

**TRANSNET PORT TERMINALS**Tender Number: **iCLM HQ 728/TPT / TPT/2022/10/1641/14790/RFP****Description of the works: UPGRADE OF EMPTY STACK (AREA 100) AT PIER 1, DURBAN CONTAINER TERMINAL FOR TRANSNET SOC LTD (REG. NO 1990/000900/30) OPERATING AS TRANSNET PORT TERMINALS (HEREINAFTER REFERRED TO AS "TPT")****Transnet Port Terminals**an Operating Division **TRANSNET SOC LTD**

[Registration Number 1990/000900/30]

**REQUEST FOR PROPOSAL (RFP)****FOR THE:****UPGRADE OF EMPTY STACK (AREA 100) AT PIER 1, DURBAN CONTAINER TERMINAL FOR TRANSNET SOC LTD (REG. NO 1990/000900/30) OPERATING AS TRANSNET PORT TERMINALS (HEREINAFTER REFERRED TO AS "TPT")**

<b>RFP NUMBER</b>	<b>: iCLM HQ 728/TPT / TPT/2022/10/1641/14790/RFP</b>
<b>ISSUE DATE</b>	<b>: 31 May 2023</b>
<b>COMPULSORY BRIEFING</b>	<b>: 09 June 2023</b>
<b>CLOSING DATE</b>	<b>: 30 June 2023</b>
<b>CLOSING TIME</b>	<b>: 10h00am</b>
<b>TENDER VALIDITY PERIOD</b>	<b>: 12 weeks from closing date</b>



## Contents

Number	Heading
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### The Tender

#### Part T1: Tendering Procedures

- |      |  |
|------|--|
| T1.1 | Tender Notice and Invitation to Tender |
| T1.2 | Tender Data                            |

#### Part T2: Returnable Documents

- |      |                             |
|------|-----------------------------|
| T2.1 | List of Returnable Document |
| T2.2 | Returnable Schedules        |

## The Contract

#### Part C1: Agreements and Contract Data

- |      |                              |
|------|------------------------------|
| C1.1 | Form of Offer and Acceptance |
| C1.2 | Contract Data (Parts 1 & 2)  |
| C1.3 | Form of Guarantee            |

#### Part C2: Pricing Data

- |      |                      |
|------|----------------------|
| C2.1 | Pricing Instructions |
| C2.2 | Activity Schedule    |

#### Part C3: Scope of Work

- |      |                   |
|------|-------------------|
| C3.1 | Works Information |
|------|-------------------|

#### Part C4: Site Information

- |      |                  |
|------|------------------|
| C4.1 | Site Information |
|------|------------------|

## **Part T1: Tendering Procedures**

**TRANSNET PORT TERMINALS**Tender Number: **iCLM HQ 728/TPT**

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## T1.1 TENDER NOTICE AND INVITATION TO TENDER

### SECTION 1: NOTICE TO TENDERERS

#### 1. INVITATION TO TENDER

Responses to this Tender [hereinafter referred to as a **Tender**] are requested from persons, companies, close corporations or enterprises [hereinafter referred to as a Tenderer].

<b>DESCRIPTION</b>	<b>UPGRADE OF EMPTY STACK (AREA 100) AT PIER 1, DURBAN CONTAINER TERMINAL FOR TRANSNET SOC LTD (REG. NO 1990/000900/30) OPERATING AS TRANSNET PORT TERMINALS (HEREINAFTER REFERRED TO AS "TPT")</b>
<b>TENDER DOWNLOADING</b>	<b>This Tender may be downloaded directly from the National Treasury eTender Publication Portal at <a href="http://www.etenders.gov.za">www.etenders.gov.za</a> and the Transnet website at <a href="https://transnetetenders.azurewebsites.net">https://transnetetenders.azurewebsites.net</a> (please use Google Chrome to access Transnet link) <b>FREE OF CHARGE.</b></b>

<b>COMPULSORY TENDER CLARIFICATION MEETING</b>	<p>A Compulsory Tender Clarification Meeting will be conducted at Pier 1 Auditorium <b>on the 09 June 2023, at 10:00am [10 O'clock]</b> for a period of ± 2 (two) hours. [Tenderers to provide own transportation and accommodation].</p> <p>Venue:  <u>Transnet Port Terminals – Pier 1 Auditorium Board details</u></p> <p>Pier 1 Auditorium  Pier 1 Container Terminal  Port Entrance 8  Bayhead Road  Bhekulwandle Staff Facility Building</p> <p><b>Direction Attached</b></p> <p>The Compulsory Tender Clarification Meeting will start punctually and information will not be repeated for the benefit of Tenderers arriving late.</p>
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	<p><b>A Site visit/walk will take place, tenderers are to note:</b></p> <ul style="list-style-type: none"> <li>• Tenderers are required to wear safety shoes, goggles, long sleeve shirts, high visibility vests and hard hats.</li> <li>• Tenderers without the recommended PPE will not be allowed on the site walk.</li> <li>• Tenderers and their employees, visitors, clients and customers entering Transnet Offices, Depots, Workshops and Stores will have to undergo breathalyser testing.</li> <li>• All forms of firearms are prohibited on Transnet properties and premises.</li> <li>• The relevant persons attending the meeting must ensure that their identity documents, passports or drivers licences are on them for inspection at the access control gates.</li> </ul> <p>Certificate of Attendance in the form set out in the <b>Returnable Schedule T2.2-02</b> hereto must be completed and submitted with your Tender as proof of attendance is required for a <b>compulsory</b> site meeting and/or tender briefing.</p> <p><b>Tenderers are required to bring this Returnable Schedule T2.2-02 to the Compulsory Tender Clarification Meeting to be signed by the <i>Employer's</i> Representative.</b></p> <p><b>Tenderers failing to attend the compulsory tender briefing will be disqualified.</b></p>
<b>CLOSING DATE</b>	<p><b>10:00pm on 30 June 2023</b></p> <p>Tenderers must ensure that tenders are uploaded timeously onto the system. <b>If a tender is late, it will not be accepted for consideration.</b></p>

**2. TENDER SUBMISSION**

Transnet has implemented a new electronic tender submission system, the e-Tender Submission Portal, in line with the overall Transnet digitalization strategy where suppliers can view advertised tenders, register their information, log their intent to respond to bids and upload their bid proposals/responses on to the system.

a) The Transnet e-Tender Submission Portal can be accessed as follows:

Log on to the Transnet eTenders management platform website (<https://transnetetenders.azurewebsites.net>);

- Click on "ADVERTISED TENDERS" to view advertised tenders;
- Click on "SIGN IN/REGISTER – for bidder to register their information (must fill in all mandatory information);

**TRANSNET PORT TERMINALS**Tender Number: **iCLM HQ 728/TPT**

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- Click on "SIGN IN/REGISTER" - to sign in if already registered;
  - Toggle (click to switch) the "Log an Intent" button to submit a bid;
  - Submit bid documents by uploading them into the system against each tender selected.
  - **Tenderers are required to ensure that electronic bid submissions are done at least a day before the closing date to prevent issues which they may encounter due to their internet speed, bandwidth or the size of the number of uploads they are submitting. Transnet will not be held liable for any challenges experienced by bidders as a result of the technical challenges. Please do not wait for the last hour to submit. A Tenderer can upload 30mb per upload and multiple uploads are permitted.**
- b) The tender offers to this tender will be opened as soon as possible after the closing date and time. Transnet shall not, at the opening of tenders, disclose to any other company any confidential details pertaining to the Tender Offers / information received, i.e. pricing, delivery, etc. The names and locations of the Tenderers will be divulged to other Tenderers upon request.
- c) Submissions must not contain documents relating to any Tender other than that shown on the submission.

