occurred that did not result in any injuries, illnesses, environmental or property damage but had the potential to cause an injury, illness, environmental or property damage.

Regulation

In the context of this guideline, 'Regulation(s)' refers to the Construction Regulations, 2014 required by Section 43 of the Occupational Health and Safety Act 85 of 1993, published under Government Notice R 84 in Government Gazette 37305 of February 2014.

Responsible Representative

The responsible person in charge, appointed by a Principal Contractor, who has undergone specific training (and holds a certificate) to supervise (general or direct) staff under his control who perform general work or to work on, over, under or adjacent to railway lines and in the vicinity of high-voltage electrical equipment.

Risk
A combination of the likelihood of an occurrence of a hazardous event or exposure and the severity of injury or ill health that can be caused by the event or exposure.

Risk Assessment
A process of evaluating the risk arising from a hazard, taking into account the adequacy of any existing control measures, and deciding on whether or not the risk is acceptable.

Risk Management
The systematic application of management policies, processes and procedures to identifying hazards, analysing and evaluating the associated risks, determining whether the risks are acceptable, and controlling and monitoring the risks on an ongoing basis.

Total Occupation

An occupation for a period when trains are not to traverse the section of line covered by the occupation.

Work Permit

A combined written application and authority to proceed with work on or near dead electrical equipment.

4. Abbreviations

DSTI - Daily Safety Task Instruction

CR – Construction Regulationss,2014

CWP – Construction Work Permit

EPC - Engineering Procurement and Construction

EPCM - Engineering Procurement and Construction Management

HIRA - Hazard Identification and Risk Assessment

IMS - Integrated Management System

MS - Management System

OHS Act - Occupational Health and Safety Act No.85 of 1993

PC – Principal Contractor

SOC - Safety Observation and Conversation

TNPA – Transnet National Port Authority

VFL - Visible Felt Leadership

OHS - Occupational Health and Safety

DoEL- Department of Employment and Labour

SACPCMP - The South African Council for Project and Construction Management Professions.

MSDS – Material Safety Data Sheet

5. Location

From a design and water balance perspective, the port has been divided into 5 zones as shown and described below. The proposed construction work will take place at : Port of Durban.

6. Contractor Health and Safety Management Plan

The Contractor must comply to Construction Regulation, 7(1)(a).
The Contractor must prepare, implement and maintain a project specific health and safety management plan. The plan must be based on the requirements set out in this specification as well as all applicable legislation. It must cover all activities that will be carried out on the project site(s), from mobilisation and set-up through to rehabilitation and decommissioning

The plan must demonstrate the Principal Contractor's commitment to health and safety and must, as a minimum, include the following:

- A copy of the contractor's **Health and Safety Policy**; in terms of the OHS Act section 7

- Procedures concerning **Hazard Identification and Risk Assessment**, including both Baseline and Task-Based Risk Assessments;
- Arrangements concerning the identification of applicable **Legal and Other Requirements**, measures to ensure compliance with these requirements, and measures to ensure that this information is accessible to relevant personnel;
- Details concerning **Health and Safety Objectives** – a process must be in place for setting objectives (and developing associated action plans) to drive continual improvement;
- Details concerning **Resources, Accountabilities and Responsibilities** – this includes the assignment of specific health and safety responsibilities to individuals in accordance with legal or project requirements, including the appointment of a Project Manager, Health and Safety Officers, Supervisors, Health and Safety Representatives, and First Aiders;
- Details concerning **Competence, Training and Awareness** – a system must be in place to ensure that each employee is suitably trained and competent, and procedures must be in place for identifying training needs and providing the necessary training;
- **Communication, Participation and Consultation** arrangements concerning health and safety, including Safety Observations and Coaching, Toolbox Talks, Daily Safe Task Instructions, project health and safety meetings, and notice boards;
- **Documentation and Document Control** – project-specific documentation required for the effective management of health and safety on the project must be developed and maintained, and processes must be in place for the control of these documents;
- Processes and procedures for maintaining **Operational Control**, including rules and requirements (typically contained in Safe Work Procedures) for effectively managing health and safety risks, particularly critical risks associated with working at heights, confined spaces, mobile equipment and light vehicles, lifting operations, hazardous chemical substances, etc.;
- **Emergency Preparedness and Response** procedures;
- **Management of Change** – a process must be in place to ensure that health and safety risks are considered before changes are implemented;
- **Contractor Alignment** procedures – a process must be in place for the assessment of contractors and suppliers with regard to health and safety requirements and performance (before any contract or purchase order is awarded);
- **Measuring and Monitoring** plans, including a plan for the measuring and monitoring of employee exposure to hazardous substances or agents (e.g. Noise, dust, etc.) In order to determine the effectiveness of control measures;
- **Incident Reporting and Investigation** procedures describing the protocols to be followed with regard to incident reporting, recording, investigation and analysis;
- **Non-conformance and Action Management** procedures concerning the management of corrective actions;
- **Performance Assessment and Auditing** procedures concerning health and safety performance reporting, monthly internal audits to assess compliance with the project health and safety requirements, and daily site health and safety inspections; and

- Details concerning the **Management Review** process followed to assess the effectiveness of health and safety management efforts.

Prior to mobilisation, the Contractor Project Specific Health and Safety Management Plan must be forwarded electronically, and as a hard copy, to the Client's Health and Safety Agent (CHSA) for review and approval. The plan will be audited for completeness and, if found to be adequate, will be accepted and approved. Work may not commence until the plan has been accepted and approved.

Should it be identified that the contractor has overlooked a high risk activity, and the plan is not aligned to Transnet Specification, the plan will not be approved by CHSA.

7. Contractor Health and Safety Policy

The Principal Contractor must develop, display and communicate a Health and Safety Policy that clearly states the contractor's values and objectives for the effective management of health and safety. These values and objectives must be endorsed by the Contractor's management representatives (OHS Act 16.2 Appointee) and must be consistent with those adopted for the project.
The policy must be signed and dated, and must be reviewed annually.

The policy must commit to:

- Compliance with all applicable legal requirements;
- The effective management of health and safety risks;
- The establishment of measurable objectives for improving performance, and the provision of the necessary resources to meet these objectives;
- The prevention of incidents, and
- Achieving continual improvement with regard to health and safety performance.

All employees of the Principal Contractor as well as the employees of any Sub-Contractor that may be appointed by the contractor must be made aware of the policy. This must be done through Health and Safety Induction Training and Toolbox Talks .

A copy of the policy must be displayed in each meeting room and on each notice board.

8. Hazard Identification and Risk Assessment (OHS Act, Constr. Regulations 9)

The Principal Contractor must comply to Construction Regulations, clause 9.

Detailed hazard identification and risk assessment processes must be followed for all work to be performed as well as for all associated equipment and facilities.

The client will provide a baseline risk assessment informing Contractor on the hazards and risks on site. Contractor must ensure that effective procedures and risk assessment systems are in place to control hazards and to mitigate risks to levels that are as low as is reasonably practicable.

8.1 Task-Based Risk Assessments

The Principal Contractor must carry out detailed project-specific Task-Based Risk Assessments which must be reviewed and approved by the Client's Health and Safety Agent and Project Construction Manager prior to the commencement of any work. The risk assessment process must be facilitated by a competent person (Risk

Assessor) who has been appointed in writing. The contractor's site management representatives, supervisory personnel, technical experts (as required) and workforce personnel directly involved with the task being examined must participate in the risk assessment process. An attendance register must be completed and retained.

Please Note: Under no circumstances may a Contractor Health and Safety Officer (CHSO) perform a risk assessment in isolation. The active participation of all persons referred to above is mandatory.

A Task-Based Risk Assessment must at least:

- Be accompanied by a Work Method Statement (describing in sufficient detail how the specific job or task is to be performed in a logical and sequential manner) and Safe Working Procedure;
- Provide a breakdown of the job or task into specific steps;
- Identify the hazards and potential risk scenarios associated with each step;
- Include consideration of possible exposure to noise, heat, dust, fumes, vapours, gases, chemicals, radiation, vibration, ergonomic stressors, or any other occupational health hazard or stressor;
- Describe the control measures that will be implemented to ensure that the risks are managed to levels that are as low as is reasonably practicable; and
- Assign an initial risk rating (without taking any control measures into consideration) and a residual risk rating (taking the identified control measures into consideration) to each risk scenario.
- A Task-Based Risk Assessment must be reviewed and, if necessary, updated:
- On an annual basis (as a minimum);
- When changes are made to the associated Work Method Statement; and
- Following an incident.

9. Legal and Other Requirements

The Principal Contractor must comply with the requirements of all applicable health and safety legislation as well as TNPA's project-specific standards and procedures as amended from time to time.

The Contractor must compile and maintain a register of all legal and other requirements applicable to the work that will be carried out and / or services that will be provided. This register must be updated regularly to ensure that it remains relevant.

Applicable laws and standards must be appropriately communicated to all employees of the Contractor(as well as the employees of any contractors that may be appointed by the Principal contractor) through training, Toolbox Talks, and Daily Safe Task Instructions.

10. Health and Safety Objectives

In order to drive continual improvement, the Principal Contractor must set project-specific health and safety objectives, and must develop improvement action plans to achieve these objectives. The Principal contractor's objectives must be aligned with the objectives set for the project as a whole as required by the Construction Regulations 7.

Eliminating health and safety hazards, minimising health and safety risks, preventing incidents, injuries and illnesses, and ensuring legal compliance must be the primary considerations for setting objectives.

When setting objectives, consideration must be given to the following:

- Leading indicators such as inspection findings, audit findings, hazard reporting, and observations;
- Lagging indicators (i.e. Incidents including Near Hits);
- Leading practices and lessons learnt; and
- Injury frequency rates with due understanding that the goal is "no harm".

The objectives must be specific and measurable. The improvement action plans must specify the resources (both human and financial) required to achieve the objectives, the person's responsible, and realistic timeframes for completion. The Contractor must ensure that adequate resources are allocated and that progress towards meeting the objectives is monitored regularly.

The objectives and associated improvement action plans must be documented and must be communicated to all Contractor employees. Furthermore, to ensure that the objectives remain relevant, they must be reviewed on a quarterly basis and whenever significant change has taken place on the project (i.e. Changes to activities, scope of work, operating conditions, etc.).

11. Resources, Accountabilities and Responsibilities

The Principal Contractor must adequately allocate resources, responsibility and accountability to ensure the effective implementation, maintenance and continual improvement of the Principal contractor's health and safety management system on the project.

For each role that carries health and safety accountability and / or responsibilities (including legislative requirements), a role description detailing the accountability and / or responsibilities must be documented.

All health and safety appointments (i.e. the assignment of specific health and safety responsibilities to individuals in accordance with legal or project requirements) must be done in writing. Documented proof of each appointment (i.e. a signed appointment letter) must be retained.

Principal Contractor should not discharge any legal responsibilities to employees who are not legally appointed.

The Principal Contractor must comply with the requirements of all applicable legislation concerning health and safety related appointments and delegations for the project.

A health and safety organisational chart specific to the project must be documented and maintained. All roles that carry health and safety accountability and / or responsibilities must be included, and all individuals that carry health and safety legal appointments must be clearly identified.

The provision of dedicated health and safety professionals registered on the project must be appropriate for the nature and scale of the work to be carried out.

The Principal Contractor is solely responsible for carrying out the work under the contract whilst having the highest regard for the health and safety of all persons on the project site.

Health and safety is the responsibility of each and every individual on the project, but in particular, it is the responsibility of the Principal contractor's management team who must set the tone.

Visible commitment is essential to providing and maintaining a safe workplace. The Contractor managers and supervisors at all levels must demonstrate their commitment and support by adopting a risk management approach to all health and safety issues. These individuals must consistently take immediate and firm action to address violations of health and safety rules, and must actively participate in day to day activities with the objective of preventing harm.

The contractor's management representatives are responsible and accountable for health and safety performance on the project. Key responsibilities include the following:

- Preparing, implementing and maintaining a risk-based Health and Safety Management Plan specific to the work that will be carried out;
- Establishing, implementing and maintaining health and safety programmes and procedures to ensure that all work is carried out in compliance with the requirements of this specification, the contract, and all applicable legislation;
- Establishing, implementing and maintaining effective hazard identification and risk management processes and procedures to ensure that all reasonably foreseeable hazards are controlled in order to minimise risk;
- Providing the resources necessary to meet the requirements of this specification;
- Ensuring that all contractor employees have clearly defined responsibilities with regard to health and safety, and that these responsibilities are clearly communicated and understood;
- All costs associated with meeting these responsibilities shall be borne by the contractor.
- Any cost associated with any work stoppage due to non-compliance with a health and safety requirement shall be for the contractor's account.

11.1 Construction Manager(s)

The Contractor must comply with Construction Regulations, clause 8(1).

The Principal Contractor must appoint a competent full time Construction Manager who is registered with the professional body with the duty of managing construction work on a single site, including ensuring health and safety compliance.

Competency/ Training

- Registered with SACPCMP as a Professional Construction Manager
- IRCON
- Legal Liability
- Hazard Identification and Risk Assessment(HIRA)

The Construction Manager shall be responsible for:

- Ensuring that all applicable legal and project health and safety requirements are identified and complied with at all times;
- Participating in (and approving) all Task-Based Risk Assessments conducted for the work to be carried out by the contractor;
- Ensuring that the necessary resources are made available for the effective implementation of the principal contractor's Health and Safety Management Plan;
- Ensuring that all work is adequately and competently supervised;
- Ensuring that all contractor employees have clearly defined responsibilities with regard to health and safety (assigned in writing), and that these responsibilities are clearly communicated and understood;

- Ensuring as far as is reasonably practicable that each contractor and sub-contractor employee is competent to perform his role, and has received appropriate workplace health and safety training and instruction;
- Establishing and maintaining effective communication and consultative processes to ensure that all contractor and sub-contractor employees are kept up to date with regard to health and safety information (e.g. Incidents and lessons learnt, leading practices, hazards, risks and control measures, etc.) And that feedback is provided promptly regarding issues and / or concerns raised;
- Participating in the project's Visible Felt Leadership (VFL) programme;
- Providing the necessary resources for regular health and safety audits and inspections, and ensuring that corrective actions (arising from incident investigations, audits, inspections, etc.) Are implemented, and
- Participating in an annual review of the contractor's Health and Safety Management System.

11.2 Contractor Health and Safety Officer(s)

The Contractor must comply with Construction Regulations, clause 8(5).

The Principal Contractor must appoint a full-time Construction Health and Safety Officer (s) (CHSO) for the duration of the contract who is registered with the SACPCMP.

The CHSO must be on site when work commences at the start of the day and must remain on site until all activities has ended for that day. A CHSO must be present during all shifts, so if work is carried out over more than one shift per day, the contractor must make provision for an additional CHSO.

The CHSO shall be responsible for:

- Reviewing all applicable legal and project health and safety requirements and providing guidance to contractor and sub-contractor personnel (particularly the contractor's Project / Construction Manager) to help ensure compliance at all times;
- Assisting with the implementation of effective hazard identification and risk management processes for all work to be carried out by the contractor;
- Participating in the Baseline Risk Assessment for the contractor's scope of work (prior to site establishment) and ensuring that identified control measures are implemented;
- Participating in all Task-Based Risk Assessments conducted for the work to be carried out by the contractor and ensuring that identified control measures are implemented;
- Conducting contractor health and safety induction training for all contractor and sub-contractor personnel;
- Compiling and maintaining all health and safety related documents and records required of the contractor;
- Communicating relevant health and safety information to contractor and sub-contractor personnel (e.g. incidents and lessons learnt, leading practices, hazards, risks and control measures, etc.);
- Carrying out Safety Observations and Coaching (one per day);
- Evaluating (on a daily basis) the content of the Daily Safe Task Instructions (DSTI's) conducted by the contractor's appointed supervisors, and attending at least one DSTI each day;
- Attending monthly Contractor and Site Health and Safety Meetings;

- Assisting with the implementation of the contractor's Health and Safety Management Plan and associated Safe Work Procedures;
- Carrying out Planned Task Observations on an ad hoc basis;
- Assisting with the implementation, testing and maintenance of an effective Emergency Response Plan for all contractor and sub-contractor activities;
- Responding to workplace incidents (as appropriate);
- Participating in incident investigations;
- Maintaining accurate health and safety statistics (for the contractor and all sub-contractor), and compiling health and safety performance reports as required;
- Auditing the health and safety management system and workplace activities of the contractor and each sub-contractor on a monthly basis to assess compliance with the project health and safety requirements; and
- Tracking and reporting on the implementation of corrective actions (arising from incident investigations, audits, inspections, etc.).
- The Contractor must ensure that CHSO is adequately equipped to enable him to perform his duties effectively. Each CHSO must be provided with the following:
- A computer with access to all necessary systems, including access to e-mail and the internet;
- A mobile telephone on contract or with adequate pre-paid airtime; and
- A vehicle where required or instructed by a nominated project management representative (depending on the size and location of the project site(s)).
- A CHSO must be computer literate, fluent in English, and must have the following minimum qualifications, training and experience:
- At least 5 years' experience as a CHSO on construction projects;
- SAMTRAC, NEBOSH or an equivalent training course with accredited health and safety service provider as a minimum qualification;
- Experience and appropriate training with regard to implementing and maintaining a health and safety management system compliant with national legislation or an international standard;
- Experience and appropriate training with regard to construction related hazard identification and risk management processes;
- Competence, experience and relevant training with regard to incident investigation procedures and causation analysis;
- Health and safety auditing experience and training;
- A valid First Aid certificate of competency;
- Fire prevention and protection training; and
- A valid Driving Licence (light motor vehicle).