**3. CONFIDENTIALITY**

All information related to this RFP is to be treated with strict confidentiality. In this regard Tenderers are required to certify that they have acquainted themselves with the Non-Disclosure Agreement. All information related to a subsequent contract, both during and after completion thereof, will be treated with strict confidence. Should the need however arise to divulge any information gleaned from provision of the Works, which is either directly or indirectly related to Transnet's business, written approval to divulge such information must be obtained from Transnet.

**4. DISCLAIMERS**

Tenderers are hereby advised that Transnet is not committed to any course of action as a result of its issuance of this Tender and/or its receipt of a tender offer. In particular, please note that Transnet reserves the right to:

- 4.1. Award the business to the highest scoring Tenderer/s unless objective criteria justify the award to another tenderer.

**TRANSNET PORT TERMINALS**Tender Number: **iCLM HQ 728/TPT**

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- 4.2. Not necessarily accept the lowest priced tender or an alternative Tender;
- 4.3. Go to the open market if the quoted rates (for award of work) are deemed unreasonable;
- 4.4. Should the Tenderers be awarded business on strength of information furnished by the Tenderer, which after conclusion of the contract is proved to have been incorrect, Transnet reserves the right to terminate the contract;
- 4.5. Request audited financial statements or other documentation for the purposes of a due diligence exercise;
- 4.6. Not accept any changes or purported changes by the Tenderer to the tender rates after the closing date;
- 4.7. Verify any information supplied by a Tenderer by submitting a tender, the Tenderer/s hereby irrevocably grant the necessary consent to the Transnet to do so;
- 4.8. Conduct the evaluation process in parallel. The evaluation of Tenderers at any given stage must therefore not be interpreted to mean that Tenderers have necessarily passed any previous stage(s);
- 4.9. Unless otherwise expressly stated, each tender lodged in response to the invitation to tender shall be deemed to be an offer by the Tenderer. The Employer has the right in its sole and unfettered discretion not to accept any offer.
- 4.10. Not be held liable if tenderers do not provide the correct contact details during the clarification session and do not receive the latest information regarding this RFP with the possible consequence of being disadvantaged or disqualified as a result thereof.
- 4.11. Transnet reserves the right to exclude any Tenderers from the tender process who has been convicted of a serious breach of law during the preceding 5 [five] years including but not limited to breaches of the Competition Act 89 of 1998, as amended. Tenderers are required to indicate in tender returnable [clause 12 on T2.2-19, **[Breach of Law]** whether or not they have been found guilty of a serious breach of law during the past 5 [five] years.
- 4.12. Transnet reserves the right to perform a risk analysis on the preferred tenderer to ascertain if any of the following might present an unacceptable commercial risk to the employer:
  - *unduly high or unduly low tendered rates or amounts in the tender offer;*
  - *contract data of contract provided by the tenderer; or*

**TRANSNET PORT TERMINALS**Tender Number: **iCLM HQ 728/TPT**

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- *the contents of the tender returnables which are to be included in the contract.*

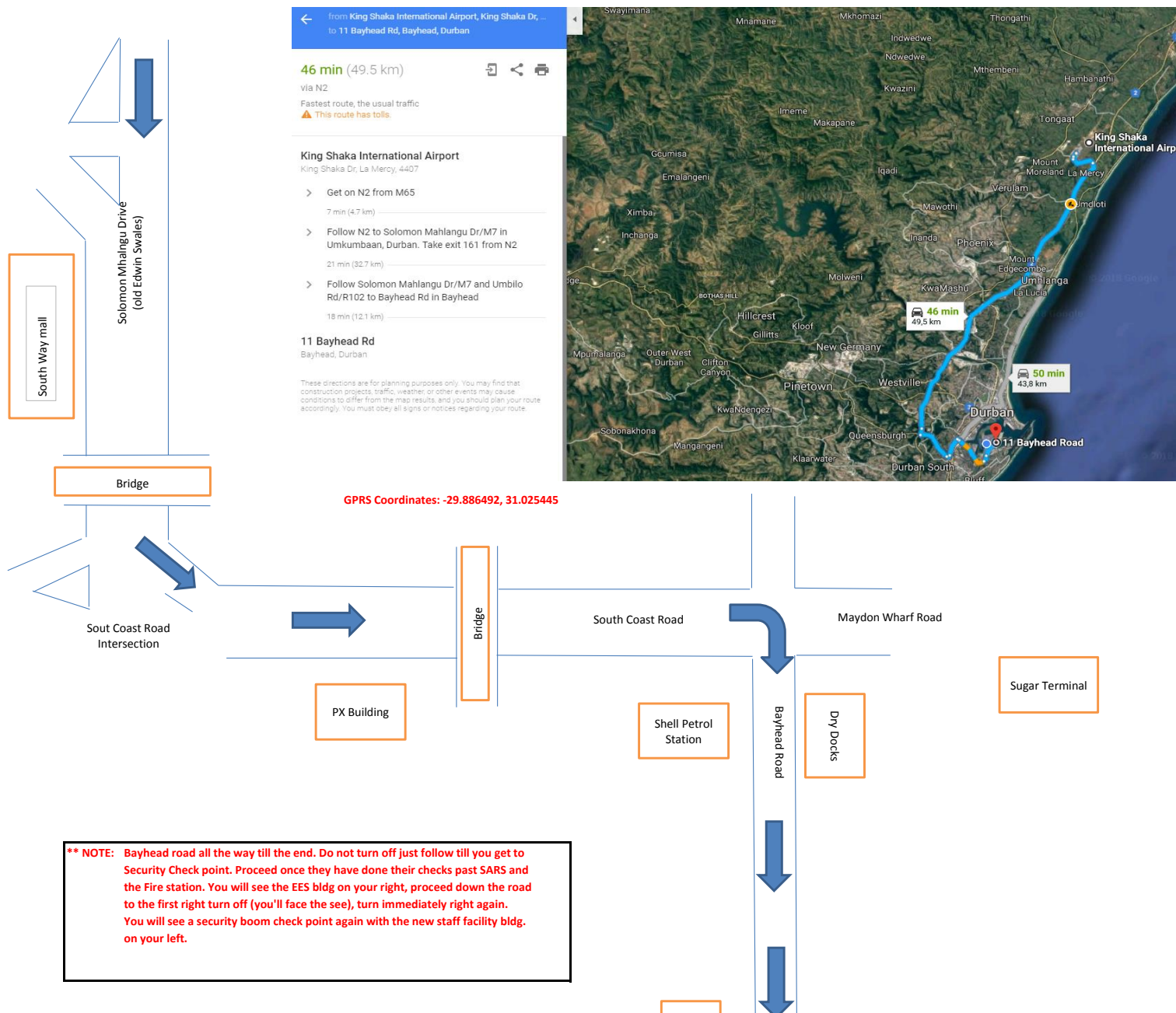
**5.** Transnet will not reimburse any Tenderer for any preparatory costs or other work performed in connection with this Tender, whether or not the Tenderer is awarded a contract.