Before placing a CHSO on the project site(s), the contractor must forward a copy of the person's CV to the Clients Construction Health and Safety Agent for review and acceptance. A proposed candidate may be

rejected should he not meet competence level required (i.e. the experience and / or qualification requirements), or due to poor work performance on previous projects.

11.3 Construction Supervisor(s)

The Contractor must comply with Construction Regulations, clause 8(7).

The contractor must ensure that all construction works are supervised at all times by an adequate number of qualified, competent and appointed supervisors who have experience in the type of work being carried out.

No work may be carried out without an appointed construction supervisor being physically present in the work area and daily safety task instruction (DSTI) has been conducted and signed.

Each Construction Supervisor shall be responsible for:

- Ensuring that all work carried out under his supervision is done so in accordance with the requirements of all applicable legislation, rules, standards, specifications, plans and procedures;
- Participating in Task-Based Risk Assessments;
- Ensuring that all employees under his supervision are made aware of the hazards, risk scenarios and control measures identified in relevant risk assessments;
- Ensuring that the control measures stipulated in all relevant risk assessments are in place and are implemented fully for all work carried out under his supervision;
- Ensuring that all employees under his supervision conduct pre-task hazard assessments when necessary;
- Driving the achievement of health and safety objectives set for his team;
- Ensuring that the necessary written appointments are in place for each employee under his supervision (e.g. first aider, mobile crane operator, etc.);
- Ensuring that all employees under his supervision attend all required training;
- Ensuring that no employee carries out any work that he is not competent to perform or has not been appointed to perform;
- Identifying training needs within his team;
- Carrying out Safety Observations and Coaching (eight per month);
- Conducting a weekly Toolbox Talk with his team;
- Leading a Daily Safe Task Instruction discussion with his team;
- Attending Health and Safety Meetings as required;
- Maintaining a Health and Safety Management Information Notice Board in the work area for which he is responsible;
- Recording, on a daily basis, a description of the day's activities as well as a breakdown (by occupation) of the personnel on site under his supervision;
- Ensuring that all Safe Work Procedures applicable to the work carried out under his supervision are adhered to and are fully implemented;
- Carrying out Planned Task Observations (four per week);

- Ensuring that emergency response procedures are understood by all employees under his supervision and that these procedures are followed in the event of an emergency;
- Reporting all incidents immediately, participating in incident investigations, communicating the lessons learnt to all employees under his supervision, and implementing corrective actions where required; and
- Carrying out workplace health and safety inspections.

Each construction supervisor must accept these responsibilities in writing as part of his appointment.

Each Construction Supervisor must be equipped with a mobile telephone to ensure that effective communication can be maintained for the duration of the contract.

11.4 Other obligatory legal appointments to ensure compliance if applicable

OHS Act Section/Regulation	Subject	Responsibilities
Section 16(2)	Assigned duties (Managers)	Responsibility of complying with the OHS Act assigned to other person/s by the CEO
Section 19(3)	Health and Safety Committee member/s	Responsibilities as outlined in Section 20 of the OHS Act.
GAR 9(2)	Incident Investigator	Responsibilities of investigating incidents as outlined in GAR 8 &9, and section 24.
GSR 9(1)	Welding, flame cutting operator	To ensure compliance with requirements of GAR 9.
GSR 13A(1)	Ladder Inspector	To ensure compliance with requirements of GSR 13A
Construction Reg 12(1)	Temporary works designer	To design, inspect and approve temporary works prior use.
Construction Reg 12(2)	Temporary works supervisor	To ensure temporary works operations are carried out under supervision.
Construction Reg 23(1)(d)(i)	Construction vehicle and mobile plant operator	Operate vehicles and mobile plant.
Construction Reg 24(1)(c)	Temporary electrical installations controller	Control temporary installations on construction site.
Construction Reg 24(1)(d)	Temporary electrical installations inspector	Inspect temporary electrical installations at least weekly.
Construction Reg 28(a)	Stacking and storage supervisor	Supervise stacking and storage on site.

12. Competence, Training and Awareness

Each employee (including contractor employees) must be suitably trained, competent, and must understand the health and safety hazards, risks and control measures associated with his work as required by the OHS Act 85 of 1993.

The Contractor must implement systems and procedures to ensure that:

- The necessary competencies required by employees are identified (by occupation), along with selection, placement and any training requirements;

Please Note: Specific competency profiles and selection criteria (fitness for work) must be developed for all roles where significant health or safety risk exists.

Please Note: A formal training needs analysis must be carried out based on the competency profiles and a training matrix must be developed for the project.

Roles requiring technical certification, registration or licensing are identified and documented, and these roles are filled only by suitably qualified personnel;

- Minimum core health and safety skills required by employees in leadership and supervisory roles are identified and suitable training is provided including hazard identification and risk assessment, incident investigation, and health and safety interactions (i.e. Observation and coaching techniques);
- Competency-based training is provided and it includes operational controls (procedures and work instructions), management of change, and emergency response;
- All employees hold and maintain the required competencies (including appropriate qualifications, certificates and licences) and are under competent supervision;
- A site-specific induction and orientation programme that highlights health and safety requirements, procedures, and significant hazards, risks and associated control measures is in place for all new employees and visitors (understanding must be assessed);
- Personnel are trained and / or briefed on new or amended standards, rules, safe work procedures, risk assessments, etc.;
- Refresher training is carried out as required (e.g. Re-induction following an absence from site);
- Records of education, qualifications, training, experience and competency assessments are maintained on site for all employees; and
- The effectiveness of training is reviewed and evaluated.

Prior to the commencement of any work, including mobilisation and site set-up activities, the Contractor must provide, to the satisfaction of the client representative, current documentation verifying that the Principal contractor's employees, as well as the employees of any appointed sub-Principal contractors, are competent and have the necessary qualifications, certificates, licences, job skills, training and experience (as required by this specification and applicable legislation) to safely carry out the work that is to be performed.

The Contractor and contractor must ensure that the following training takes place:

- how to access and egress the suspended platform safely;
- how to correctly operate the controls and safety devices of the equipment;
- information on the dangers related to the misuse of safety devices; and

- information on the procedures to be followed in the case of-
  - an emergency;
  - the malfunctioning of equipment; and
  - the discovery of a suspected defect in the equipment;
  - an instructions on the proper use of body harnesses.
- Training for all operators of construction vehicles and mobile plant.

A Contractor must at all times keep on his or her construction site records of the health and safety induction training and such records must be made available on request to an inspector, the client, the client's agent or the contractor;.

Please Note: Only certified copies of certificates, licences, etc. will be accepted.

12.1 Health and Safety Induction Training

Each employee must attend all mandatory Health and Safety Induction Training applicable to the project. No employee will be permitted to enter any project work site until he has attended this training. Each employee must carry proof that he has completed the induction training and may be removed from a site if such proof cannot be produced on request, this as required by the Construction Regulations 7(5).

Furthermore, employees must attend (where applicable) Area-Specific Health and Safety Induction Training pertaining to the particular hazards identified in the area(s) where the employees will be working. No employee will be permitted to enter a work area until he has attended the relevant area-specific training.

All visitors must receive a visitor induction briefing before entering any project work site. However, this induction does not permit a visitor to enter a site unescorted. Visitors must be accompanied at all times by an appropriately senior employee who has been fully inducted.

12.2 Specific Training and Competency Requirements

The following specific training and competency requirements must be complied with.

Please Note: An employee must be trained, assessed and found competent before he will be given authorisation to perform certain tasks or fill certain roles.

Table 13-1: Specific Training and Competency Requirements

Training	Applicable To
Health and Safety Induction	All employees, Managers and visitors
Safety Observations and Coaching (Safety Interactions)	All employees
Risk Assessment	All managers, supervisors and Safety personnel
Incident Investigation	All managers and supervisors
Safety Leadership	All managers and supervisors
Legal Liability*	All managers and supervisors
Health and Safety Rep*	All elected Health and Safety Representatives
First Aid Levels 2 and 3*	All nominated First Aiders
Fire Fighting (Fire Extinguisher Use)*	All employees

Training	Applicable To
Flag personnel	All appointed flag personnel
Permit to Work	All Authorised Persons (i.e. Permit issuers) and all Applicants (i.e. Employees who will be applying for permits)
Isolation and Lockout	All Authorised Persons (i.e. Persons who authorise work that requires Isolation and Lockout), all Isolation Officers, and all Applicants (i.e. Persons who request permission to work on systems or equipment requiring Isolation and Lockout)
Mobile Equipment Site Licence	All mobile equipment operators

Training requirements marked with an * must be arranged through accredited external training institutions by the Principal contractor. All other trainings will be provided by Transnet National Port Authorities.

13. Communication, Participation and Consultation

The Contractor must develop and maintain effective communication and consultative processes (allowing for a two-way dialogue) for the duration of the project to ensure that:

- All personnel are kept up to date with regard to health and safety matters (e.g. Hazards and risks, incidents and lessons learnt, leading practices, performance against objectives, etc.);
- General health and safety awareness levels are kept high;
- Prompt feedback is given to personnel with regard to health and safety issues orconcerns that they raise; and
- Relevant, and often critical, health and safety related information (e.g. Design changes, instructions, reporting of hazardous conditions or situations, etc.) Is effectively disseminated.

This must be achieved as follows:

13.1 Toolbox Talks

The Principal Contractor must prepare a Toolbox Talk on a weekly basis and must share it with all personnel for which the Contractor is responsible (including all contractors). Toolbox Talks must address health and safety issues that are relevant to the work performed on the project site(s) and must include information and / or knowledge sharing, lessons learnt from incidents that have occurred, information concerning specific hazards and / or risks and control measures to prevent injury, etc.

Attendance records must be kept and maintained in the Principal Contractor's health and safety file.

13.2 Daily Safe Task Instructions (DSTI's)

A Daily Safe Task Instruction (DSTI) is a pre-start discussion amongst the members of a work team, led by the appointed supervisor, aimed at anticipating hazards and potential risks associated with the activities planned for the day or shift, and ensuring that the necessary control measures are in place to prevent incidents.

At the start of each day or shift, prior to the start of any work, each appointed supervisor must inspect the work area for which he is responsible and ensure that it is safe. He must then conduct a DSTI with his work team specifically concerning the tasks that they will be performing during the course of the day or shift. The relevant Task-Based Risk Assessment for the activity must be used as the basis for the discussion. The correct work method must be reiterated and the identified hazards, risks and control measures must be discussed with the team (each team member must be given the opportunity to contribute and participate in the discussion).

Any team member arriving late must first be taken through the information that was discussed (work method, hazards, risks and control measures) before being permitted to start working. If the work method changes after activities have already begun, the DSTI must be revisited and updated with the team, and the changes must be signed off by the relevant Contractor Health and Safety Officer.

Every member of the work team must sign the DSTI attendance register. The attendance records must be kept and maintained in the Principal contractor's health and safety file.

The Principal Contractor's Construction Health and Safety officer must evaluate the content of the DSTI's daily to ensure that they are task-specific. Furthermore, the Construction Health and Safety officer must attend at least one DSTI per day prior to the start of work. The Construction Health and Safety officer may not lead the DSTI discussions, as this is the responsibility of the appointed supervisor.

13.3 Health and Safety Meetings

The contractor must schedule and consistently hold monthly health and safety meetings. These meetings must be chaired by the Contractor's Construction / Project Manager and all project team must be in attendance.

The contractor must compile minutes of each meeting and attendance records must be kept. These records must be maintained in the contractor's health and safety file.

Note: Where there are other Contractors working in the same construction site, an interface meeting must be held every morning by all contractor's Construction Managers, CHSOs, Construction Supervisors and Health and Safety Representatives.

14. Documentation and Document Control

The Principal Contractor must develop and maintain project-specific documentation required for the effective management of health and safety on the project.
All documents related to the Principal contractor's health and safety management system must be effectively controlled.
The Principal Contractor must establish a process for the systematic control of health and safety records and related data. Controls must be in place for the creation, receipt, secure storage, maintenance, accessing, use and disposal of such records and data.
The confidentiality and security of records and data must be maintained in a manner that is appropriate for the nature of the records and data, and in accordance with any applicable data or privacy protection legislation.

14.1 Contractor Health and Safety File Requirements

The Principal Contractor must compile and maintain a file containing all necessary health and safety related documentation. The client should provide construction work permit to be displayed and kept on site at all times. The contents of the file will be audited by Client's Health and Safety Agent / Representative on a monthly basis. Required documentation includes, but is not limited to, the following:

- Letter of Good Standing from the Workman's Compensation Commissioner (where applicable) must have DoL stamp;
- Proof of Public Liability Insurance;
- Scope of Work under the contract;
- List of Contacts and their Telephone Numbers;
- Health and Safety Policy;
- Approved Contractor Health and Safety Management Plan;

- Organisational Chart for the project;
- Appointment Letters (appointment of the contracting company, and appointments for all persons with health and safety related responsibilities);
- Notifications to the relevant authorities that construction work is in progress e.g. CWP;
- Baseline and Task-Based Risk Assessments;
- Health and Safety Objectives, and associated Improvement Action Plans;
- Safe Work Procedures, Work Instructions and Work Method Statements;
- Planned Task Observations;
- A dossier (Equipment Profile) for each fuel-driven vehicle or machine;
- Inspection Registers, Forms and Checklists (e.g. for portable electrical tools, ladders, safety harnesses, light vehicles, mobile equipment, lifting equipment and lifting tackle, first aid boxes, fire extinguishers, etc.);
- PPE Issue Registers;
- Material Safety Data Sheets;
- Emergency Response Procedures;
- Incident Records;
- A dossier (Employee Profile) for each employee containing:

a) A copy of the employee's Identity Document or Passport;

b) Certificate of Fitness (Pre-Employment Medical Examination);

c) Proof of Induction Training;

d) Other Training Records;

e) Copies of Qualification Certificates and / or Certificates of Competency; and

f) Copies of Licences;

The Principal Contractor must ensure that an equivalent file is compiled and maintained by each appointed sub-contractor.

15. Construction Work Permit

The client will apply and issue the contractor with Construction Work Permit (CWP) from the Department of Employment and Labour. The contractor must comply with all the requirements of the Construction Work Permit. The CWP site specific number must be conspicuously displayed at the main entrance To the site for which the number is assigned.

16. Operational Control

For project operations and activities, the Principal Contractor shall implement and maintain:

- Operational controls, as applicable to the organization and its activities;

- The organization shall integrate those operational controls into its overall OH&S Management System;
- Controls related to purchased goods, equipment and services;
- Controls related to Principal contractors and other visitors to the workplace;
- Documented procedures, to cover situations where their absence could lead to deviations from the OH&S policy and the objectives;
- Stipulated operating criteria where their absence could lead to deviations from the OH&S policy and objectives.

16.1 Safe Work Procedures

The Principal Contractor must develop, document and implement Safe Work Procedures for all activities involving significant health or safety risk. These procedures must detail the control measures required to effectively manage the health and safety risks associated with the work activities.

Each Safe Work Procedure must be consistent with the Task-Based Risk Assessment completed for the activity.

Every person engaged in an activity for which a Safe Work Procedure has been developed must receive suitable training on the procedure.

16.2 Management Participation and involvement CR 8

16.2.1 Visible Felt Leadership (VFL) and Safety Observations and Coaching (SOC's)

The Principal Contractor's supervisory personnel (i.e. Managers and supervisors) must participate in the project's Visible Felt Leadership (VFL) programme. Each manager and each supervisor must, as part of his normal duties, perform Safety Observations and Coaching (SOC's). The intention of this programme is to encourage interaction between supervisors and workers concerning health and safety matters in order to:

- Reinforce behaviours consistent with standards, procedures and management system requirements;
- Correct behaviours inconsistent with standards, procedures and management system requirements; and
- Verify whether employees have the necessary training, certification, equipment, etc.

16.2.2 Planned Task Observations

All Principal Contractor, management supervisors must perform Planned Task Observations (PTO's) to verify that the control measures that have been identified in Safe Work Procedures (and associated Risk Assessments) are being adhered to and are being properly implemented, and to provide guidance where deviations are noted.

Each supervisor must complete at least one PTO per week involving one or more employees in his work team.

16.3 General Rules of Conduct

All persons are required to conform to the following rules of conduct while on the site.

The following acts are prohibited:

- Engaging in practical jokes, horseplay, scuffling, wrestling, fighting, or gambling;
- Assault, intimidation, or abuse of any person;
- Insubordination towards any supervisor or manager;
- Refusing to carry out a reasonable and lawful instruction concerning health and safety;
- Entry into any restricted area (including barricaded areas), unless authorised to do so by the responsible person;

- Unauthorised use / operation of any equipment or machinery;
- Negligently, carelessly or wilfully causing damage to any property;
- Destroying or tampering with safety devices, signs, or signals;
- The use of water from fire hydrants or hose reels for any purpose other than extinguishing a fire;
- The wilful and unnecessary discharging of fire extinguishers;
- Refusing to give evidence or deliberately making false statements during incident investigations;
- Bringing alcohol, drugs, or any other intoxicating substance onto site;
- Bringing a firearm, ammunition, or any other offensive weapon onto site;
- Bringing animals onto site;
- Running, except in an emergency;
- The use of an ipod (or similar) whilst working on site;
- Sleeping on the job;
- Building fires on site, unless in a suitably constructed barbequing facility; and
- Pouring / pumping / flushing any substance (chemical / hydrocarbon / waste water) into a storm water drain, onto bare soil, or into any area where the substance is not effectively contained.

Any of the above actions may result in the temporary or permanent removal of the offending person(s) from site, as well as possible prosecution. The decision of the client representative shall be final and binding in respect of any dispute that may arise from the interpretation of these requirements.

16.3.1 Alcohol, Drugs and Other Intoxicating Substances

The Principal Contractor must ensure that all personnel under his authority do not at any time enter the site or perform any work whilst under the influence of alcohol, a drug, or any other intoxicating substance.

A drugs and alcohol testing program will be implemented. Persons entering the site will be tested. Any person who tests positive for alcohol or drug consumption will be subject to disciplinary action and shall be permanently removed from the site.

Any person have the opportunity to rather report that he/she is under the influence before accessing the project site – in these case the employee may only be send home for the day by the responsible project manager representative but will then be tested for the following five days (each day) on his return to the project site. If it is found that the same person is frequently reporting that he/she is under the influence before even accessing the project site. It shall be the responsibility of the client representative to take disciplinary action and remove such a person's form the project site.

Note: All personnel involved in an incident / accident must immediately be subjected to an alcohol test and a drug test as part of the investigation.

16.4 Site Establishment and Rehabilitation

The Principal Contractor shall ensure that all Risk Assessment including method statements should be submitted to the TNPA Health and Safety Representation before work can commence and aligned themselves with Environmental requirements.

16.5 Signs and Notices

The Principal Contractor must ensure that all required safety signs and notices are prominently displayed in accordance with the applicable legislation and good safety practice.
Signs and notices must be in English as well as any other language(s) commonly spoken on the project site.
All symbolic signs must comply with the applicable national standards.
No person may deface or damage any safety sign or notice. No person may remove or alter any safety sign or notice unless authorised to do so.

16.6 Machinery

The Contractor must ensure that all plant and equipment brought onto the site is:

- Appropriate for the type of work to be performed
- Approved, inspected, tested, numbered and tagged (if appropriate) before being brought onto site
- Properly maintained in accordance with the manufacturer's recommendations; and
- Placed on a register and checked at least once per month or as required by the applicable legislation.

The Principal Contractor must supply, at his cost, all items of plant and equipment necessary to perform the work and must maintain all items in good working order.
Should any plant or equipment become inoperable for a period that is having or will have a significant impact on the work schedule, the Contractor must, on instruction from the client representative, remove the out of service plant or equipment and replace it with similar fully operational plant or equipment at no additional cost.

No item of plant or equipment delivered to site for use on the contract may be removed from the site prior to the completion of the contract without approval in writing from the client representative.

16.7 Cranes and Lifting Equipment

Should there be a need for the utilisation of the lifting equipment, the contractor must comply with Construction Regulations 22 and all other legislations that are applicable to cranes and lifting equipment.

16.8 Permit to Work

All personnel must comply with the Permit to Work system applicable to the project.
A Permit to Work must be obtained before carrying out any work that involves:

- A hazardous energy source or system, including electricity, compressed fluids (e.g. hydraulics and pneumatics), chemical substances (e.g. toxic, corrosive, flammable or explosive gases and liquids), heat (e.g. steam), radiation, and machinery or materials with potential energy (gravitational and elastic) – isolation and lockout may be required;
- Confined space entry;
- Working at height;
- Hot work outside of designated workshops;
- Excavation; or
- A service (e.g. water supply, fire suppression systems, etc.).

16.9 Isolation and Lockout

Isolation and lockout procedures that make it impossible to inadvertently energise any system, plant or equipment so isolated, must be in place for all work where hazardous energy sources exist, including electricity, compressed fluids (e.g. hydraulics and pneumatics), chemical substances (e.g. toxic, corrosive, flammable or explosive gases and liquids), heat (e.g. steam), radiation, and machinery or materials with potential energy (gravitational and elastic). These procedures must be strictly enforced.
All personnel must comply with the isolation and lockout system and procedures applicable to the project.
All Isolation and Lockout Procedures must incorporate the following basic requirements:

- The issuing of a formal Permit to Work for any work that requires the isolation of any system, plant or equipment;
- The use of defined Equipment, Discipline and Personal Locks and multiple lockout systems (i.e. Isolation Bars and lockout hasps);
- Clear identification of all isolation and lockout points ensuring there is no duplication;
- Isolation of the main energy source;
- The use of slip plates or the blanking off of pipelines or ducting, in addition to the chaining and locking of valves, as determined by a risk assessment;
- Suitable methods of preventing the movement of equipment; and
- Methods to test the effectiveness or completeness of the isolation.

Note: In the case of electrical isolation, a test for voltage must be carried out, after the switching device, to ensure the absence of voltage.

- The Isolation Officer must place the key to the Equipment Locks on an Isolation Bar (at a Lockout Station) and must then attach a Discipline Lock (to prevent the key from being removed) before issuing a Clearance Certificate;
- The Discipline Lock must remain in place when handing over to subsequent shifts. All Discipline Locks for a particular discipline (e.g. low voltage electricity) must be keyed-alike so that any Isolation Officer appointed for that discipline (and issued with a key) can open any of the Discipline Locks used for that discipline.
  This enables an Isolation Officer to de-isolate equipment that may have been isolated by another Isolation Officer during an earlier shift. Appointed Isolation Officers for a particular discipline are the only persons permitted to hold keys to the Discipline Locks used for that discipline.

16.10 Electrical Safety

All electrical work must be carried out by competent personnel in accordance with all legal requirements, codes, design criteria and safety standards applicable to the project.
Each Contractor carrying out electrical work on the project site(s) must develop, document and implement Safe Work Procedures that are aligned with the requirements of this standard.
All persons who will be carrying out electrical work must be certified against the requirements of job and equipment-specific electrical competency standards for the project, which must address job and equipment-specific Safe Work Procedures.

Each person potentially exposed to electrical hazards must receive electrical hazard training at the commencement of his employment on site and thereafter on an annual basis. The training must address the equipment and conditions specific to the area where the individual will be working. The training material must be documented and training records must be kept.

16.10.1 High Voltage Power Lines

Before any mobile equipment (such as a crane, bulldozer, back-actor, boom truck or drill rig) is mobilised to a work site, an assessment must be carried out (including a thorough inspection of the work site and the access route) in order to clearly identify any overhead or underground power lines.

A system must be in place to mitigate the risks associated with working in close proximity to power lines and suitable measures must be taken to prevent personnel or equipment from coming into contact with power lines. Extreme caution must be exercised.
Where possible, exclusion zones (based on minimum clearance distances specified by the electrical power utility or the client representative) must be created with rigid barriers and warning signs.

Only in exceptional circumstances, and then only after a detailed method statement and risk assessment has been approved, all necessary mitigation or control measures are in place (including the use of a spotter), and a Permit to Work has been issued by the client representative, may equipment be operated within one boom length of energised overhead power lines. Suitable protective insulating barriers may need to be used.

If possible, the power lines must be de-energised and isolated while the work is carried out.
All equipment operators and rigging personnel must be trained in the hazards and the applicable safe approach distances (exclusions zones) associated with overhead power lines.

A procedure must be in place for the evacuation of mobile equipment or a vehicle in the event of accidental contact with power lines. All operators must be trained in this procedure and must follow it implicitly.

Note: Works on, over, under or adjacent to Railway Lines and near High Voltage Equipment must comply with Transnet E7/1 Specification.

16.10.2 Welding

The contractor shall comply with General Safety Regulations 9.

16.10.3 Compressed Gas Cylinders

The contractor must establish a suitable storage area for oxygen, acetylene, LPG and argon cylinders in compliance with the following requirements:

- Compressed gas cylinders must always stand upright (i.e. when being used, stored or transported) and must be properly and individually secured to prevent them from falling over.
- Cylinders must be protected from flame, heat and from being struck by moving equipment and falling objects.
- When handling gas cylinders (whether full or empty), care must be taken to prevent sudden impacts.
- Whenever a cylinder is not in use, the protective cap must be in place to prevent the valve from being damaged.
- Gas cylinders may not be carried, dragged, rolled or slid across a floor or surface.
- When gas cylinders are to be moved / used, they must be placed in a proper cylinder trolley fitted with a 1.5kg dry chemical powder fire extinguisher.
- Gas cylinders may not, under any circumstances, be used as rollers or work supports.
- If transported by crane, hoist or derrick, compressed gas cylinders must be placed in a suitable cradle, net or skip box. Cylinders may NEVER be lifted using wire rope, fibre rope, a web sling or a chain sling. Before moving / transporting a gas cylinder, the regulator must be removed and the protective valve cap must be replaced. Gas cylinders may not be taken into a confined space. Gas hoses that are run into a confined space must be removed during breaks.

- Cylinder valve keys must be in place. If no suitable valve key is available then the cylinder may not be used. Nothing but the manufacturer-supplied key may be used to open the valve.
- A flashback arrestor and a check valve (non-return valve) must be installed between the regulator and the hose and between the hose and the torch on the oxygen line and on the fuel (acetylene) line.
- Connection fittings may not be forced and safety devices associated with cylinder valves or regulators may not be altered / tampered with.
- Gas hoses may not be joined. Only approved hose connectors of the crimp type are permitted. Wire and jubilee clamps are prohibited.
- Only high quality ancillary equipment may be used. This includes flashback arrestors, hoses, clamps, spindle keys, nozzles and torches.
- Only trained and competent personnel may operate gas welding / cutting equipment and appliances.
- When an employee opens the valve to a cylinder, he must stand to one side and open it slowly. Valves may never be left partly open – they must either be closed or be opened fully.
- Leaking cylinders must immediately be removed from service and the workplace (if it is safe to do so). Suitable firefighting equipment must be at hand wherever gas cylinders containing oxygen and / or fuel gas are being used.
- Gas cylinders must be prevented from coming into contact with electrical circuits, e.g. welding leads. Never strike an arc on a cylinder.
- Oxygen may only be used for the purpose for which it is provided. Do not use oxygen in pneumatic tools or tyres, as an explosion may occur.
- Empty cylinders must immediately be marked as such and must be removed to the cylinder storage area at the end of each day / shift.

16.10.4 Portable Electrical Equipment

The contractor shall comply with Electrical Machinery Regulation 10.

16.11 Electrically Powered Tools and Equipment

All powered hand tools, such as circular saws, drills, chainsaws, percussion tools, jigsaws etc., must be equipped with a constant pressure switch that will shut off the power when the pressure is released. (Exception: this requirement does not apply to concrete vibrators, concrete breakers, powered tampers, jack hammers, rock drills, and similar hand operated power tools).

Electrical power tools must be of the approved double-insulated type. The electric cord, pneumatic or hydraulic supply line of powered tools must not be used for hoisting or lowering of the tool.
Loose clothing, jewellery or gloves that could get caught in the tool must not be worn when operating powered tools.
Operators of powered tools who have long hair must keep their hair tied up.
The power source must be disconnected from the tool before making any repairs, servicing, adjustments, or replacing attachments such as drill bits.

16.12 Pneumatically Powered Tools and Equipment

Pneumatic powered tools must only be driven by filtered compressed air with an in-line lubrication system, or be lubricated prior to use if there is no in-line lubrication system. When using pneumatic powered tools the designated tool pressure must be attained by the use of a regulator.

Pneumatic powered tools must be disconnected when not in use. They must not be disconnected from the air supply until all the residual pressure has been released or contained by a shut-off device. Hoses must not be kinked as a means of containment.

Employees operating pneumatic powered tools, and any potentially affected employee in the vicinity of use, must wear suitable personal protective equipment.
All rotary compressed air tools (e.g. drills) must have the rated revolution per minute (RPM) permanently marked on the casing. Only attachments of compatible RPM must be used with these machines.

The actual RPM of the tool must be checked every three months to ensure that the speed is as rated to manufacture specifications.

Pneumatic powered tools must be secured to the air supply hose by an approved positive means to prevent the tool from becoming accidentally disconnected. Safety clips or retainers must be securely installed and maintained on pneumatic impact (percussion) tools to prevent attachments from being accidentally expelled.

All pneumatically driven nailers, staplers, and other similar equipment provided with automatic fastener feed, which operate at more than 100 kPa pressure at the tool, must have a safety device on the muzzle to prevent the tool from ejecting fasteners unless the muzzle is in contact with the work surface.
Compressed air must not be used for cleaning purposes except where reduced to less than 30 kPa, and then only with effective chip guarding and personal protective equipment in place. The 30 kPa requirement does not apply to concrete form, mill scale and similar cleaning purposes. The use of compressed air for cleaning purposes must be approved by the client representative. Compressed air must not be pointed at any part of the body or used for cleaning clothing.

Airless spray guns of the type which atomize paints and fluids at high pressures must be equipped with automatic or visible manual safety devices which will prevent pulling of the trigger to prevent release of the paint or fluid until the safety device is manually released. A diffuser nut which will prevent high pressure, high velocity release while the nozzle tip is removed, plus a nozzle tip guard which will prevent the tip from coming into contact with the operator, or other equivalent protection must be provided in lieu of the above.

Abrasive cleaning nozzles must be equipped with an operating valve, which must be held open manually to enable operation. A support must be provided on which the nozzle may be mounted when it is not in use.

16.13 Fuel Powered Tools and Equipment

Fuel powered tools must be shut down and allowed to cool before being refuelled, serviced, or maintained. Fuel must be transported, handled, and stored in approved fuel containers. Where possible, diesel driven engines must be used in preference to petrol driven engines. All fuel powered tools must be included on the Principal contractor's Equipment Register and the register must be submitted to the client representative prior to the relevant work commencing.

When fuel powered tools are used in enclosed spaces, the space must be ventilated and the atmosphere monitored to measure toxic gas concentrations. Persons in the space must wear the necessary personal protective equipment. Confined Space Entry clearance may apply. This type of activity must only be undertaken in exceptional circumstances and requires the approval of the client representative.

16.14 Hydraulically Powered Tools and Equipment

Hydraulic powered tools must use only approved fluid that retains its operating characteristics at the most extreme temperatures to which it will be exposed. The manufacturer's stated safe operating pressures for hoses, valves, pipes, filters and fittings must not be exceeded.
Only manufacturer approved hoses, valves, pipes, filters and fittings must be used.

16.15 Hand Tools

Employees required to use hand tools must receive training relevant to the tool and have their competency assessed in the operation, inspection and maintenance of the tool. Where necessary, additional applicable personal protective equipment must be worn when using hand tools.