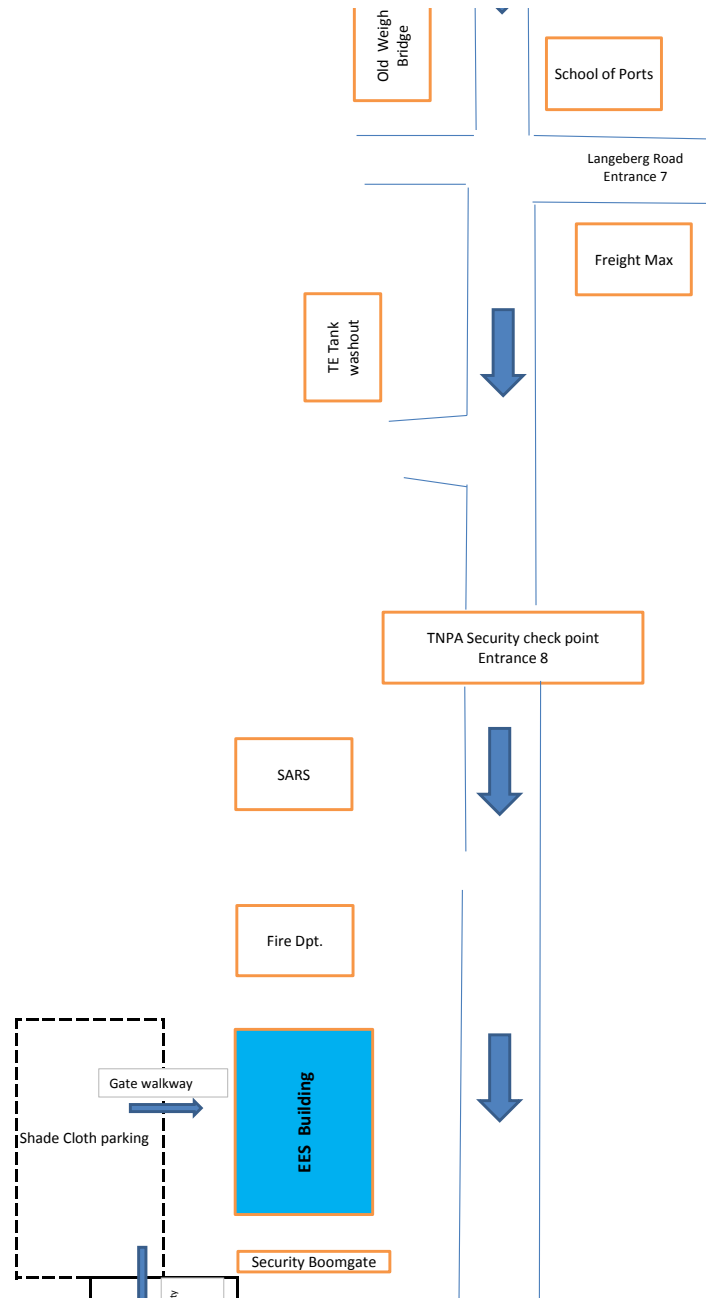
**6. NATIONAL TREASURY'S CENTRAL SUPPLIER DATABASE**

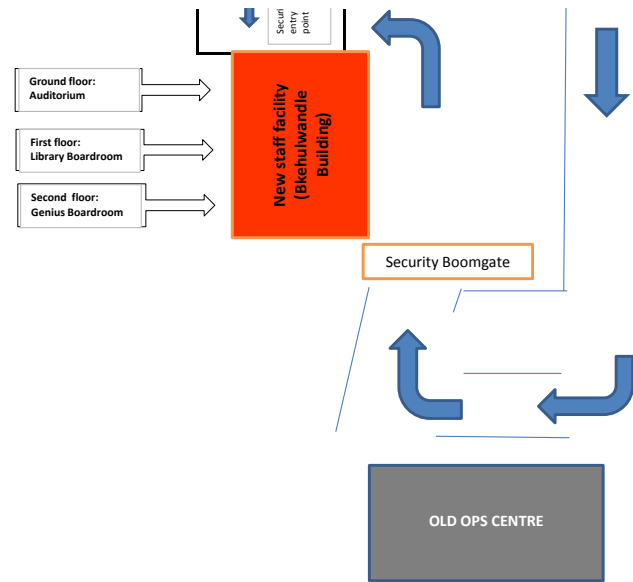
Tenderer are required to self-register on National Treasury's Central Supplier Database (CSD) which has been established to centrally administer supplier information for all organs of state and facilitate the verification of certain key supplier information. The CSD can be accessed at <https://secure.csd.gov.za/>. Tenderer are required to provide the following to Transnet in order to enable it to verify information on the CSD:

Supplier Number..... and Unique registration reference number.....(**Tender Data**)

**Transnet urges its clients, suppliers and the general public  
to report any fraud or corruption to  
TIP-OFFS ANONYMOUS: 0800 003 056 OR [Transnet@tip-offs.com](mailto:Transnet@tip-offs.com)**







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Tender Number: iCLM HQ 728/TPT

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## T1.2 TENDER DATA

The conditions of tender are the Standard Conditions of Tender as contained in Annex C of the CIDB Standard for Uniformity in Engineering and Construction Works Contracts. The Standard for Uniformity in Construction Procurement was first published in Board Notice 62 of 2004 in Government Gazette No 26427 of 9 June 2004. It was subsequently amended in Board Notice 67 of 2005 in Government Gazette No 28127 of 14 October 2005, Board Notice 93 of 2006 in Government Gazette No 29138 of 18 August 2006, Board Notice No 9 of 2008 in Government Gazette No 31823 of 30 January 2009, Board Notice 86 of 2010 in Government Gazette No 33239 of 28 May 2010, Board Notice 136 of 2015 in Government Gazette 38960 of 10 July 2015 and Board Notice 423 of 2019 in Government Gazette No 42622 of 8 August 2019.

This edition incorporates the amendments made in Board Notice 423 of 2019 in Government Gazette 42622 of 8 August 2019. (see [www.cidb.org.za](http://www.cidb.org.za)).

The Standard Conditions of Tender make several references to Tender data for detail that apply specifically to this tender. The Tender Data shall have precedence in the interpretation of any ambiguity or inconsistency between it and the Standard Conditions of Tender.

Each item of data given below is cross-referenced in the left-hand column to the clause in the Standard Conditions of Tender to which it mainly applies.

Clause	Data
C.1.1 The <i>Employer</i> is	<b>Transnet SOC Ltd</b> <b>(Reg No. 1990/000900/30)</b>
C.1.2 The tender documents issued by the <i>Employer</i> comprise:	
<b>Part T: The Tender</b>	
Part T1: Tendering procedures	T1.1 Tender notice and invitation to tender T1.2 Tender data
Part T2 : Returnable documents	T2.1 List of returnable documents T2.2 Returnable schedules
<b>Part C: The contract</b>	
Part C1: Agreements and contract data	C1.1 Form of offer and acceptance C1.2 Contract data (Part 1 & 2) C1.3 Form of Securities
Part C2: Pricing data	C2.1 Pricing instructions C2.2 Activity Schedule



**TRANSNET PORT TERMINALS**Tender Number: **iCLM HQ 728/TPT**

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	Part C3: Scope of work	C3.1 Works Information
	Part C4: Site information	C4.1 Site information
C.1.4	The Employer's agent is:	Procurement Officer
	Name:	Snegugu Nhlapho
	Address:	Transnet Port Terminals 2nd Floor, 202 Anton Lembede Street, Durban Central Durban, 4001.
	Tel No.	060 847 5715
	E – mail	Snegugu.Nhlapho@transnet.net
C.2.1	Only those tenderers who satisfy the following eligibility criteria are eligible to submit tenders:	
	<p><b>1. Stage One - Eligibility with regards to attendance at the compulsory clarification meeting:</b></p> <p>An authorised representative of the tendering entity or a representative of a tendering entity that intends to form a Joint Venture (JV) must attend the compulsory clarification meeting in terms C2.7</p>	
	<p><b>2. Stage Two - Eligibility in terms of the Construction Industry Development Board:</b></p> <p>a) Only those tenderers who are registered with the CIDB, or are capable of being so prior to the evaluation of submissions, in a contractor grading designation equal to or higher than a contractor grading designation determined in accordance with the sum tendered or a value determined in accordance with Regulation 25 (1B) or 25(7A) of the Construction Industry Development Regulations, designation of <b>6CE or higher</b> class of construction work, are eligible to have their tenders evaluated.</p> <p>b) Joint Venture (JV)</p> <p>Joint ventures are eligible to submit tenders subject to the following:</p> <ol style="list-style-type: none"> <li>every member of the joint venture is registered with the CIDB;</li> <li>the lead partner has a contractor grading designation of not lower than one level below the required class of construction works under consideration and possesses the required recognition status; and</li> <li>the combined Contractor grading designation calculated in accordance with the Construction Industry Development Regulations is equal to or higher than a Contractor grading designation determined in accordance with the sum</li> </ol>	

tendered for a **6CE** or higher class of construction work or a value determined in accordance with Regulation 25(1B) or 25(7A) of the Construction Industry Development Regulations

The tenderer shall provide a certified copy of its signed joint venture agreement

***Any tenderer that fails to meet the stipulated eligibility criteria will be regarded as an unacceptable tender.***

### **3. Stage Four - Functionality:**

Only those tenderers who obtain the minimum qualifying score for functionality will be evaluated further in terms of price and the applicable preference point system. The minimum qualifying for score for functionality is 60 points.

The evaluation criteria for measuring functionality and the points for each criteria and, if any, each sub-criterion are as stated in C.3.11.3 below.

***Any tenderer that fails to meet the stipulated pre-qualifying criteria will be regarded as an unacceptable tender.***

C.2.7 The arrangements for a compulsory clarification meeting are as stated in the Tender Notice and Invitation to Tender. **Tenderers must complete and sign the attendance register.** Addenda will be issued to and tenders will only be received from those tendering entities including those entities that intends forming a joint venture appearing on the attendance register.

Tenderers are also **required to bring their RFP document to the briefing session and have their returnable document T2.2-02 certificate of attendance** signed off by the Employer's authorised representative.

C.2.12 No alternative tender offers will be considered.

C.2.13.3 Each tender offer shall be in the **English Language**.

C.2.13.5 The *Employer's* details and identification details that are to be shown on each tender offer are as follows:

Identification details:

The tender documents must be uploaded with:

- Name of Tenderer: **(insert company name)**
- Contact person and details: **(insert details)**
- The Tender Number:
- The Tender Description

Documents must be marked for the attention of:

***Employer's Agent:***

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C.2.13.9 Telephonic, telegraphic, facsimile or e-mailed tender offers will not be accepted.

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C.2.15 The closing time for submission of tender offers is:  
Time: **10:00pm** on the **30 June 2023**  
**Location: The Transnet e-Tender Submission Portal:**  
**(<https://transnetetenders.azurewebsites.net>);**

**NO LATE TENDERS WILL BE ACCEPTED**

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C.2.16 The tender offer validity period is **12 weeks** after the closing date. Tenderers are to note that they may be requested to extend the validity period of their tender, on the same terms and conditions, if Transnet's internal evaluation and governance approval processes has not been finalised within the validity period.

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C.2.23 The tenderer is required to submit with his tender:

1. A valid Tax Clearance Certificate issued by the South African Revenue Services.  
**Tenderers also to provide Transnet with a TCS PIN to verify Tenderers compliance status.**
2. A **valid B-BBEE Certificate** from a Verification Agency accredited by the South African Accreditation System [**SANAS**], or a **sworn affidavit** confirming annual turnover and level of black ownership in case of all EMEs and QSEs with 51% black ownership or more together with the tender;
3. A valid CIDB certificate in the correct designated grading;
4. Proof of registration on the Central Supplier Database;
5. Letter of Good Standing with the Workmen's compensation fund by the tendering entity or separate Letters of Good Standing from all members of a newly constituted JV.

**Note:** Refer to Section T2.1 for List of Returnable Documents

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C3.11 The minimum number of evaluation points for functionality is: **60**

The procedure for the evaluation of responsive tenders is Functionality, Price and Preference:

**Only those tenderers who attain the minimum number of evaluation points for Functionality will be eligible for further evaluation, failure to meet the minimum threshold will result in the tender being disqualified and removed from any further consideration.**

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### Functionality Criteria

The functionality criteria and maximum score in respect of each of the criteria are as follows:

**Note: Any tender not complying with the above mentioned requirements, will be regarded as non-responsive and will therefore not be considered for further evaluation. This note must be read in conjunction with Clause C.2.1.**

Functionality criteria	Sub-criteria	Sub-criteria points	Maximum number of points
<b>T2.2-03 Occupational Plan</b>	<ul style="list-style-type: none"> <li>- Aligned to Method Statement</li> <li>- Aligned to Programme</li> <li>- Drawing showing occupation</li> </ul>		<b>15</b>
<b>T2.2-04 Management &amp; CV's of Key Persons</b>	Relevant Technical experience:	<b>5</b>	<b>15</b>
	Education, training and skills for the following:	<b>5</b>	
	Knowledge of issues pertinent to the project	<b>5</b>	
<b>T2.2-05 Method Statement</b>	<ul style="list-style-type: none"> <li>- Execution Approach (including limitations due to required occupations to carry out work in operational areas)</li> <li>- Resource Allocation</li> <li>- Health and Safety (including security)</li> <li>- Quality Control</li> <li>- Civil Work</li> <li>- Traffic Control</li> </ul>	<b>20</b>	<b>20</b>
<b>T2.2-06 Programme</b>	Ability to Provide the <i>Works</i> in terms of the Scope as detailed under C3: <i>Works</i> Information and within the required timeframe, indicating, in a logical sequence, the order and timing of the activities that will take place in order to Provide the <i>Works</i> and detailed at an appropriate level of decomposition to support the scope and associated duration estimates.	<b>6</b>	