Wrenches, including adjustable, pipe, end, and socket wrenches, must not be used when the jaws are sprung to a point where slippage occurs. Impact tools such as drift pins, wedges and chisels, must be kept free of mushroomed heads. The wooden handles of tools must be kept free of splinters or cracks.

Adjustable wrenches must not be used in lieu of ring or open-end type spanners, unless a risk assessment has been conducted and the use of the adjustable wrench is approved by the client representative. Wherever possible, ring spanners must be used in preference to open end spanners.

Correct hand tools for the job must be used, e.g. screwdrivers must not be used as chisels, and pliers must not be used as hammers.
All wedges and drifts that may spring, fly or fall to lower levels upon impact must be fitted with an attachment which attaches a safety "lanyard" to a solid structure to restrain the impact tool from becoming a projectile.

Purpose built tools and equipment may not be used unless a risk assessment has been conducted and authorised by the client representative.

16.16 Angle Grinders

The following personal protective equipment must be worn when using angle grinders:

- Safety helmet;
- Gloves;
- Safety glasses (or safety goggles) and a full face shield (i.e. double eye protection);
- Overalls with long sleeves and long pants, avoid any form of loose clothing;
- Safety boots with steel toe protection;
- Hearing protection;
- Breathing apparatus where dust or fumes may be generated;
- Where grinding machines are used, a face shield is to be worn as extra protection to the safety glasses; and
- Certain tasks may require the use of a leather apron as determined by a risk assessment.

16.17 Inspection of Equipment and Tools

All tools must be inspected by the user before, during and after use. If any faults are identified, the tool must be taken out of service and not used until repaired. Faulty tools that are not able to be repaired must be tagged "out of service" and removed from site.

16.18 Manual Handling and Vibration

Any handling or lifting task that can only be done manually must be planned and rehearsed before the task is done. If more than one person is involved in a task a communication procedure must be agreed in advance. Lowering the load must be done in a controlled manner. Dropping a load is dangerous and must be avoided.

As a guideline 25 kg is considered to be the limit of what a person can safely handle. Where there are loads exceeding 25 kg the risk of handling the load must be mitigated to assure minimal potential for any injury.
When mechanical lifting aids are provided, they should be used.
Extra care should be taken when lifting awkwardly shaped objects.

Position the feet correctly. The feet should be placed hip-width apart to provide a large base. One foot should be put forward and to the side of the object, which gives better balance.
Bend or 'unlock' the knees and crouch to the load. The weight will then be safely taken down the spine and the strong leg muscles will do the work.

Get a firm grip. The roots of the fingers and the palm of the hand should grip the load. This keeps the load under control and permits it to be distributed more evenly.

16.19 Personal Protective Equipment

The contractor shall comply with General Safety Regulation 2.

16.20 Sun Protection

The Contractor must ensure that all personnel are protected in sunlight through the use of long sleeve shirts, long trousers, brims to safety helmets and UV factored sunscreen. Shade structures must also be made available to all employees.

The Contractor must conduct training and awareness sessions with his employees, advising on the risks associated with working in the heat (including dehydration) and the precautions to be taken (e.g. ensuring adequate fluid intake).

16.21 Fuel / Flammable Liquid Storage and Refuelling

The Contractor must comply to the General Safety regulations 4.

16.22 Fire Protection and Prevention

The Contractor must compile a Fire Protection and Prevention Plan for the work that will be carried out on site.

The Contractor must comply with Construction Regulations 29 and in addition must comply with environmental regulation for workplaces 1987 .
Over and above the following should be complied to:

All fire extinguishers (and any other firefighting equipment) placed on site must be:

- Conspicuously numbered;
- Recorded in a register;
- Visually inspected by a competent person on a monthly basis (the results of each inspection must be recorded in the register and the competent person must sign off on the entries made); and Inspected and serviced by an accredited service provider every year.

Any fire extinguisher that has a broken seal, has depressurised, or shows any sign of damage must be sent to an accredited service provider for repair and / or recharging. Details must be recorded in the register.
The Contractor must compile an emergency response procedure detailing the actions that must be taken in the event of a fire or a fire / evacuation alarm.
Each vehicle used on site for work purposes and each item of mobile equipment with a diesel or petrol engine must be fitted with a permanently mounted fire extinguisher.

Whenever any work is carried out involving the use of a flammable substance / material, the area must be cordoned off and appropriate warning signage (i.e. "No Unauthorised Entry", "No Smoking" and "No Naked Flames") must be displayed.

16.23 Smoking

The Contractor must not permit smoking on site except within designated smoking areas selected in accordance with the applicable legislation. Such an area must be clearly demarcated and the required signage must be displayed.
In all designated smoking areas, adequate non-combustible commercial ashtrays and / or cigarette butt receptacles (butt cans) must be provided.
Ashtrays and other receptacles provided for the disposal of smoking materials must not be emptied into rubbish bins or any other container holding combustible materials.
"No Smoking" signs must be strictly observed.

16.23.1 Island View

Island View is a Major Hazardous (MHI) Installation site, smoking only allowed at designated smoking areas.

16.24 Housekeeping

The Contractor must comply to Construction Regulations 27 and in addition must comply with Environmental Regulation for Workplaces 1987.
The Contractor must carry out housekeeping inspections on a weekly basis to ensure maintenance of satisfactory standards. The Contractor must document the results of each inspection. These records must be maintained and must be made available to the client representative on request.
Where the Contractor fails to maintain housekeeping standards, the client representative may instruct the Contractor to appoint a dedicated housekeeping team for the duration of the project at the Principal contractor's expense.

16.25 Stacking and Storage

The Contractor must comply to Construction Regulations 28 and in addition must comply with the provisions for the Stacking of Articles in the General Safety Regulations, 2003.
No equipment, tools, files or documents may be stored or stacked on top of cupboards which are higher than 1.5 metres in height.

16.26 Working at Heights

All applicable legislation concerning work performed from an elevated position must be complied with at all times.
Fall prevention or fall protection measures must be in place whenever the potential exists for a person to fall 2 metres or more.

16.26.1 Fall Prevention

16.26.1.1 Work Platforms

Wherever practical, a safe working area must be provided in the form of a work platform with fixed edge protection. This may include:
A permanent work platform or walkway (i.e. a fixed steel structure);
A fixed or mobile scaffold or
An Elevating Work Platform (EWP) such as a scissor lift, man lift, boom lift or cherry picker.
All work platforms and walkways elevated one metre or more must have complete floors, and edge protection must be in place in the form of toe boards and sturdy guard rails properly secured (i.e. bolted, welded, clamped, etc.) to prevent accidental displacement. Safe means of access and egress must be provided.
Guard rails must be capable of withstanding a force of at least 100 kilograms applied in any direction at any point.

The top rail must be positioned at a height of one metre above the working surface, and a mid-rail must be provided.

16.26.1.2 Floor Openings, Holes and Edges

Any opening or hole (temporary or permanent) in a floor, platform or walkway must be protected by sturdy guard rails (removable if required) or a cover to prevent a person from stepping into or falling through the gap. Covers must be strong enough to support the loads that will be imposed on them and must be secured to prevent accidental displacement.
Ladder way floor openings and platforms must be protected by guard rails of standard construction and toe boards must be fitted along all edges, except at the entrance to an opening where a gate must be installed and so arranged that a person cannot walk directly into the opening.
When open, hatchways and floor openings must be protected by removable guard rails and toe boards of standard construction. When these openings are not in use, covers of adequate strength must be put in place and must be secured to prevent accidental displacement.
Where doors or gates open directly onto a stairway, a platform must be provided and the swing of the door or gate must not reduce the effective width of the platform to less than 500mm.

16.26.2 Fall Protection

Whenever there is a risk of falling 2 metres or more, whenever there is a risk of falling onto dangerous equipment or machinery even if the potential fall distance is less than 2 metres, or whenever work must be carried out within 2 metres of an opening through which (or an edge over which) a person could fall, no work may commence unless:
A Fall Protection (and Rescue) Plan is in place (prepared by a competent person, approved by the project management representative, and implemented by the contractor);
A detailed task-specific Risk Assessment has been carried out;
A Safe Work Procedure is in place for the task to be performed;
A Permit to Work has been obtained; and
Each person has been provided with suitable fall protection equipment.
Fall protection equipment (either fall restraint or fall arrest equipment) must be used at all times whilst the work is being carried out.
To prevent persons from falling, fall restraint equipment must be used whenever work must be carried out within 2 metres of an opening through which (or an edge over which) a person could fall.
Fall arrest equipment must be used whenever the potential exists for a person to fall 2 metres or more.
A person has been provided with suitable fall protection equipment if he is secured by means of an approved full body harness (well fitted) with two shock absorbing lanyards or an inertia reel (when fall arrest equipment is required) or two short restraining lanyards (when fall restraint equipment is required), double or triple action snap hooks (or karabiner type rings), and secure anchorage points (a person's lanyard may be attached either directly to an anchorage point or indirectly through the use of a variety of systems that incorporate a lifeline).
A dual lanyard system must be used to ensure that at least one connection point is maintained at all times.
Note: When selecting fall arrest equipment, care must be taken to ensure that the potential fall distance is greater than the height of the person plus the length of the lanyard with its shock absorber deployed (taking the height of attachment into account).
Anchorage points must, where practical, be above the head of the person, and must ensure that in the event of a fall the person will neither swing nor touch the ground.
All permanent anchorage points must be designed and approved by a professional structural engineer.
All anchorage points must be periodically inspected and tested by a competent person to ensure that they are secure and can support the required load. A system must be in place to identify anchorage points as authorised for use.

Temporary anchorage points (and lifeline systems) may only be used if a competent person has certified them safe to use.
If an elevating work platform is used, such equipment must be fitted with a fixed anchorage point for the attachment of fall protection equipment.
The use of fall protection (fall restraint or fall arrest) systems must be avoided wherever and whenever possible through design, the installation of physical barriers that protect persons from falling, and employing alternative methods of working.
Only if physical barriers protecting against free falls cannot be installed must fall protection equipment be used.
Fall protection (fall restraint or fall arrest) systems are items of personal protective equipment and, if required, must be purchased, installed and provided to employees.
Prior to commencing with any work at height, an assessment must be conducted to determine if the work requires the use of fall protection equipment, and if so, which fall protection system is the most appropriate for the work.
There must be a system for ensuring that fall protection equipment is:
Tested and certified for use;
Inspected by the user before use; and
Destroyed following a fall or where inspection has shown evidence of excessive wear or mechanical malfunction.
All persons that are required to work at height (in order to carry out routine or non-routine tasks) must first be trained and certified competent to do so. Furthermore, each person must be in possession of a valid medical certificate of fitness specifically indicating that the person is fit to work at height.
All persons required to use personal fall protection equipment must be trained and certified competent in the correct selection, use, maintenance and inspection of such equipment.
All fall protection equipment must be thoroughly inspected on a monthly basis by competent persons appointed in writing and each item of equipment must be tagged to show when it was last inspected. All inspections must be recorded in a register. On finding defective or damaged equipment, appropriate action must be taken by the competent person (i.e. the destruction of the equipment to prevent further use).
Persons making use of personal fall protection equipment must do so in strict accordance with the instructions or requirements specified by the manufacturer or supplier of the equipment or system.
Specific pre-use inspection, maintenance and fitting protocols must be established in accordance with the manufacturer's requirements or guidelines and these protocols must be followed by all users of the fall protection equipment.
Solvents may not be used to clean fall protection equipment. Only manufacturer-approved cleaning solutions may be used.
No person required to use personal fall protection equipment may work in isolation (a minimum of two persons working together is required).
Competent supervision must be in place at all times for all work carried out at height. Supervisors must be appointed in writing.
Emergency response (rescue) procedures for the rapid retrieval of suspended persons in the event of a fall from height must be prepared and tested.
Note: Even though there is no risk of free fall, fall protection equipment may be required in situations where there is a risk of falling, slipping or sliding down a slope of more than 45 degrees.
Note: The maximum service life of fall protection equipment manufactured of synthetic fibre shall be 5 years from the date of first use and / or manufacture unless otherwise specified by the manufacturer.
A person may climb or descend a ladder without fall protection provided that he is able to use both hands and legs to do so, faces the ladder, and uses one step at a time. The ladder must be tied off or supported at its base (refer to Section 13.13.8).
Prior to any roof work being performed, or prior to persons accessing a roof, a structural engineer must verify that the roof is of sound construction and that it is capable of supporting the weight of the persons as well as any equipment that may be required. Should the engineer's findings be to the contrary, alternative methods of performing

the work must be found. Particular care must be taken when work is carried out on an asbestos cement roof or a fibreglass roof.

16.26.3 Man Baskets, Suspended Scaffolds and Boatswain's Chairs

The use of a man basket, suspended scaffold or a boatswain's chair may only be considered when all other avenues to safely perform the work (e.g. ladder, scaffolding, mobile elevating work platform, etc.) have been exhausted. Authorisation to use a man basket, suspended scaffold or a boatswain's chair must be obtained from the nominated project management representative. If permission is granted, the use of such equipment must be in strict compliance with all applicable legislation.
A person working from a man basket or a suspended scaffold must remain within the basket and must keep his feet on the floor at all times.
Each person working from a man basket, suspended scaffold or a boatswain's chair must be in possession of a valid medical certificate of fitness and must be trained (and assessed competent) in the Safe Work Procedures pertaining to the use of the equipment, as well as the Fall Protection Plan.
Each person working from within a man basket or suspended scaffold or from a boatswain's chair must wear personal fall protection equipment at all times (i.e. an approved full body harness connected by means of a shock absorbing lanyard to an anchorage point or lifeline that does not form part of the basket or chair).
If suspended using a crane, the man basket, suspended scaffold or boatswain's chair must be visible to the crane operator at all times. A suitable means of communication must be in place to ensure that the suspended person(s) are able to communicate with the crane operator and personnel on the ground.
The crane operator must remain at the controls at all times while the man basket, suspended scaffold or boatswain's chair is occupied.
Where feasible (and if it is safe to do so), tag lines must be used to stabilise the man basket, suspended scaffold or boatswain's chair.
A man basket or suspended scaffold (including the suspension system) must be designed by a qualified engineer.
Only an approved and certified man basket or suspended scaffold may be used. Regulations may require approval by an authority or certification to a national or international standard. The manufacturer's procedures and conditions for use must be strictly complied with at all times.
Each man basket or suspended scaffold must be fitted with an information plate indicating the maximum weight and number of persons that may be lifted. Copies of the welding x-rays and engineering drawings must be kept on site.
Any work involving the use of a man basket, suspended scaffold or boatswain's chair must be carried out under the supervision of a competent person who has been appointed in writing.
A man basket, suspended scaffold or boatswain's chair must be thoroughly inspected (examined for damage) by a competent person prior to use (every time the equipment is used) and the results of each inspection must be recorded in a register. The crane or hoist as well as all lifting equipment (tackle) that is used to suspend the man basket, suspended scaffold or boatswain's chair must be tested and inspected.
All suspended scaffold erectors, operators and inspectors must be appointed in writing and proof of competency must be provided.
Persons carrying out welding or flame cutting work from within a man basket or suspended scaffold or from a boatswain's chair must take precautions to ensure that they do not accidentally cut or burn through the cables or wire ropes that are suspending them.

16.26.4 Scaffolding

16.26.4.1 Training, Competency and Supervision

Scaffolding may only be erected, maintained, altered or dismantled under the strict personal supervision of a competent Scaffolding Supervisor (or Scaffolding Inspector) who has been appointed in writing.

Scaffolding may only be erected, maintained, altered or dismantled by competent and appointed Scaffolding Erectors (or Scaffolding Builders). It is the Scaffolding Supervisor's responsibility to ensure that all persons carrying out such work are suitably trained and experienced.
A certificate of competency issued by a reputable (i.e. accredited and approved) training provider must be produced for each Scaffolding Supervisor and each Scaffolding Erector.