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	Dates when the <i>Contractor</i> will need <i>access</i> to any part of the Site/s and/or persons, as well as submission, approval process and timing for Health & Safety, Environmental and Quality pre-requisites/requirements. In addition the Programme must clearly demonstrate adequate provision for the review and approval processes. Moreover, the Programme must clearly demonstrate adequate provision for the process and timeframes associated with undertaking procurement processes, inductions, permits and medicals.	<b>3</b>	
	The Contractor indicates how he plans in achieving the following dates and clearly demonstrates them on the schedule - Starting Date, Access Date, Planned Completion and Completion Dates. In addition the Programme clearly demonstrates adequate provisions for Time Risk Allowance (TRA).	<b>3</b>	
	The Programme shall be aligned to the C3: <i>Works</i> Information, and detailed at an appropriate level of decomposition to support the scope and associated duration estimates.	<b>3</b>	
	The Programme must clearly support and demonstrate alignment to the Method Statement per as contained under T.2.2-05. In addition the programme needs to have a basis of a schedule not limited to assumptions, constraints and approach to providing the <i>Works</i> and construction monitoring as detailed in the programme.	<b>5</b>	

**TRANSNET PORT TERMINALS**

Tender Number: iCLM HQ 728/TPT

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<b>T2.2-07</b> <b>Previous Experience</b>	<p>A list of past / current comparable projects.</p> <p>Execution of similar works as detailed in the Works Information with reference to:</p> <ul style="list-style-type: none"><li>- Previous Experience of tarmacadam paving, sub-grade preparation, palisade fencing, stack markings projects by tenderer, or their partner/ subcontractor over the past five years with a minimum value of R4 000 000. References to provide letter of reference, to be traceable and contactable to allow verification of track record provided.</li><li>- Sufficient references to substantiate experience indicated (Client name and contact details, project description, duration and contract value).</li></ul>		<b>15</b>
<b>T2.2-08</b> <b>Health and Safety Requirements</b>	Project Specific Safety Plan	<b>3</b>	<b>15</b>
	Policy (State points allocated)	<b>1</b>	
	Roles & Responsibilities	<b>2</b>	
	Training Matrix	<b>1</b>	
	Overview of the Baseline	<b>3</b>	
	One year synopsis	<b>2</b>	
	Safety Questionnaire	<b>2</b>	
	Cost Breakdown Sheet	<b>2</b>	
<b>Maximum possible score for Functionality</b>			<b>100</b>



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- C.3.11. Only tenders that achieve the minimum qualifying score for functionality will be/Only tenders that are Administratively and Substantively Responsive (in case Functionality is not applicable – Please delete this note) (Please select the applicable statement and delete the other and delete this note) will be evaluated further in accordance with the 80/20 preference points systems as described in Preferential Procurement Regulations.

80 where the financial value of one or more responsive tenders received have a value equal to or below R50 million, inclusive of all applicable taxes,

Up to 100 minus  $W_1$  tender evaluation points will be awarded to tenderers who complete the preferencing schedule and who are found to be eligible for the preference claimed. **Should the BBBEE rating not be provided, tenderers with no verification will score zero points for preferencing.**

**Note:** Transnet reserves the right to carry out an independent audit of the tenderers scorecard components at any stage from the date of close of the tenders until completion of the contract.

- C.3.13 Tender offers will only be accepted if:

1. The tenderer or any of its directors/shareholders is not listed on the Register of Tender Defaulters in terms of the Prevention and Combating of Corrupt Activities Act of 2004 as a person prohibited from doing business with the public sector;
2. the tenderer does not appear on Transnet's list for restricted tenderers and National Treasury's list of Tender Defaulters;
3. the tenderer has fully and properly completed the Compulsory Enterprise Questionnaire and there are no conflicts of interest which may impact on the tenderer's ability to perform the contract in the best interests of the Employer or potentially compromise the tender process and persons in the employ of the state.
4. Transnet reserves the right to award the tender to the tenderer who scores the highest number of points overall, unless there are **objective criteria** which will justify the award of the tender to another tenderer. Objective criteria include but are not limited to the outcome of a due diligence exercise to be conducted. The due diligence exercise may take the following factors into account inter alia; the tenderer:
  - a) is not under restrictions, or has principals who are under restrictions, preventing participating in the employer's procurement,

**TRANSNET PORT TERMINALS**Tender Number: **iCLM HQ 728/TPT****Description of the works: UPGRADE OF EMPTY STACK (AREA 100) AT PIER 1, DURBAN CONTAINER TERMINAL FOR TRANSNET SOC LTD (REG. NO 1990/000900/30) OPERATING AS TRANSNET PORT TERMINALS (HEREINAFTER REFERRED TO AS "TPT")**

- 
- b) can, as necessary and in relation to the proposed contract, demonstrate that he or she possesses the professional and technical qualifications, professional and technical competence, financial resources, equipment and other physical facilities, managerial capability, reliability, experience and reputation, expertise and the personnel, to perform the contract,
  - c) has the legal capacity to enter into the contract,
  - d) is not insolvent, in receivership, under Business Rescue as provided for in chapter 6 of the Companies Act, 2008, bankrupt or being wound up, has his affairs administered by a court or a judicial officer, has suspended his business activities, or is subject to legal proceedings in respect of any of the foregoing,
  - e) complies with the legal requirements, if any, stated in the tender data and
  - f) is able, in the option of the employer to perform the contract free of conflicts of interest.

- 
- C.3.17      The number of paper copies of the signed contract to be provided by the Employer is 1 (one).
-



## **Part T2 - Returnable Documents**

**TRANSNET PORT TERMINAL**Tender Number: **ICLM HQ 728/TPT**

Description of the works: **UPGRADE OF EMPTY STACK (AREA 100) AT PIER 1, DURBAN CONTAINER TERMINAL FOR TRANSNET SOC LTD (REG. NO 1990/000900/30) OPERATING AS TRANSNET PORT TERMINALS (HEREINAFTER REFERRED TO AS "TPT")**

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## **T2.1 List of Returnable Documents**

### **2.1.1 These schedules are required for pre-qualification and eligibility purposes:**

- T2.2-01 **Stage Three as per CIDB: Eligibility Criteria Schedule** - CIDB Registration
- T2.2-02 **Stage Four as per CIDB: Eligibility Criteria Schedule** - Certificate of attendance at Compulsory Tender Clarification Meeting

### **2.1.2 Stage Five as per CIDB: these schedules will be utilised for evaluation purposes:**

- T2.2-03 **Evaluation Schedule:** Occupation Plan
- T2.2-04 **Evaluation Schedule:** Project Organogram, Management & CV's
- T2.2-05 **Evaluation Schedule:** Method Statement
- T2.2-06 **Evaluation Schedule:** Programme
- T2.2-07 **Evaluation Schedule:** Previous experience
- T2.2-08 **Evaluation Schedule:** Health and Safety Management

### **2.1.3 Returnable Schedules:**

#### **General:**

- T2.2-09 Authority to submit tender
- T2.2-10 Record of addenda to tender documents
- T2.2-11 Letter of Good Standing
- T2.2-12 Risk Elements
- T2.2-13 Availability of equipment and other resources
- T2.2-14 Schedule of proposed Subcontractors
- T2.2-15 Site Establishment requirements

#### **Agreement and Commitment by Tenderer:**

- T2.2-16 CIDB SFU ANNEX G Compulsory Enterprise Questionnaire
- T2.2-17 Non-Disclosure Agreement
- T2.2-18 RFP Declaration Form
- T2.2-19 RFP – Breach of Law
- T2.2-20 Certificate of Acquaintance with Tender Document
- T2.2-21 Service Provider Integrity Pact
- T2.2-22 Supplier Code of Conduct

**TRANSNET PORT TERMINAL**Tender Number: **ICLM HQ 728/TPT**

Description of the works: **UPGRADE OF EMPTY STACK (AREA 100) AT PIER 1, DURBAN CONTAINER TERMINAL FOR TRANSNET SOC LTD (REG. NO 1990/000900/30) OPERATING AS TRANSNET PORT TERMINALS (HEREINAFTER REFERRED TO AS "TPT")**

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**1.3.2 Bonds/Guarantees/Financial/Insurance:**

- T2.2-23 Insurance provided by the Contractor
- T2.2-24 Form of Intent to provide a Performance Guarantee
- T2.2-25 Forecast Rate of Invoicing
- T2.2-26 Three (3) years audited financial statements

**1.3.3 Transnet Vendor Registration Form:**

- T2.2-27 Transnet Vendor Registration Form

**2.2 C1.1 Offer portion of Form of Offer & Acceptance****2.3 C1.2 Contract Data****2.4 C1.3 Forms of Securities****2.5 C2.1 Pricing Instructions****2.6 C2.2 Activity Schedule**

## T2.2-01: Eligibility Criteria Schedule - CIDB Grading Designation

### Note to tenderers:

Tenderers are to indicate their CIDB Grading by filling in the table below. **Attach a copy of the CIDB Grading Designation or evidence of being capable of being so registered.**

CRS Number	Status	Grading	Expiry Date

- Only those tenderers who are registered with the CIDB, or are capable of being so prior to the evaluation of submissions, in a contractor grading designation equal to or higher than a contractor grading designation determined in accordance with the sum tendered or a value determined in accordance with Regulation 25 (1B) or 25(7A) of the Construction Industry Development Regulations, for a **6CE or Higher** class of construction work, are eligible to have their tenders evaluated.

### 2. Joint Venture (JV)

Joint ventures are eligible to submit tenders subject to the following:

- every member of the joint venture is registered with the CIDB;
- the lead partner has a contractor grading designation of not lower than one level (**5CE**) below the required grading designation in the class of construction works under consideration and possesses the required recognition status; and
- the combined Contractor grading designation calculated in accordance with the Construction Industry Development Regulations is equal to or higher than a Contractor grading designation determined in accordance with the sum tendered for a **6CE or Higher** class of construction work or a value determined in accordance with Regulation 25(1B) or 25(7A) of the Construction Industry Development Regulations
- the Contractor shall provide the employer with a certified copy of its signed joint venture agreement;
- and in the event that the joint venture is an 'Incorporated Joint Venture' the Memorandum of Incorporation to be provided within 4 (four) weeks of the Contract Date.

## T2.2-02: Eligibility Criteria Schedule:

### Certificate of Attendance at Tender Clarification Meeting

This is to certify that

(Company Name)

Represented  
by:

(Name and  
Surname)

Was represented at the compulsory tender clarification meeting

Held at:		
On (date)		Starting time:

#### Particulars of person(s) attending the meeting:

Name

Signature

Capacity

#### Attendance of the above company at the meeting was confirmed:

Name

Signature

**For and on Behalf of the  
Employers Agent.**

Date

## T2.2-03 : Evaluation Schedule: Occupation Plan

### Note to tenderers:

Occupation Plan - Area 100 is a 24 hour operational area, the Contractor will not be given 100% occupation of Area 100. The Contractor is required to develop an Occupation Plan indicating the sectional area/s and the associated extent (m2) of required occupation, the Occupation Plan must be aligned to the Programme and Method Statement.

**Please note: Tenderers are required to provide a detailed occupation plan. Scores will be based on the linear scale below, and will be averaged and weighed to provide a final score. Tenderers to note that they will not achieve an "acceptable" score should they not provide the information as required in this Returnable.**



The table below will be used as guidelines for scoring / evaluating the method statement submitted by the Tenderer:

<b>SCORE</b>	
	<ul style="list-style-type: none"> <li>• Aligned to Method Statement</li> <li>• Aligned to Programme</li> <li>• Drawing showing occupations</li> </ul>
<b>Maximum Score</b>	<b>15</b>
	<b>Formulae:</b> $Points = \frac{Score}{100} \times 15$
<b>Score 0</b>	The tenderer has submitted no information or inadequate information to determine a score.
<b>Score 20</b>	The plan and work alignment to project schedule and method statement is poorly presented, generic and not tailored to address the specific project objectives and methodology.
<b>Score 40</b>	The plan is generic and not tailored to address the specific project objectives and methodology. The methodology approach does not adequately deal with the critical characteristics of the project.
<b>Score 60</b>	Satisfactory response/solution to the particular aspect of the requirement and evidence given that the stated employer's requirements will be met.
<b>Score 80</b>	The plan is specifically tailored to address the specific project objectives and methodology and is sufficiently flexible to accommodate changes that may occur during execution. The plan to manage activities is specifically tailored to the critical characteristics of the project.
<b>Score 100</b>	Besides meeting the "80" rating, the important issues are approached in an innovative and efficient way, indicating that the tenderer has outstanding knowledge of state-of-the-art approaches. The plan details ways to improve the project outcomes and the quality of the outputs.

## T2.2-04: Evaluation Schedule: Management & CV's of Key Persons

Please describe the management arrangements for the *works* and the tenderer is to take note that evaluation of this schedule must contain the following information:

Comprehensive CV's should be attached to this schedule:

As a minimum each CV should address the following, but not limited to;

1. Personal particulars;
2. Qualifications (degrees, grades of membership of professional societies and Professional registrations, all these certificates are to be attached);
3. Skills;
4. Name of current employer and position;
5. Overview of post graduate experience (year, organisation, position and responsibilities); and
6. Outline of recent assignments / detailed experience that has a bearing on the scope of work.
7. CV's for people proposed for all identified posts including:

i) **Contracts Manager**

The Contracts Manager should at least have a minimum qualification of a BSc. Eng./B.Tech./National Diploma in Civil Engineering and a ECSA/SACPCMP registration as Pr. Eng/Pr. Tech. Eng./Pr. Cert Eng./Pr. CPM with at least 10 years of experience in civil infrastructure projects. The Contracts Manager must have experience working with the NEC3 Engineering and Construction Contract in at least 3 separate projects, with at least 1 project in excess of R 20M in civil Works component value.

ii) **Construction Manager**

The Construction Manager should at least have a minimum qualification of a B.Tech./National Diploma in Civil Engineering and a ECSA/SACPCMP registration as Pr. Eng/Pr. Tech. Eng./Pr. Cert Eng./Pr. CM with at least 10 years of experience in civil infrastructure projects. The Construction Manager must have experience working with the NEC3 Engineering and Contract in at least 1 project in excess of R15m in civil Works component value.

iii) **Site Agent**

The Site Agent must have a minimum of NTC 4 Trade Certificate in Civil Engineering with at least 10 years of experience in civil infrastructure projects.