16.26.4.2 Erection and Dismantling of Scaffolding

Only approved scaffolding components may be used to erect a scaffold. Scaffolding must be erected, modified and used in accordance with the manufacturer's guidelines or recommendations, and in strict compliance with all applicable legislation and standards.
A free-standing scaffold must not exceed a height of three times the smallest dimension of its base.
Scaffolds with a height to base width ratio of more than 3:1 must be restrained from tipping over by guying, tying, or bracing. Guy wires and ties prevent scaffolding from tipping away from the building or structure, and braces are rigid supports that prevent the scaffolding from tipping into the building or structure.
Scaffolding must be secured to the structure every 6 metres vertically and every 9 metres horizontally (as a minimum). Adequate underpinning, sills or footplates must be provided for scaffolds erected on filled or otherwise soft ground (including sand or gravel).
If the scaffolding is to be load bearing (i.e. other than normal access and workplace storage) then full calculations and a design must be prepared and authorised in writing by a structural engineer. The load limits specified by the scaffolding manufacturer may not be exceeded under any circumstances.
Scaffolds must be plumb and level at all times.
All scaffolding components must be in good condition (i.e. undamaged and free of corrosion).
All scaffolding components must be properly connected or secured and scaffolding must be effectively braced (diagonal bracing).
Each person erecting, maintaining, altering or dismantling scaffolding must use fall protection at all times (i.e. a full body safety harness with two shock absorbing lanyards fitted with scaffold hooks). The work must be planned to enable every Scaffolding Erector to be securely anchored at all times. A suitable lanyard length (not exceeding 2 metres) must be selected taking the potential fall distance and height of attachment (height of anchorage point) into account. If the lanyard is too long or the anchorage point is too low, the person may hit the ground, a platform, or objects below him before the lanyard is able to break his fall.
The area around the base of a scaffold must be barricaded to prevent unauthorised access into the work area.
When scaffolding is erected or dismantled on a level, platform, or floor lying above ground level and the potential exists for components to fall to levels below the level on which the scaffolding is positioned, then the area directly below the scaffolding on each of those levels must also be barricaded. Appropriate warning signage (i.e. "Overhead Work In Progress" and "No Unauthorised Access") must be prominently displayed.
Hoists, lifts and approved material baskets must be used (where available) to lift scaffolding components to elevated positions.
Where components are passed from hand to hand during the erection or dismantling of a scaffold, each Scaffolding Erector must always stand on three boards and not directly above the person below him. During this process, each Scaffolding Erector must remain within the confines of the scaffold and must expose as little of his body as possible to minimise the risk of being struck by a falling component. Good communication between team members must be maintained at all times.
No scaffolding components, tools, or any other material may be dropped from height or thrown from one level to another. Components, tools and materials must be lowered or lifted in a controlled manner. Use may be made of a chute.
Each tool must be secured to the wrist, harness or structure by means of a lanyard. A tool bag (around the waist or over the shoulder) may be used for carrying tools up and down a scaffold structure. Tools or equipment may not be

carried by hand up or down a structure, as both hands must be used for climbing. If necessary, a rope must be used for lifting or lowering tools or equipment.
While a scaffold is being erected or dismantled, no scaffolding components may be stacked on the scaffold structure unless it has been designed for that purpose. Any loading of a scaffold structure must be authorised in writing by a structural engineer.
For special scaffolding, a design must be prepared by the appointed Scaffolding Supervisor and this design must be authorised in writing by a structural engineer before the scaffolding is erected.
Scaffolding may not stand on steel grating unless the grating is adequately supported from below. Scaffolding must rather stand on the structure that supports the grating.
Empty drums, crates or bricks may not be used to prop up, support or anchor scaffolding.
Before scaffolding is erected in close proximity to an electrical installation or live conductors, an electrical engineer (employed by Project or the client) must inspect the area and determine whether or not the scaffolding must be earthed. Should the scaffolding require earthing, this must be done as soon as possible while the scaffolding is being erected.
Scaffolding may not be erected if it is raining or in winds stronger than 32 km/h.
A green tag (displaying the words, "Scaffold Safe for Use") or a red tag (displaying the words, "Danger: Do Not Use Scaffold") must be prominently displayed on each scaffold at all times. The tag must be positioned close to the base of the ladder or staircase provided for safe access. The wording on the tags must be in English and any other language commonly used on site.
As a minimum, a green tag must display the Scaffolding Supervisor's name, the date that the scaffold was erected, and the date that the scaffold was last inspected.
Only an appointed Scaffolding Supervisor may attach, change, update the information on, or remove these tags.
Scaffolding must not be:
Left partially erected or partially dismantled except for normal work stoppages (for example, over weekends);
Left in an unsafe condition (if scaffolding is unavoidably in an unsafe condition, barricading must be in place to prevent unauthorised access and the required red tags must be prominently displayed on the scaffold structure); or
Moved or altered while work is in progress.
Mobile scaffolding must be equipped with brakes, which must be engaged at all times when the scaffolding is in use.
A scaffold may not be moved if any person is on the structure.

16.26.4.3 Safe Access

Safe and convenient access must be provided to every scaffold platform by means of properly installed ladders or approved stairways, which must remain unobstructed at all times. Climbing up or down a scaffold on the braces or ledgers is forbidden.
All ladders used to access scaffolding must be securely attached to the scaffold structure.
Hook-on and attachable ladders must be specifically designed for use with the type of scaffolding being used.
If a ladder is used to access a scaffold platform at a height greater than 1.5 metres above the ground, then the ladder must be secured internally (i.e. within the scaffold structure) and there must be an opening (closed with a trap-door) in the platform at the top of the ladder.
If the scaffold platform is at a height of less than 1.5 metres above the ground, then the ladder may be attached externally provided the guard rails around the platform are modified to allow access (the opening in the guard rails must be kept closed using a self-closing gate). No person may climb over or through the guard rails to gain access to a platform.

If a vertical ladder used on scaffolding is more than 5 metres in length it must be equipped with a ladder cage extending from a point 2 metres from the base of the ladder to a height of 1 metre above the platform (or the uppermost platform) that the ladder is providing access to.
Circular ladder cages must have an internal diameter of no more than 700mm. Square ladder cages must have internal dimensions of no more than 700mm by 700mm.
The requirement for a ladder cage may be waived if platforms are provided at height intervals not exceeding 4 metres, with the vertical ladder secured on the inside of the scaffolding framework and an opening (closed with a trap-door) in each platform.
Vertical ladders must be braced at three metre intervals (as a minimum) to prevent undue movement.
All vertical ladders providing access to a platform must be left in place for as long as the scaffold remains in place and must be inspected as part of the scaffold structure.
Any deviation from the requirements stipulated above must be subjected to a risk assessment and the nominated project management representative must authorise the deviation in writing.

16.26.4.4 Scaffolding Platforms

Safe work platforms must be provided.
Every work platform must be complete (i.e. from ledger to ledger and from transom to transom without any gaps) in order to prevent personnel, materials, tools, etc. from falling through the platform.
Every work platform must be constructed from manufactured steel scaffold boards (planks) of equal thickness (height). Timber boards are not permitted under any circumstances.
Each steel scaffold board must be securely hooked (fastened) onto the ledgers or transoms that support it.
On all sides except the one facing the structure, every scaffold platform must be provided with:
Sturdy guard rails positioned 500mm above the platform floor (the mid rail) and 1000mm above the platform floor (the top rail); and
Steel toe boards that are at least 150mm high and securely attached such that no gap exists between the toe boards and the platform floor.
Note: Wire mesh infill panels incorporating a toe board may be used instead of a mid-rail.
Scaffold platforms must be as close to the structure as is practicable (but not closer than 75mm) except where personnel need to sit on the edge of the platform while they work in which case the distance may be increased to no more than 300mm.
Scaffold platforms must, at all times, be kept free of waste, protruding objects, and any other obstructions. Platforms must be cleaned if necessary to ensure that they are maintained in a non-slip state.

16.26.4.5 Inspection of Scaffolding

Every scaffold structure must be inspected by a competent Scaffolding Supervisor:
Prior to use after erection, and at least weekly thereafter;
After inclement weather (heavy rain, strong winds, etc.);
After any incident resulting in jarring, tilting or overloading;
After any alteration is made; and
Before being dismantled.
On completion of an inspection, the Scaffolding Supervisor must update the information on the scaffold tag.
A record of each inspection (date and time of inspection, location of scaffolding, findings, etc.) must be captured in a register. The register(s) must be maintained by the Scaffolding Supervisor(s) carrying out the inspections.

16.26.4.6 Using Scaffolding

The user of a scaffold (i.e. the responsible supervisor) must inspect the erected structure prior to acceptance and must ensure, as far as is reasonably possible, that the scaffold is safe and fit for purpose before allowing his team to make use of the scaffold.
In particular, the user must ensure that:
The scaffold and the platforms have been constructed to meet the loading requirements of the work that is to be carried out (the Scaffolding Supervisor must be consulted in this regard);
The Scaffolding Supervisor has checked that adequate ties and braces are in place;
The work platforms are in the correct positions and are complete with toe boards and guard rails;
Safe and convenient access has been provided (ladders and / or stairways); and
A green ("Scaffold Safe for Use") tag has been attached to the scaffold by the Scaffolding Supervisor.
Use of an incomplete or unsafe scaffold is prohibited.
Unsteady or non-rigid scaffolds must not be used and inadequacies must be reported to, and rectified by, the responsible Scaffolding Supervisor.
The user of a scaffold must ensure that every person in his team is aware that no alterations to the scaffold may be made by the team during the course of their work, and that if any alterations are required, they must be made by competent Scaffolding Erectors under the supervision of an appointed Scaffolding Supervisor.
A scaffold may not be used:
If a red tag is displayed indicating that the scaffold is not safe to use; or
During inclement weather, defined as wind speeds greater than 40km/h, thunderstorms, or heavy rain (in excess of 40mm/h).
Note: With due consideration of possible educational limitations, the contractor must ensure that all persons understand what green and red tags mean.
The area around the base of a scaffold must be appropriately barricaded to prevent unauthorised access into the work area. Appropriate warning signage (i.e. "Overhead Work In Progress" and "No Unauthorised Access") must be prominently displayed.
Loose tools and / or materials on scaffold platforms must be secured using lanyards, wire or fibre rope, or must be placed in secured containers.
Where deemed appropriate, "catch nets" may be installed as an additional safety measure to prevent materials or tools from falling to the ground.
The storage or placement of materials on scaffolding platforms must be kept to a minimum. Debris as well as tools and materials that are no longer required must be removed from all working platforms at least once per day.
Scaffolding platforms must be cleaned regularly.
A heavy load may not be placed on a scaffolding platform unless the scaffold has been designed and constructed specifically for that purpose. Any loading of a scaffold structure must be authorised in writing by a structural engineer.
Scaffolds may not be used as hoisting towers or to support piping or equipment.
Each person working from scaffolding must wear fall protection (i.e. a full body safety harness with two shock absorbing lanyards fitted with scaffold hooks) and must be securely anchored at all times (refer to Section 13.13.2).
All work must be carried out from properly constructed work platforms. Standing on railings or braces in order to perform work is forbidden.
Drums, boxes and other makeshift substitutes for scaffolding may not be used under any circumstances.
Where work on an electrical system is to be undertaken from a scaffold, an electrical engineer (employed by Project or the client) must determine whether or not the scaffolding structure requires bonding and earthing. The scaffolding may not be used until this has been determined, and if required, until the structure has been bonded and earthed.

16.26.4.7 Identification and Inspection of Scaffolding Components

All scaffolding components belonging to a contractor must be properly marked or uniquely coloured to enable positive identification.

Prior to erecting a scaffold, all scaffolding components must be carefully inspected by a competent Scaffolding Supervisor.
Components found to be defective during an inspection must be conspicuously marked and removed to a suitably demarcated quarantine area for destruction, repair, refurbishment or removal from site. Deformed and bent wedges must be straightened and inspected for cracks before being put back into service.

16.26.4.8 Storage of Scaffolding Components

All scaffolding components must be stored in a demarcated storage area in such a manner that they are not exposed to environmental extremes and will not cause injury to persons. Suitable barricading or fencing must be erected and warning signage must be posted (e.g. No Unauthorised Entry).
Within a storage area, scaffolding components must be stacked such that pathways (750mm in width) are maintained between the stacks. Each stack must be stable and components must be neatly placed to ensure that no ends protrude into any pathway. The various components must be stacked separately.
The weight of scaffolding components must be considered when stacking them in elevated positions.
Any storage area for scaffolding components must be positioned such that it will not interfere with any onsite activity (including the operation of any plant or equipment), block any access way, or obstruct access to any plant or equipment. Before establishing a storage area, the location must be agreed with the nominated project management representative.

16.27 Ladders

All ladders used on site must be of sound construction and adequate strength.

Only non-conductive ladders made of wood or fibreglass may be used for electrical work or work being performed in proximity to energised electrical equipment. Metal ladders and ladders with metal reinforcing may not be used.

All ladders must be numbered, listed in a register, and inspected by a competent person on a monthly basis (the results of each inspection must be recorded in the register).

Before using a ladder, the user must inspect it for damage.

Ladders with missing, broken, cracked or loose rungs, split stiles, missing or broken spreaders (stepladders) or any other form of damage or defect may not be used.

A damaged ladder must be removed from service (and tagged, "Out of Service") without delay and must then either be repaired (if possible) or destroyed to prevent further use.

Persons must receive instruction in the correct use and proper care of ladders.

Ladders may only be used as a means of access and egress. The use of ladders as working platforms is prohibited, except for inspection and carrying out minor tasks (i.e. light work and short duration) such as changing a light bulb.

Ladders may not be positioned horizontally and used as walkways or runways or as scaffolding.

All portable ladders must be fitted with non-skid safety feet (or some other means to prevent the base of the ladder from slipping) and the feet must always be placed (stand) on a firm level surface.

The use of bricks, stones, wood or any other material to level the stiles of a ladder is prohibited.

Ladders may not be placed on movable bases such as boxes, tables, trucks, etc.

The base or foot of a ladder must always be secured to prevent it from slipping. The ladder must be held by an assistant if the base cannot be secured in any other way (e.g. tied off).

A straight ladder must extend at least one metre above its support (or above the working platform that it is providing access to). The top of the ladder must be tied off (or otherwise secured to its support) to prevent accidental movement.

A straight ladder must be placed at a safe angle, i.e. tilted at a ratio of approximately 4:1, meaning that the base of the ladder must be one metre away from the wall (or other vertical surface) for every four metres of height to the point of support.

A stepladder may never be used as a straight ladder. A stepladder must be opened fully and the spreaders must be locked securely.

When using an extension ladder, at least four rungs must always overlap at the centre of the ladder.

Ladders may not be joined together unless they have been specifically designed and manufactured for that purpose.

A suspended ladder (i.e. not standing on a base) must be attached in a secure manner to prevent undue swinging or swaying, and to ensure that it cannot be displaced.

A ladder may not be placed against a window, glass or any other material which is unlikely to withstand the force exerted on it by the top of the ladder.

A ladder may not be placed in front of a door or window that opens towards the ladder unless the door or window has been locked or barricaded.

When a ladder is used near an entrance or exit, the base of the ladder must be barricaded.

Materials and / or equipment may not be placed in close proximity to the base or landing of any ladder.

When ascending or descending a ladder, a person must always face the ladder and use both hands (i.e. maintain three points of contact).

Nothing may be carried up or down a ladder if it prevents the person from holding on to the ladder with both hands. Tools must always be properly secured. This can be achieved by attaching them to the wrist using lanyards or placing them in a tool belt around the waist. Tools and materials may also be carried in a bag over the shoulder or hoisted to the landing using a tool bag and rope.

Only one person at a time may use (i.e. be positioned on) a ladder.

No person may stand or step above the third rung from the top of a straight ladder or above the second highest step of a stepladder.

Overreaching from a ladder is prohibited. If the target is not within comfortable reach, the person must climb down and reposition the ladder.

No person may run up or down a ladder, or jump from the lower rungs or steps to the ground.

All ladders must be properly maintained and cared for.

Ladders must be stored under cover and should be hung in a horizontal position from several brackets.

No ladder may be left lying on the ground or be left exposed to the weather. A ladder left lying on the ground presents a tripping hazard and it may be damaged by vehicles running over it.

No ladder may be left in such a position where it may fall over, be accidentally knocked over, or be blown over by the wind.

Ladders may not be painted, as the paint may conceal damage, defects, labels or other markings.

Instead of paint, clear varnish or wood oil may be used to preserve wooden ladders.

Ladders must be kept clean, as dirt may conceal damage or defects. Oil or grease accumulation on the rungs of a ladder may cause a person to slip.

Before making use of a ladder, each person must make an effort to remove mud, oil, grease, etc. from his boots.

16.28 Confined Spaces

Entry into a confined space occurs when a person's whole body, upper body or head is within the confined space. This is not intended to prevent an authorised, competent person from inserting only his arm into the space to test for hazards using appropriate monitoring equipment. Precautions must be taken to prevent persons from being overcome by atmosphere escaping from the confined space.