**iv) Foreman**

Building and civil infrastructure Foreman must have a minimum of NTC 4 Trade Certificate in Civil Engineering with at least 10 years of experience in building services and civil /building construction.

**v) Planner**

The Planner should have at least 5 years of experience working in civil projects as a Planner.

**vi) Quality Officer**

The Quality Officer should have a Diploma or certified qualification in quality systems with at least 5 years of relevant quality experience in civil projects. If staff experience is limited, an indication of relevant training that they have attended would be helpful.

**vii) Safety, Health and Environmental Officer**

Health and Safety Officer should have SAMTRAC, NEBOSH and Modern SHEQ Risk Management (MSRM) training course with accredited health and safety service provider as a minimum qualification and registered as a Health and Safety Officer with SACPCMP. At least 5 years' experience as a Safety, Health and Environmental Officer on construction projects. The SHEO must also have undergone Environmental awareness and short courses.

**viii) Document Controller**

The Document Controller should have at least 5 years of experience working in construction related projects.

8. Details of experience for proposed staff working in similar projects in terms of nature, competency and value.
9. An explanation of how you propose to allocate adequate resources to enable you to comply with the requirements and prohibitions imposed on you by or under the statutory provisions relating to health and safety.
10. Details of experience for proposed staff in respect of NEC3 Engineering & Construction Contract option chosen for this Contract. If staff experience is limited, an indication of relevant training that they have attended would be helpful.

**TRANSNET PORT TERMINAL**

Tender Number: **ICLM HQ 728/TPT**

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TRANSNET



**Attached submissions to this schedule:**

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The scoring of the Management & CV's of Key Persons will be as follows:

Weight	Relevant Technical experience:	Education, training and skills for the following:	Knowledge of issues pertinent to the project for the following:
	<b>Management</b>	<b>Management</b>	<b>Management</b>
20%	Contracts Manager	Contracts Manager	Contracts Manager
20%	Construction Manager	Construction Manager	Construction Manager
30%	Site Agent	Site Agent	Site Agent
30%	Foreman	Foreman	Foreman
	<b>Site Officers</b>	<b>Site Officers</b>	<b>Site Officers</b>
30%	Planner	Planner	Planner
20%	Quality Officer	Quality Officer	Quality Officer
30%	HSE Officer	HSE Officer	HSE Officer
20%	Document Controller	Document Controller	Document Controller
<b>Points</b>	<b>5</b>	<b>5</b>	<b>5</b>
<b>(score 0)</b>	Failed to provide information or inadequate information provided to determine a score	Failed to provide information or inadequate information provided to determine a score	Failed to provide information or inadequate information provided to determine a score
<b>(score 20)</b>	Key staff do not have relevant levels of relevant experience. <ul style="list-style-type: none"> <li>Contracts Manager: &lt; 5 years</li> <li>Construction Manager: &lt; 5 years</li> <li>Site Agent: &lt; 5 years</li> <li>Foreman: &lt; 5 years</li> <li>Planner: &lt; 1 year</li> <li>Quality Officer: &lt; 1 year</li> <li>Safety Officer: &lt; 1 year</li> <li>Document Controller: &lt; 1 year</li> <li>Environmental Officer: &lt; 1 year</li> </ul>	Key staff does not have project specific education, skills, training and experience as indicated above.	Key staff has no experience of issues pertinent to the project.
<b>(score 40)</b>	Key staff have limited levels of general experience <ul style="list-style-type: none"> <li>Contracts Manager: ≥ 5 &lt; 10 years</li> <li>Construction Manager: ≥ 5 &lt; 10 years</li> <li>Site Agent: ≥ 5 &lt; 10 years</li> <li>Foreman: ≥ 5 &lt; 10 years</li> <li>Planner: &lt; 2 years</li> <li>Quality Officer: &lt; 2 years</li> <li>Safety Officer: &lt; 2 years</li> <li>Document Controller: &lt; 2 years</li> <li>Environmental Officer: &lt; 2 years</li> </ul>	Key staff have limited levels of project specific education, skills, training and experience	Key staff have limited experience of issues pertinent to the project
<b>(score 60)</b>	Key staff have reasonable levels of general experience	Key staff have reasonable	Key staff have reasonable

	<ul style="list-style-type: none"> <li>Contracts Manager: &lt; 10 years</li> <li>Construction Manager: &lt; 10 years</li> <li>Site Agent: &lt; 10 years</li> <li>Foreman: &lt; 10 years</li> <li>Planner: &lt; 3 years</li> <li>Quality Officer: &lt; 3 years</li> <li>Safety Officer: &lt; 3 years</li> <li>Document Controller: &lt; 3 years</li> <li>Environmental Officer: &lt; 3 years</li> </ul>	levels of project specific education, skills, training and experience	experience of issues pertinent to the project
<b>(score 80)</b>	Key staff have extensive levels of general experience <ul style="list-style-type: none"> <li>Contracts Manager: <math>\geq 10 &lt; 15</math> years</li> <li>Construction Manager: <math>\geq 10 &lt; 15</math> years</li> <li>Site Agent: <math>\geq 10 &lt; 15</math> years</li> <li>Foreman: <math>\geq 10 &lt; 15</math> years</li> <li>Planner: <math>&gt; 4 &lt; 5</math> years</li> <li>Quality Officer: <math>&gt; 4 &lt; 5</math> years</li> <li>Safety Officer: <math>&gt; 4 &lt; 5</math> years</li> <li>Document Controller: <math>&gt; 4 &lt; 5</math> years</li> <li>Environmental Officer: <math>&gt; 4 &lt; 5</math> years</li> </ul>	Key staff have extensive levels of project specific education, skills, training and experience	Key staff have extensive experience of issues pertinent to the project
<b>(score 100)</b>	Key staff have outstanding levels of general experience <ul style="list-style-type: none"> <li>Contracts Manager: <math>\geq 15</math> years</li> <li>Construction Manager: <math>\geq 15</math> years</li> <li>Site Agent: <math>\geq 15</math> years</li> <li>Foreman: <math>\geq 15</math> years</li> <li>Planner: <math>\geq 5</math> years</li> <li>Quality Officer: <math>\geq 5</math> years</li> <li>Safety Officer: <math>\geq 5</math> years</li> <li>Document Controller: <math>\geq 5</math> years</li> <li>Environmental Officer: <math>\geq 5</math> years</li> </ul>	Key staff have outstanding levels of project specific education, skills, training and experience	Key staff have outstanding experience of issues pertinent to the project

The undersigned, who warrants that he I she is duly authorised to do so on behalf of the Tenderer, confirms that the contents of this schedule are within my personal knowledge and are to the best of my belief both true and correct.