Before any person enters a confined space, a detailed risk assessment must be carried out, including the need for an authorised person to assess such things as oxygen levels, contaminants, temperature extremes and concentration of flammable substances.

As a minimum the risk assessment shall address the following:

- Isolation and lockout procedures required for chemical substances, mechanical or electrical energy, steam, pressure, heat, gases, liquids and solids;
- Venting, purging, draining and cleaning prior to entering the confined space;
- Hazards created by carrying out particular tasks or through the use of chemical substances in the confined space. Task-Based (or Issue-Based) Risk Assessments and/or Written Safe Work Procedures must be available for work in confined spaces - in particular for abrasive blasting, welding, flame cutting, grinding, chemical/steam cleaning, rubber lining and painting;
- Entry, exit and escape routes as well as barricading;
- The electrical safety, intrinsic safety and other safety specifications of equipment to be used in the confined space (explosive atmospheres must be considered);
- The need to test for presence of toxic/asphyxiant substances, radioactivity, oxygen, temperature extremes and flammable substances prior to entry and during the performance of work;
- Provision of suitable mechanical ventilation and personal protective equipment e.g. lifejackets etc. and in particular the use of respiratory protection such as compressed air breathing apparatus; and
- A ventilation rate suitable for general use must take into account factors such as air contaminant type, rate of generation, rate of oxygen depletion, temperature, efficiency of ventilation distribution and contaminant removal from the breathing zone. Therefore each situation needs to be evaluated on its own merit by a risk assessment that will select a combination of ventilation method and respiratory protection that suits the particular circumstances. This must be achieved by consultation between competent operations personnel, engineers and a ventilation specialist.

Entry and work inside a permitted confined space must be controlled and regulated by the project Isolation / Lockout and Permit to Work control systems. The Authorised Person issuing the Permit to Work may only do so if the conditions applying to the specific confined space entry have been satisfied and documented.

As a minimum, the following must be included in the permitting process:

- Access barriers to prevent unauthorised entry;

- Isolation procedures for contaminants and other energy sources;
- The need for breathing apparatus / ventilation requirements;
- The sign-in and sign-out of all persons entering the confined space;
- Display of the permit;
- Communication procedures and/or equipment;
- Safety specifications of equipment to be taken into the confined space;
- Barricading of entrances and exits;
- Rescue plan and equipment;
- Standby person(s); and
- A completion and lock-in procedure (to ensure that space is evacuated and adequately secured).

The Permit to Work process must require competent rescue persons with suitable communication, rescue and firefighting equipment to be present where any of the following may exist:

- Compressed air breathing apparatus is required;
- There is a high risk of fires or explosions;
- The atmosphere can rapidly become unsafe for breathing purposes if the mechanical ventilation fails;
- There is a high risk of flooding or engulfment;
- Narrow tunnels or pipes are entered or where exit or escape routes cannot readily be accessed
- Work is done in remote areas; and
- A single person, who cannot be observed directly or is isolated from other workers, does the work.

Where testing for toxic/asphyxiate substances, radioactivity, oxygen, temperature extremes and other health hazards as well as for flammable substances is carried out, it may only be done by persons trained, tested and certified competent in writing to do so.

The ventilation method and quantity must be adequate to ensure oxygen levels and explosive or toxic gas levels remain within acceptable defined limits. Where ventilation is required, this must be covered by an approved documented procedure.

As a minimum standard, the volume of air pumped in and circulated in a confined space needs to be equivalent to 20 times the volume of the space per hour.

Where breathing apparatus or respiratory equipment is required, the contractor's Health and Safety Officer must be consulted with regard to the specification and selection of suitable equipment.

All persons required to use respiratory protection must be medically fit and trained in the correct use of the equipment.

Safe and convenient entry, exit and escape routes from the confined space must be provided where possible and practical. Where this cannot be achieved effectively, the risk assessment must determine if a competent rescue person must be on duty at the confined space when work is in progress.

Where a standby/rescue person is required, they will have no other duties and will be positioned outside the confined space entry point at all times while personnel are within the space.

16.29 Hazardous Chemical Substances

The Contractor must comply to Hazardous Chemical Substances Regulations.

16.30 Fitness for Work

The Contractor must comply to General Safety Regulation 2A.(Intoxication)
The Contractor must develop and implement a programme to manage employee fitness for work. All employees working on site for whom the Contractor is responsible (i.e. direct employees of the Contractor as well as the employees of any appointed contractors) must be subject to this programme.

All safety critical jobs (i.e. roles where fatigue or other causes of reduced fitness for work could lead to serious injury, illness or death to employees, significant equipment / plant damage, or significant environmental impact) must be identified and the risks associated with reduced fitness for work in these roles must be assessed.

Sleep deprivation during shift work or from excessive working hours is a known cause of fatigue. Fatigued employees are at increased risk of accidents. Shift system design must consider:

- The effect on worker fatigue;
- The effects of activities carried out during scheduled and overtime hours;
- The impact on sleep cycles of activities such as commuting to and from site; and
- The monitoring and control of working hours.

All employees engaged in safety critical jobs must undergo fitness assessments (medical examinations) which must be carried out prior to the commencement of employment on the project, prior to a change in role, periodically based on an employee's individual risk profile, and on termination of employment on the project by a registered occupational medical practitioner:

- **Pre-Employment Medical Examination** – to assess the physical and psychological suitability of the person for the role and environment in which he will work (carried out prior to the commencement of employment on the project and prior to induction);
- **Periodic (Surveillance) Medical Examination** – to assess the ongoing physical condition of an employee to determine if his role is impacting on his health and whether the employee's fitness level is still adequate for the role he holds (these medical examinations are "risk driven" – the specific protocol followed and the frequency of the examinations will depend on the applicable legal requirements and the employee's individual risk profile as determined by his personal fitness, the nature of his role / duties, and the environment in which he works / occupational health hazards to which he is exposed). The periodic medical assessment programme must include:
  - The identification of modifiable risk factors that may impact fitness for work;
  - Education and support to maintain health or address identified risk factors; and
  - Education and support to help employees regain their fitness for work.
  - Role Change Medical Examination – to assess an employee's physical suitability for a different role and work environment (carried out prior to a change in role / duties);

  Exit (Post-Employment) Medical Examination – to determine the total physical impact of the work the employee performed (carried out on termination of employment on the project if the employee worked on the project site for more than three months).

Note: The medical examinations described above may only be carried out by an occupational medical practitioner (i.e. a medical doctor who holds a qualification in occupational medicine).

16.31 Asbestos and Non-Asbestos Fibrous Silicates

This section applies to asbestos and bio-persistent non-asbestos fibrous silicates that may display asbestos-like toxicity, related to fibre diameter and length. Local regulations must be followed as a minimum. The following requirements must be met:

- A management program must be in place and actively pursued;
- No new products containing these materials may be purchased;
- Installed materials of this type must be identified and assessed annually for current safety. Where 'safe in place', it should not be removed, unless there is an opportunity for removal during renovation or construction of buildings or equipment;
- Work areas must be barricaded off and signposted to restrict entry; and
- Contaminated material must be promptly placed in appropriate marked plastic disposal bags or covered containers for disposal to an approved landfill.

All workers exposed to these materials must be on a register. "Exposed" means working on or near such material that has been disturbed, abraded or cut. The register must contain details of their annual medical examination and the results of occupational hygiene monitoring.
Asbestos contractors must be competent, registered and have adequate equipment, procedures and monitoring.

Where required, the asbestos / bio-persistent non-asbestos fibrous silicates management programme must cover work practices, training, monitoring, medical surveillance, and waste handling and disposal.

Maintenance operations must be made aware of potential cristobalite exposure hazards when disturbing non-asbestos fibrous silicates that have undergone high temperature conditions.
The potential for occurrence of naturally occurring asbestiform materials in exploration or mining production activities must be assessed, the risk of exposure determined and appropriate control measures implemented where required.

16.32 HIV / AIDS

The Contractor must assess the risks posed by HIV. Appropriate mitigation strategies must be implemented as required.
Discrimination towards employees on the basis of actual or perceived HIV status is forbidden.
All information on the HIV status and condition of employees and community members, including that relating to counselling, care and treatment and receipt of benefits, must be maintained in medical confidence.

HIV / AIDS screening may not be a requirement for recruitment or a condition of employment.

16.33 National Railway Safety Regulator Act / Railway Safety

The Principal Contractor shall ensure that its equipment, machinery and employees when on railway lines complies fully with all applicable railway safety requirements and/or regulations of the National Safety Regulator Act 16 of 2002 and the relevant SANS Codes of Practice.

The Principal Contractor when engaging Subcontractor must review the capability of the proposed contractor to comply with specified railway safety requirements and/or regulations.

Permission for the engagement of a Subcontractor by the Contractor both initially and during a contract shall be subject to a review by TNPA of the capability of the proposed subcontractor to comply with railway safety requirements and user specifications.

The Principal Contractor and/or his Subcontractors must grant TNPA access, during the term of the contract, to review any railway safety related activities, including the coordination of such activities across all parts of the organisation.

The Contractor shall ensure that where applicable, such work is performed by person who has the necessary competencies as required in terms of any applicable railway safety standard or code of practice.

The Contractor shall ensure that all his employees are protected from the risk of being hit by moving trains.

17. Occupational Hygiene

The Contractor shall conduct Health Risk Assessments of all the Occupational Hygiene / Environmental stressors (e.g. noise, dust, illumination, HCS, heat & cold stressors, ergonomics, etc.) present in the area where they operate to determine if there is any possible worker exposure. Records of all these assessment should be documented and kept up to date.

The Contractor shall monitor the extent to which their employees are exposed to the occupational hygiene stressors. These assessments shall be conducted by an Approved Inspection Authority as listed on the Department of Labour database. The findings from these assessments should be kept on the SHE file, communicated to all affected parties and be reported to relevant authorities.

17.1 Thermal Stress

The Contractor must comply to Environmental Regulations for Workplaces, Reg. 2 and in addition to the following:

When a risk of thermal stress is identified, the following exposure controls must be implemented:

- An acclimatization period for new workers and those returning from extended leave or sickness;
- Training in the recognition of signs and symptoms of heat or cold stress, emergency procedures and preventative measures;
- Protective observation (buddy system or supervision); and
- A requirement for self-paced working.

The following exposure controls must be considered by a competent person:

- Work / rest regimes and job rotation based on measurements conducted;
- Suitable rest areas with a provision of cool drinking water and cool conditions for high temperatures, or provision of warm drinks and warm conditions for cold temperatures;
- Selection of appropriate clothing or other PPE for extreme temperature conditions;
- The use of engineering controls; and
- Undertake hot / cold tasks during a cooler / warmer time of the day.

Where thermal stress is assessed to be a risk, the operation must develop a suitable emergency response plan.

18. Measuring and Monitoring

The Contractor must comply to Hazardous Biological Agents Regulations 7 and Hazardous Chemical Substance Regulations 5

A plan for measuring and monitoring occupational exposure must be developed and it must include:

- Detail of what must be measured and monitored, based on a risk assessment and / or identified legal or other requirements;

- The frequency of measurement and monitoring;
- A description of the necessary equipment;
- Data quality requirements and controls (including details on the sample size for statistical validation and any rejection criteria);
- The sampling and analysis method(s) including any laboratory certification requirements; and
- The competency requirements for persons carrying out workplace monitoring.

Each instrument and item of equipment used for occupational exposure measurement and / or monitoring must be:

- Properly maintained to ensure compliance with legislative requirements;
- Controlled and safeguarded from unintentional adjustments;
- Suitably stored and protected from damage; and
- Calibrated or verified against a traceable standard at specific intervals (calibration records must be retained).

Each analytical laboratory service that is used must have implemented a credible quality assurance or quality control program.

All monitoring results obtained must be analyzed on a regular basis to:

- Identify trends and potential exceedances of legal or other requirements (such as Occupational Exposure Limits);
- Identify inconsistent or unusual results;
- Evaluate the effectiveness of existing control measures;
- Measure performance against stated objectives; and Identify continual improvement opportunities.

Each exceedance of a specified requirement or limit must be recorded, investigated and reported. Appropriate corrective actions must be identified and implemented.

19. Structure

A Contractor must ensure that, all reasonably practicable steps are taken to prevent the uncontrolled collapse of any new or existing structure or any part thereof, which may become unstable or is in a temporary state of weakness or instability due to the carrying out of construction work;

No structure or part of a structure is loaded in a manner which would render it unsafe; and
all drawings pertaining to the design of the relevant structure are kept on site and are available on request to an inspector, other Principal contractors, the client and the client's agent or employee.

An owner of a structure must ensure that;
Inspections of that structure are carried out periodically by competent persons in order to render the structure safe for continued use;

- That the inspections contemplated in paragraph (a) are carried out at least once every six months for the first two years and thereafter yearly;
- The structure is maintained in such a manner that it remains safe for continued use;
- The records of inspections and maintenance are kept and made available on request to an inspector.

20. Emergency Preparedness and Response

The Contractor must develop, implement, test and maintain an Emergency Response Plan (incorporating emergency evacuation procedures) that focuses specifically on the Principal contractor's team and work activities. The plan must be risk-based and must detail the procedures that must be followed when responding to all potential emergency scenarios such as a medical emergency (including first aid response), a fire, an explosion, a hazardous substance spill, flooding, rescue from height, rescue from a confined space, etc.

The Principal contractor's Emergency Response Plan must be aligned with the Emergency Response Plan developed for the project.
Potential off-site emergency scenarios must be included (e.g. emergency scenarios related to the transport of personnel, the transport of hazardous materials, and personnel performing work in remote locations).

Consideration must be given to neighbours, and to the availability and capability of local emergency services. Details of any arrangements with external emergency response service providers must be included.
The Emergency Response Plan must satisfy and comply with all applicable legal requirements.
The plan must be adequately resourced to ensure effective implementation. These resources must include appropriate personnel, external emergency response service providers, emergency response equipment, and warning devices. All equipment and warning devices must be identified, maintained and tested to ensure availability at all times.

Accountability for the Emergency Response Plan must be clearly defined. An Emergency Response Team (ERT) responsible for the implementation, management and execution of the Emergency Response Plan must be established. The roles and responsibilities of each team member must be clearly defined in the plan. Each team member must receive appropriate training to ensure that each role is performed competently.

The process for managing incident communication, notification, and reporting must be incorporated into the Emergency Response Plan. The responsible person(s) must be clearly identified, and the protocols for communicating with internal and external stakeholders must be defined.
Emergency evacuation procedures must be developed and included in the Emergency Response Plan.
A copy of the plan must be provided to the client representative for approval prior to site establishment.
The Emergency Response Plan must be formally reviewed (and amended if necessary) at least on an annual basis, to ensure that it remains appropriate and effective on emergency situations.

At the Transnet National Port Authorities Port of Durban Road Rehabilitation project site, the Contractor must ensure:

- A suitable evacuation alarm (siren) must be provided. If work is to be carried out in proximity to an existing operational plant, the alarm provided by the Contractor must be distinctly different (in terms of the sound that it generates) to any alarm installed in the operational plant. All persons working in an area where an evacuation alarm is sounded must respond to it immediately.
- Suitable fire-fighting equipment must be provided and maintained, and personnel must be trained in fire-fighting procedures and the use of fire-fighting equipment.
- Suitable first aid equipment and supplies must be provided and maintained, and an adequate number of appropriately trained First Aiders must be in place.

- Emergency assembly points positioned in safe locations away from buildings, plant and equipment must be designated (and conspicuously signposted). In the event of an evacuation, all persons (i.e. personnel and visitors) must assemble and be accounted for at these emergency assembly points.
- All personnel must receive awareness training on the applicable emergency response procedures, and all visitors entering the site must be properly instructed in these procedures.
- The emergency response procedures must be displayed on each notice board.
- A diagram (site plan) indicating evacuation routes, emergency assembly point locations, and the positioning of emergency equipment (fire extinguishers, first aid boxes, etc.) must be prominently displayed in all buildings and plants, in all offices, on all notice boards, and in other locations on the site as may be required.
- An up-to-date list of emergency telephone numbers must be compiled and maintained. A copy of this list must be posted at each site entrance, in each office, near each telephone, and on every notice board.
- Emergency response drills must be conducted to test the effectiveness of the emergency procedures and equipment, as well as the knowledge and proficiency of the response personnel. Where appropriate, drills must include liaison with and the involvement of external emergency response service providers. A variety of emergency scenarios must be tested including, but not limited to, medical emergencies, fires, rescues, and hazardous substance spills. A drill must be carried out one month after site establishment and six-monthly thereafter.

Each drill must be monitored and the outcomes (highlights and shortcomings) must be documented. Corrective actions must be identified and implemented to address the shortcomings, and the Emergency Response Plan and associated procedures must be amended as required.

20.1 First Aid Kits

The contractor shall comply with General Safety Regulations 3.

21. Management Review

A review of the Principal contractor's Health and Safety Management System must be completed annually to ensure that the system continues to be effective in managing health and safety performance and meeting project requirements.

The review must evaluate if there is any need for change and must identify actions to improve the system.

The review must be led by senior management and the following must be considered:

- The suitability of the policy adopted for the project;
- The impact of changing legislation;
- The management of risk;
- Health and safety objectives and performance indicators;
- Changing expectations and requirements of relevant stakeholders;
- Changes to the Principal contractor's scope, schedule, designs, etc.;
- Changes to the Principal contractor's organisational structure;
- Communication and feedback (particularly from employees, Project representatives, and client representatives);
- The effectiveness of the management of change process;
- Workplace exposure monitoring and medical surveillance;
- The status of corrective actions;

- Performance statistics, including an annual summary of safety statistics, and occupational hygiene monitoring and medical surveillance results;
- Non-conformances (findings) from completed audits;
- Follow up on actions from previous management reviews; and
- Recommendations and opportunities for improving the effectiveness of the management system.

A record of each completed management review must be retained and it must include all decisions and identified actions concerning alterations, modifications or improvements to the management system that demonstrate a commitment to continual improvement.
For occupational hygiene: Approved Inspection Authority (AIA) for Occupational Hygiene

22. Management of Change

To ensure that proposed changes do not give rise to unacceptable health or safety risk, the Contractor must develop and implement a process for identifying and managing change in the workplace (e.g. changes to scope, schedule, procedures, work methods, site conditions, designs, plans, plant and equipment, materials, processes, etc.) that may impact on health or safety performance.

The management of change process must take into consideration that changes may be planned or unplanned, sudden or gradual, temporary or permanent.

The process must aim to ensure that:

- Changes are identified and assessed before they are implemented;
- Careful consideration is given to managing the risks associated with any change;
- Due diligence can be shown to have taken place;
- The number of unsatisfactory or unnecessary changes is minimised;
- The right people are involved in the change process; and
- All statutory requirements are met.

All risks associated with a proposed change must be evaluated and ranked. The risks that are ranked as moderate or higher must be managed to prevent serious injury or illness.

It must not simply be assumed that a change will not result in significant risks. All proposed changes must be formally evaluated. The evaluation or review must include:

- An appropriate level of technical expertise;
- The involvement of the workforce potentially affected by the proposed change; and
- Approval of the change by a person with at least the same level of authority as those who control the existing process or item being changed.

23. Contractor Alignment

Processes must be in place to ensure that the health and safety risks associated with the procurement of materials, equipment, services and labour are identified, evaluated and effectively managed.

A process for evaluating a sub-Principal contractor's (or supplier's) ability to provide materials, equipment, services and labour that meet defined specifications must be in place. A prospective sub-Principal contractor's health and safety management expertise, experience and capability (including previous health and safety performance) must be formally assessed prior to any contract or purchase order being awarded.

Each appointed contractor must develop and implement a detailed Health and Safety Management Plan based on the requirements of the Principal contractor's Health and Safety Management Plan and the Health and Safety Specification for the project. This plan must be reviewed and approved by the Contractor prior to the commencement of any work.

The properties of all materials provided to the project must be adequately understood, documented and integrated into operating procedures where exposure to these materials presents a significant health or safety risk.

Procedures, commensurate with the evaluated risk, must be in place for the receiving, storing, dispatching and transporting of all equipment and materials.

Before work commences on any contract, all contractor personnel must receive comprehensive orientation and induction training (refer to clause 14).
All work carried out by a contractor must be managed (activity supervised) throughout the contract period and performance must be reviewed (audited) on a regular basis.

24. Incident Reporting and Investigation

The Contractor must establish a procedure for the management of all health and safety incidents. This procedure must define the responsibilities, methodologies and processes that must be followed for:

- Reporting an incident;
- Investigating an incident;
- Analysing an incident to determine the root cause;
- Identifying and implementing corrective actions to prevent a recurrence; and
- Communicating information concerning an incident to relevant persons and / or groups.

Please Note: Arrangements must be in place to ensure that proper medical care is provided to any Contractor or contractor employee that suffers an occupational injury or illness. These arrangements must be described in the Principal contractor's Health and Safety Management Plan.

An incident may have multiple impacts. For each impact, the Actual Consequence and the Maximum Reasonable Outcome must be evaluated. Each impact must be evaluated independently, with the most significant classification forming the primary rating of the incident. A Near Miss is an incident, therefore must be reported.

An incident must be reported on the same work day or shift on which it occurs and preliminary details must be recorded and a TNPA Incident Flash Report must be completed within 24 hours.
Depending on the Actual Consequence and Maximum Reasonable Potential Outcome of the impact(s), the relevant internal and external parties must be notified in accordance with specified protocols and timeframes, and legislative requirements.

In the event of a significant incident (i.e. an incident with an Actual Consequence of Moderate, Major or Catastrophic, or a Maximum Reasonable Potential Outcome of High or Extreme, work must cease and must only resume once the necessary actions (including the re-evaluation of any relevant risk assessments) have been taken to eliminate or reduce the risk of recurrence. Work must only be permitted to recommence once formal authorisation has been granted by the Project Construction Manager. In the case of incidents with an Actual Consequence of Major or Catastrophic, work must not be permitted to recommence until authorisation has been granted by the relevant government authorities (i.e. the South African Police, the Department of Employment and Labour or the Department of Mineral Resources).

The Project Construction Manager must ensure that an investigation is completed for each incident that occurs, and that appropriately senior personnel participate in, and authorise the outcomes of, each investigation. Incident investigations must be facilitated by competent and experienced persons who have been trained in the appropriate methodology. (i.e. TCAM – Transnet Causal Analysis Methodology).

All significant incidents (i.e. incidents with an Actual Consequence of Moderate, Major or Catastrophic, or a Maximum Reasonable Outcome of High or Extreme must be investigated using the approved Transnet investigation methodology. Such an investigation must be facilitated by a trained project representative within 7 calendar days.

For all other incidents (i.e. incidents with an Actual Consequence of Insignificant or Minor, or a Maximum Reasonable Outcome of Low or Moderate other methodologies approved by the Project Health and Safety Manager must be used.

Each incident (including Near Hits) must be investigated to a level of detail that is appropriate for the Maximum Reasonable Potential Outcome of the incident.

Each incident must be analysed to determine the root cause, and corrective actions must be identified and prioritised for implementation to eliminate or reduce the risk(s) in order to prevent recurrence of the incident.

For each corrective action, a responsible person must be designated and an appropriate timeframe (target date) for completion of the corrective action must be specified. Progress on implementing corrective actions (i.e. closing incidents) must be monitored and reported on. The implementation of corrective actions must be verified during monthly audits by the Project Health and Safety Advisors but also no later than 30 calendar days after the conclusion of the incident investigation.
The Contractor must document the results of each investigation and a report must be submitted to the client representative within five working days of the incident occurring.

As a minimum, each incident report must include:

- The date, time and location of the incident;
- A detailed description of the incident, including photographs;
- The names of any injured persons;
- Injury details (if applicable);
- A summary of the first aid and / or medical treatment provided (if applicable);
- The current status of any injured persons;
- The root causes of the incident; and
- Detailed corrective actions, including responsible persons and target dates for implementation.

Each significant incident must be summarised for its lessons learnt following the investigation. This information must be reviewed by the Principal contractor's Project Manager to assure completeness, accuracy and relevance before it is shared with (communicated to) all project personnel.

25. Non-conformance and Action Management

The Contractor must establish a process for identifying and recording corrective actions arising from:

- Incident investigations;
- Hazard identification and risk assessment;
- Measurement and monitoring;
- Improvement plans and suggestions;
- Managing change;

- Audits and inspections; and
- Safety observations and coaching (safety interactions).

The Contractor must establish a procedure for managing actions that addresses:

- Identification, categorisation and prioritisation of actions;
- Formal evaluation and approval of actions (management of change process);
- Assignment of responsibilities, resources and schedules for implementation;
- Implementation of actions;
- Tracking and reporting on implementation status; and
- Monitoring and verifying the effectiveness of the actions.

26. Performance Assessment and Auditing

The Contractor must establish and maintain programmes for measuring and monitoring health and safety performance on a regular basis. Metrics must include leading and lagging indicators, and be based on qualitative and quantitative data.

26.1 Reporting on Performance

Reports summarising the Principal contractor's health and safety performance on the project must be compiled on a weekly and a monthly basis.

- The Contractor must be prepared to discuss the content of these reports at scheduled health and safety meetings. The reports must contain the following information:
- Number of Contractor and contractor employees on site;
- Total hours worked on site by Contractor and contractor employees (by company);
- Number of incidents by category (i.e. Near Hit, FAI, MTI and LTI);
- Lost Time Injury Frequency Rate (LTIFR) (project to date and 12-month rolling);
- Details of all new incidents for the reporting period and the corrective actions taken or to be taken;
- Feedback (progress updates) on all open incidents and outstanding corrective actions;
- Status and feedback on any employee that may have been injured and has not yet returned to work;
- Details of all health and safety training carried out during the reporting period;
- Number of SOC's (Safety Observations and Coaching) carried out during the reporting period;
- SOC trends identified and proposed action for the coming week or month to maintain positive trends and / or address negative trends;
- Details of all audits, inspections and site visits carried out during the reporting period, and the corrective actions taken (or to be taken) to address all non-conformances;
- Feedback (progress updates) on all open non-conformances and outstanding corrective actions;
- Number of Toolbox Talks conducted during the reporting period (monthly);
- Number of Planned Task Observations (PTO's) carried out during the reporting period (monthly);
- Details of all active risk assessments and Safe Work Procedures highlighting those that are due for review in the coming month (monthly);
- A look ahead (to the coming week, month or quarter) to ensure that appropriate health and safety planning and preparation is done for upcoming work;
- Challenges faced with regard to health and safety; and
- Any other health and safety related information specific to the project that may be required.

Leading indicators (e.g. audit findings, observations, etc.) must be analysed, and any negative trends identified with regard to unsafe behaviour or conditions must be appropriately addressed to prevent incidents.

Lagging indicators (e.g. injuries, illnesses, near hits, etc.) must be investigated in detail to determine the root causes. Corrective actions must be identified, implemented and integrated into Safe Work Procedures to prevent recurrences.

26.2 Audits and Inspections

On a monthly basis, the health and safety management system and workplace activities of the Contractor will be audited by a Project Health and Safety Advisor to assess compliance with the project health and safety requirements. Any deviation from these requirements (i.e. non-conformance) that places the health or safety of any person in immediate danger will result in the specific activity being stopped until the non-conformance is corrected.

For each non-conformance determined during any audit, the Contractor must identify and implement appropriate corrective actions.

For each corrective action, a responsible person must be designated and an appropriate timeframe (target date) for completion of the corrective action must be specified. Progress on implementing corrective actions (i.e. closing non-conformances) must be monitored and reported on. The implementation of corrective actions will be verified during the monthly audits.

The Contractor Audit conformance will be assessed as a percentage and where conformance is better than 90% it will be considered satisfactory and the Principal contractors must develop and implement an Action Plan within 4 weeks, to be reviewed at the next scheduled Audit. Where the level of conformance is between 80-90%, a corrective action plan will be required to be developed and implemented within 2 weeks, and a follow-up Audit will be carried out. Where the conformance is less than 80%, the Contractor must stop work until an investigation of the cause/s has been completed and corrective action have been developed and implemented by the Principal contractor. Actions required from the audit result are risk based, e.g. An audit result with a critical element scored low may still result in an NCR being issued, or even a work stoppage.

Should it be determined that the Principal contractor's level of compliance is unsatisfactory, all work being performed by the Contractor on the project site may be stopped (at the Principal contractor's expense) until an investigation into the reasons for the poor performance has been carried out, a corrective action plan has been developed, and corrective actions have been implemented.

In addition to the audit carried out by the Project Health and Safety Advisor, the Contractor must carry out an internal audit on a monthly basis to assess compliance with the project health and safety requirements (including the requirements of this specification and the Principal contractor's Health and Safety Management Plan). Furthermore, the Contractor must ensure that each appointed contractor is audited and measured to the same standard. Copies of these audit reports must be submitted to the Project Health and Safety Advisor on a monthly basis.
The Contractor must carry out internal health and safety inspections as follows:

- General site health and safety inspections on a daily basis; and
- Inspections of plant, tools and equipment prior to establishment or use on site, and at least monthly thereafter.

All audits and inspections must be carried out by competent persons who have been appointed in writing.

A schedule of planned audits and inspections must be compiled and maintained ensuring that:

- All work areas and all activities are covered at regular intervals;
- All applicable legal requirements are complied with; and
- Areas or activities with significant associated hazards or risks receive greater attention.

27. COVID-19 Cleaning and Disinfecting

Cleaning and disinfecting are two (2) different processes:

Cleaning means physically removing germs, dirt and organic matter from surfaces.

Disinfecting means using chemicals to kill germs on surfaces. It's important to clean before disinfecting because organic matter and dirt can reduce the ability of disinfectants to kill germs.

Note: A combination of cleaning and disinfection will be most effective in removing the COVID-19 virus. Cleaning reduces the soil load on the surface, allowing the disinfectant to work and kill the COVID-19 virus. Disinfectant may not kill the virus if the surface has not been cleaned with a detergent first.

A) Routine cleaning

Workplaces including construction sites should clean surfaces at least daily. Special attention should be given to frequently touched surfaces (e.g. tabletops, door handles, light switches, desks, toilets, taps, kitchen surfaces, cupboard handles, and etc.). Ideally, once clean, surfaces should also be disinfected regularly. Alternatively, you may be able to do a 2-in-1 clean and disinfection by using a combined detergent and disinfectant.

Surfaces and fittings should be cleaned more frequently when:

- Visibly soiled
- Used repeatedly by a number of people, and
- After any spillage.

For routine cleaning, disinfectants are usually only necessary if a surface has been contaminated with potentially infectious material. For this reason, when and how often a workplace should undertake disinfection as part of routine cleaning will depend on the likelihood of contaminated material being present at the workplace. For example, in a busy area such as toilet facilities with many employees entering each day, more frequent disinfection is recommended to prevent the spread of COVID-19.

B) How to clean

Use the following steps to clean an environment:

- Wear gloves when cleaning. Gloves should be discarded after each clean. If it is necessary to use reusable gloves, gloves should only be used for COVID-19 related cleaning and should not be used for other purposes or shared between workers;
- Wash reusable gloves with detergent and water after use and leave to dry;
- Clean hands immediately after removing gloves using soap and water or hand sanitiser;
- Thoroughly clean surfaces using detergent and water. Always clean from the cleanest surfaces to the dirtiest surfaces. This stops the transfer of germs to cleaner surfaces and allows you to physically remove and dispose of the largest possible amount of germs;
- If you need to use a disinfectant, clean the surface first using detergent then apply a disinfectant or use a combined detergent and disinfectant. A disinfectant will not kill germs if the surface has not been cleaned first;
- Apply disinfectant to surfaces using disposable paper towel or a disposable cloth. If non-disposable cloths are used, ensure they are laundered and dried before reusing;
- Allow the disinfectant to remain on the surface for the period of time required to kill the virus (contact time) as specified by the manufacturer. If no time is specified, leave for 10 minutes;

- It is advisable to use a hand-lotion after washing your hands to protect against skin irritation

How should I clean if someone at my workplace is suspected or confirmed to have COVID-19?

- If a person who has been at your workplace is suspected or confirmed to have COVID-19, you must thoroughly clean and disinfect all areas of suspected contamination;
- Clean and disinfect all areas (for example, offices, bathrooms and common areas) that were used by the suspected or confirmed case of COVID-19. Close off the affected area before cleaning and disinfection. Open outside doors and windows if possible to increase air circulation and then commence cleaning and disinfection;
    - Clean and disinfect hard surfaces using either: a physical clean using detergent and water followed by a clean with bleach solution (2-step clean), for example, household bleach or hospital-grade bleach solutions that are readily available from retail stores.
    - A physical clean using a combined detergent and bleach solution (2-in-1 clean) made up daily from a concentrated solution.
- Once cleaning and disinfection is complete, place disposable cloths, PPE and covers in a plastic rubbish bag, place it inside another rubbish bag (double-bagging) and dispose of the bag in the general waste;
- There is no need to close down an entire workplace, while cleaning and disinfection takes place, particularly if the person infected, or suspected to be infected, has only visited parts of the workplace. However the cleaning and disinfection must occur before any workers return to affected areas;

Note: Whether you need to suspend operations in your workplace will depend on factors such as the size of the workplace, nature of work, number of people, and suspected areas of contamination in your workplace.

- Those cleaning an area of suspected contamination need to be equipped with appropriate PPE. This includes disposable gloves and safety eyewear to protect against chemical splashes;
- If there is visible contamination with respiratory secretions or other body fluids in the area, the cleaning staff should also wear a disposable apron.
- Clean your hands using soap and water for at least 20 seconds, or where this is not possible, hand sanitiser of with at least 60% ethanol or 70% isopropanol as the active ingredient before putting on and after removing PPE;
- Cleaning equipment including mop heads and cloths should be laundered using hot water and completely dried before re-use;
- Cleaning equipment such as buckets should be emptied and cleaned with a new batch of disinfectant and allowed to dry completely before re-use.

Hard surfaces

- In most circumstances, cleaning with detergent and water is sufficient;
- Disinfectants containing ≥ 70% alcohol, quaternary ammonium compounds, chlorine bleach or oxygen bleach are suitable for use on hard surfaces (that is, surfaces where any spilt liquid pools, and does not soak in). These will be labelled as 'disinfectant' on the packaging;

Soft or porous surfaces

- For soft or porous surfaces like fabric or leather, seek advice from the manufacturer of the item to be cleaned about which products can be safely used;

- Detergent can generally be used to clean fabric surfaces. If more thorough cleaning is needed, fabric surfaces may be steam cleaned. Leather will have special cleaning requirements;

Using disinfectants safely

- Follow all manufacturer's instructions and read the label and the Material Safety Data Sheet (MSDS);
- Do not use different types of disinfectants together;
- Store your disinfectants safely and securely, out of direct sunlight and away from heat sources;
- For spraying or misting products, spray directly into the cleaning cloth to dampen the cloth for use. Take care not to generate a mist.

PPE to use when diluting and using disinfectants includes:

- Gloves, elbow-length if available, and
- Eye protection (safety glasses, not prescription glasses).

Disposal or cleaning of materials and PPE

- Reusable, washable cloths, PPE and covers should be washed in a regular cycle wash using the warmest possible setting with normal washing detergent. Avoid shaking out the items before placing in the washing machine;
- Wear disposable gloves to handle used cloths, PPE and covers. Wash your hands thoroughly with soap and water for at least 20 seconds after removing the gloves;
- Reusable, non-washable PPE such as eye protection, should be wiped clean with a detergent solution first, then wiped over with a disinfectant, and left to air dry.

28. Site Meetings Procedures under COVID-19

Key considerations to prevent or reduce COVID-19 risks on construction sites meetings:

Before the meeting

The following should be exhausted:

- Develop and agree on preparedness plan to prevent infection at your meeting;
- Consider whether a face-to-face meeting is needed. Could it be replaced by a teleconference or online meeting;
- Could the meeting be scaled down so that fewer people attend?
- Pre-order sufficient supplies, including tissues and hand sanitizer for participants. Have face masks available to offer anyone who develops respiratory symptoms;
- Ensure that the boardroom is thoroughly cleaned and disinfected before the meeting including door and chair handles;
- Encourage attendants to bring their own pens to write notes or sign documentation;
- Actively monitor where COVID-19 is circulating. Advise participants in advance that if they have any symptoms or feel unwell, they should not attend;
- Make sure all organisers and participants at the meeting provide contact details: mobile telephone numbers, email and address where they are staying. State clearly that their details will be shared with local public health authorities if any participant becomes ill with a suspected infectious disease. If they will not agree to this they cannot attend the meeting;
- Develop and agree a response plan in case someone at the meeting becomes ill with symptoms of COVID-19 (dry cough, fever, malaise). This plan should include at least: Identify a room or area on site where someone who is feeling unwell or has symptoms can be safely isolated;

- Develop a plan for how they can be safely transferred from there to a health facility;
- Include what to do in your plan if a meeting participant or project member tests positive for COVID-19 during or just after the meeting.

During the meeting

- All meeting organisers must ensure that health and safety briefing is held where they will provide information or a briefing, preferably both orally, on COVID-19 and the measures that organisers are taking to make the meeting safe for participants;
- Build trust. For example, as an icebreaker, practice ways to say hello without touching;
- Encourage regular hand-washing or use of hand sanitiser by all participants at the meeting;
- Encourage participants to cover their face with the bend of their elbow or a tissue if they cough or sneeze. Supply tissues and closed bins to dispose of them in;
- Encourage attendees to wear face masks during the meeting if possible;
- Provide contact details or a local health hotline contact number that participants can call for advice or to give information;
- Display dispensers of alcohol-based hand rub prominently around the construction site;
- Arrange seats so that participants are at least one (1) meter apart;
- Open windows and doors whenever possible to make sure the site meeting venue is well ventilated;
- If anyone starts to feel unwell, follow your site emergency preparedness plan and report to the Project Manager or Construction Manager;
- Depending on the situation in your area, or recent travel of the participant, place the person in the isolation room. Offer the person a mask so they can get home safely, if appropriate, or to a designated assessment facility;
- Thank all participants for their cooperation with the provisions in place.

After the meeting

- Retain the names and contact details of all participants in the health and safety file for the project duration. This will also help public health authorities trace people who may have been exposed to COVID-19 if one or more participants become ill shortly after the meeting;
- If someone at the meeting or event was isolated as a suspected COVID-19 case, the organiser should let all participants know this. They should be advised to quarantine and monitor themselves for symptoms for 7 days and take their temperature twice a day;
- If they develop even a mild cough or low-grade fever (i.e. a temperature of 37.3 C or more) they should stay at home and self-isolate. This means avoiding close contact (1 meter or nearer) with other people, including family members. They should also contact their healthcare provider or the local public health department, giving them details of their recent travel and symptoms;
- Meeting organisers must thank all the participants for their cooperation with the provisions in place;
- The boardroom must be cleaned and disinfected after the meeting.

29. Authority Officers of Transnet

The Contractor shall co-operate with the officers of the network operator and shall comply with all instructions issued and restrictions imposed with respect to the Works which bear on the existence and operation of the network operator's railway lines and high-voltage equipment.

Without limiting the generality of the provisions above, any duly authorised representative of the network operator, having identified himself, may stop the work if, in his opinion, the safe passage of trains or the safety of the network operator's assets or any person is affected.

NB: CONSIDERATIONS OF SAFETY SHALL TAKE PRECEDENCE OVER ALL OTHER CONSIDERATIONS.

30. Contractor/s Representatives

The Principal Contractor shall nominate Responsible Representatives of whom at least one shall be available at any hour for call-out in cases of emergency. The Contractor shall provide their Construction Manager's names, addresses and telephone numbers to Transnet appointed health and Safety Agent or Project Manager.

The Principal Contractor's directors must satisfy themselves that their Construction Manager is fully conversant with project specific health and safety specification and that he shall ensure compliance with all obligations in respect thereof.

The Principal Contractor shall ensure that their employees and all contractors under their control receives relevant awareness, educational and competence training regarding railway safety as prescribed.

31. Occupations and Work Permits

All construction work to be done on total occupation or during an occupation between trains or under a work permit shall be done in a manner decided by the operator and at times to suit the network operator requirements.

The Contractor shall organise the construction works in a manner which will minimise the number and duration of occupations and work permits required.

The network operator will not be liable for any financial or other loss suffered by the Contractor arising from his failure to complete any work scheduled during the period of an occupation or work permit.

The Contractor shall submit to Transnet Project Manager, in writing, requests for occupations or work permits together with details of the work to be undertaken, at least 21 days before the beginning of the intended construction work. The network operator does not undertake to grant an occupation or work permit for any particular date, time or duration.

The network operator reserves the right to cancel any occupation or work permit at any time before or during the period of occupation or work permit. If, due to cancellation or change in date or time, the Contractor is not permitted to start work under conditions of total occupation or work permit at the time arranged, all costs caused by the cancellation shall be borne by the Contractor.

Before starting any work for which an occupation has been arranged, the Contractor shall obtain from the Project manager written confirmation of the date, time and duration of the occupation. Before starting any construction work for which a work permit has been granted, the construction manager shall read and sign portion C of the Work Permit, signifying that he is aware of the work boundaries within which work may be undertaken. After the work for which the permit was granted has been completed, or when the work permit is due to be terminated, or if the permit is cancelled after the start, the same person who signed portion C shall sign portion D of the Work Permit, thereby acknowledging that he is aware that the permit is cancelled. The Contractor will advise all his workmen accordingly.

32. Protection of Construction Employees

When speed restrictions are imposed by the network operator because of the Contractor's activities, the Contractor shall organise and carry out his work so as to permit the removal of the restrictions as soon as possible.

When the Project Manager or Project Health and Safety Agent considers protection to be necessary the Contractor shall, unless otherwise agreed, provide all protection including flagmen, other personnel and all equipment for the protection of the network operator's and the Contractor's personnel and assets, the public and including trains.

The network operator will provide training free of charge of the Contractor's flagmen and other personnel performing protection duties. The Contractor shall consult with the Contract Supervisor, whenever he considers that protection will be necessary, taking into account the minimum permissible clearances set out in the Manual for Track Maintenance (Document no. BBB0481).

- Drawing no. BE-97 Sheet 1: Horizontal Clearances: 1065mm gauge (Annexure 1 sheet 1)
- Drawing no. BE-97 Sheet 2: Vertical Clearances: 1065mm gauge (Annexure 1 sheet 2)
- Drawing no. BE-97 Sheet 3: Clearances: Platform (Annexure 1 sheet 3)
- Drawing no. BE-97 Sheet 5: Clearances: 610mm Gauge (Annexure 1 sheet 5)

The Contractor shall appoint a Responsible Representative to receive and transmit any instruction which may be given by the network operator personnel providing protection.

33. Clearances

No temporary works shall encroach on the appropriate minimum clearances set out in the Manual for Track Maintenance (Document no. BBB0481):

- Drawing no. BE-97 Sheet 1: Horizontal Clearances: 1065mm gauge (Annexure 1 sheet 1
- Drawing no. BE-97 Sheet 2: Vertical Clearances: 1065mm gauge (Annexure 1 sheet 2)
- Drawing no. BE-97 Sheet 3: Clearances: Platform (Annexure 1 sheet 3
- Drawing no. BE-97 Sheet 5: Clearances: 610mm Gauge (Annexure 1 sheet 5)

34. Stacking of Materials

The Contractor shall not stack any material closer than 3m from the centre line of any railway line without prior approval of the Transnet appointed project manager.

35. Excavation, Shoring, Dewatering and Drainage

Unless otherwise approved by the Transnet project manager any excavation adjacent to a railway line shall not encroach clearance/safe area as specified by the Transnet track master. The Contractor shall prevent ingress of water to the excavation but where water does enter, he shall dispose of it as directed by the Project Manager. The Contractor shall not block, obstruct or damage any existing drains either above or below ground level unless he has made adequate prior arrangements to deal with drainage.

36. Signal Track Circuits

Where signal track circuits are installed, the Contractor shall ensure that no material capable of conducting an electrical current makes contact between rails of railway line/lines. No signal connections on track-circuited tracks shall be severed without the Project Manager's knowledge and consent.

37. Penalty for Delays to Trains

If any trains are delayed by the Contractor and the Contract Supervisor is satisfied that the delay was avoidable, a penalty will be imposed on the Contractor as stipulated in the contract, for the period and number of trains delayed.

38. Temporary Level Crossings

The Project Manager may, on request of the Contractor, and if necessary for the purpose of execution of the project, permit the construction of a temporary level crossing over a railway a line at a position approved by the network track master and at the Contractor's cost. The period for which the temporary level crossing is permitted will be at the discretion of the track master. The Contractor will provide protection and supervise the construction of the road over the track(s) and within the railway servitude at the level crossing, as well as the erection of all road signs and height gauges. All cost to be borne by the contractor.
The Contractor shall exercise extreme caution in carrying out this work, especially in respect of damage to tracks, services, overhead power and communications routes and prevent contact with "live" overhead electrical equipment. Unless otherwise agreed, the Contractor will provide the service deviations or alterations to the network operator's track-, structure-, drainage-, electrical-, telecommunications- and train authorisation systems to accommodate the level crossing.

The Contractor shall take all necessary steps including the provision of gates, locks and, where necessary, watchmen to restrict the use of the temporary level crossing to himself and his employees, his subcontractors and their employees, the staff of the network operator and to such other persons as the Project Manager may permit and of whose identity the Contractor will be advised. If so ordered by the Project Manager, the Contractor shall provide persons to control road traffic using the temporary

level crossing. Such persons shall stop all road traffic when any approaching train is within seven hundred and fifty (750) metres of the temporary level crossing, and shall not allow road traffic to proceed over it until the lines are clear.

The Contractor shall maintain the temporary level crossing within the railway servitude in good condition for the period it is in use. A temporary agreement with the road authority to be concluded for the maintenance of the level crossing outside the railway servitude.

When the temporary level crossing is no longer required by the Contractor, or permitted by the network operator, the Contractor shall at his own cost remove it and restore the site and the network operator's track-, structure-, drainage-, electrical-, telecommunications- and train authorisation systems to its original condition. Work over the tracks and within the railway servitude will be supervised by the network operator.

39. Completion of the Works

On completion of the works, the Contractor shall remove all the remaining construction plant and material from the site, other than material which is the property of the network operator, and leave the site in a clean, neat and tidy condition. If material and plant is required for the liability and maintenance period the project manager must authorise it's retention on site.

40. Interference with Networks Operator's Assets and Work on Open Lines

The Contractor shall not interfere in any manner whatsoever with an open line, nor shall he carry out any work or perform any act which affects the security, use or safety of an open line except with the authority of the Project Manager and in the presence of a duly authorised representative of the network operator.

The Contractor shall not carry out any work or operate any plant, or place any material whatsoever nearer than three metres from the centre line of any open line except with the written permission of the Project Manager and subject to such conditions as he may impose. Care must be taken not to interfere with or damage any services such as overhead wire routes, cables or pipes and optical fibre cable, except as provided for the work specified. The Contractor will be held responsible for any damage to or interruption of such services arising from any act or omission on his part or of any of his employees, or persons engaged by him on the Works. The cost of repairing, replacing or restoring the services, as well as all other costs arising from any damage to services, shall be borne by, and will be recovered from the Contractor.

Authority granted by the Project Manager and the presence of an authorised representative of the network operator in terms hereof, shall not relieve the Contractor of his duty to comply with the requirements of this specification.

41. Construction Management

The project manager will provide overall technical superintendence for the construction sites, and may direct the Contractor in terms of the provisions of the Contract or in respect of any measures which the project manager may require for the operations of the network operator, the safety of trains, property and workmen of the network operator, and for the safety of other property and persons. The Contractor shall carry out the directions of the project manager or client health and safety agent. The superintendence exercised by the client representatives , including any agreement, approval, refusal or withdrawal of any approval given, shall not relieve the Contractor of any of his duties and liabilities under the Contract, and shall not imply any assumption by the network operator or by the project manager of the legal and other responsibilities of the Contractor in carrying out the construction work.

The project manager may delegate to any Transnet's construction manager or supervisor or other person, any of his/her duties or functions under the project. On receiving notice in writing of such delegation, the Contractor shall recognize and obey the Transnet's construction manager or supervisor or person to whom any such duties or functions have been delegated as if he were the project manager.

The Contractor shall exercise supervision over the construction work at all times when work is performed. The Contractor's construction manager shall be available on the site at all times while the construction works are in progress.

42. Construction Work Done Near Rolling Stock, Including Loading or Unloading Areas

No person may stand, climb or work, whilst on any platform, surface or foothold:

- Higher than the normal unrestricted access way, namely -
- External walkways on diesel, steam and electric locomotives, steam heat vans, etc. and
- Walkways between coaches and locomotives.
- Restricted access ways in terms of the Electrical Safety Instructions namely -
- The floor level of open wagons
- External walkways or decks of road-rail vehicles, on-track maintenance machines and material trains.

43. Reference Documents

Table 29-1: Reference Documents

Document Title
Occupational Health and Safety Act, 85 of 1993 and Regulations
Compensation for Occupational Injuries and Diseases Act, 1993