## **T2.2-05: Evaluation Schedule: Method Statement**

### **Note to tenderers:**

Method statement - The tenderers must sufficiently demonstrate the approach/methodology that will be employed to cover the scope of the project and **MUST** cover the following aspects.

- Execution Approach (including limitations due to required occupations to carry out work in operational areas)
- Resource Allocation
- Health and Safety (including security)
- Quality Control
- Civil Work
- Traffic Control

**Please note: Tenderers are required to provide detailed method statements for the categories as listed above. Each sub-category as listed will be scored based on the linear scale below, and will be averaged and weighed to provide a final score. Tenderers to note that they will not achieve an "acceptable" score should they not provide the information as required in this Returnable.**

The table below will be used as guidelines for scoring / evaluating the method statement submitted by the Tenderer:

<b>SCORE</b>	
	<ul style="list-style-type: none"> <li>• Execution Approach (including limitations due to required occupations to carry out work in operational areas)</li> <li>• Resource Allocation</li> <li>• Health and Safety (including security)</li> <li>• Quality Control</li> <li>• Civil Work</li> <li>• Traffic Control</li> </ul>
<b>Maximum Score is 20</b>	<b>20</b>
	<b>Formulae:</b> $Points = \frac{Score}{100} \times 15$
<b>Score 0</b>	The tenderer has submitted no information or inadequate information to determine a score.
<b>Score 20</b>	The methodology/approach and work alignment to project schedule and outage plan is poorly presented, generic and not tailored to address the specific project objectives and methodology.
<b>Score 40</b>	The methodology/approach is generic and not tailored to address the specific project objectives and methodology. The methodology approach does not adequately deal with the critical characteristics of the project.
<b>Score 60</b>	Satisfactory response/solution to the particular aspect of the requirement and evidence given that the stated employer's requirements will be met.
<b>Score 80</b>	The methodology/approach is specifically tailored to address the specific project objectives and methodology and is sufficiently flexible to accommodate changes that may occur during execution. The methodology/approach to manage activities is specifically tailored to the critical characteristics of the project.
<b>Score 100</b>	Besides meeting the "80" rating, the important issues are approached in an innovative and efficient way, indicating that the tenderer has outstanding knowledge of state-of-the-art approaches. The methodology approach details ways to improve the project outcomes and the quality of the outputs.

## T2.2-06: Evaluation Schedule - Programme

### Programme

The Tenderer details the proposed Programme below or makes reference to his proposed Programme and attaches it to this schedule. The Tenderer's attention is drawn to clause 31.2 of the NEC 3 Engineering Construction Contract regarding the items to be shown on a Programme.

The Tenderer shall provide the proposed Programme showing but not limited to the following:

- Ability to Provide the *Works* in terms of the Scope as detailed under C3: *Works* Information and within the required timeframe indicating, in a logical sequence, the order and timing of the activities that will take place in order to Provide the *Works* and detailed at an appropriate level of decomposition to support the scope and associated duration estimates
- Dates when the *Contractor* will need *access* to any part of the Site/s and/or persons, as well as submission, approval process and timing for Health & Safety, Environmental and Quality pre-requisites/requirements as well as designs. In addition, the Programme must clearly demonstrate adequate provision for the review and approval processes. Moreover, the Programme must clearly demonstrate adequate provision for the process and timeframes associated with undertaking procurement processes, inductions, permits and medicals.
- The *Contractor* indicates how he plans in achieving the following dates and clearly demonstrates them on the schedule - Starting Date, Key Dates, Planned Completion and Completion Dates. In addition the Programme clearly demonstrates adequate provision for Time Risk Allowance (TRA).
- The Programme must clearly support and demonstrate alignment to the Method Statement as contained under T.2.2-05. In addition, the programme needs to have a basis of a schedule not limited to assumptions, constraints and approach to providing the *Works* as detailed in the programme.

The scoring of the Programme will be as follows:

	Ability to Provide the <i>Works</i> in terms of the Scope as detailed under C3: <i>Works</i> Information and within the required timeframe, indicating, in a logical sequence, the order and timing of the activities that will take place in order to Provide the <i>Works</i> and detailed at an appropriate level of decomposition to support the scope and associated duration estimates.	Dates when the <i>Contractor</i> will need <i>access</i> to any part of the Site/s and/or persons, as well as submission, approval process and timing for Health & Safety, Environmental and Quality pre-requisites/requirements. In addition the Programme must clearly demonstrate adequate provision for the review and approval processes. Moreover, the Programme must clearly demonstrate adequate provision for the process and timeframes associated with undertaking procurement processes, inductions, permits and medicals.	The <i>Contractor</i> indicates how he plans in achieving the following dates and clearly demonstrates them on the schedule - Starting Date, Access Date, Planned Completion and Completion Dates. In addition the Programme clearly demonstrates adequate provisions for Time Risk Allowance (TRA).	The Programme shall be aligned to the C3: <i>Works</i> Information, and detailed at an appropriate level of decomposition to support the scope and associated duration estimates.	The Programme must clearly support and demonstrate alignment to the Approach Paper as contained under T.2.2-41. In addition the programme needs to have a basis of a schedule not limited to assumptions, constraints and approach to providing the <i>Works</i> and construction monitoring as detailed in the programme.
<b>Total Points</b>	<b>6</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>5</b>
<b>Score 0</b>	The tenderer has submitted no information.				
<b>Score 20</b>	<ul style="list-style-type: none"> <li>The Programme is not acceptable as it will not satisfy project objectives or requirements. The tenderer has misunderstood the scope of <i>Works</i> and does not deal with the critical aspects of the overall Programme.</li> </ul>	<ul style="list-style-type: none"> <li>The tenderer has not addressed critical access requirements.</li> <li>The tenderer has not allowed timing for undertaking deliverables as stipulated within the <i>Works</i> Information.</li> <li>The tenderer has not allowed approval process and timing for Health &amp;</li> </ul>	<ul style="list-style-type: none"> <li>The tenderer has addressed some but not all date requirements and submission contains critical logic and sequencing errors which renders it unrealistic / unachievable.</li> <li>The tenderer has not demonstrated Time Risk Allowance (TRA).</li> </ul>	<ul style="list-style-type: none"> <li>No alignment between Programme and the <i>Works</i> Information.</li> </ul>	<ul style="list-style-type: none"> <li>No alignment between Programme and Approach Paper.</li> <li>The Basis of the Schedule document contains insufficient detail, critical errors and omissions. As such it does not support the programme model and the submission does not contain the minimum requirements</li> </ul>



		<p>Safety, Environmental and Quality pre-requisites/requirements.</p> <ul style="list-style-type: none"> <li>The tenderer has not demonstrated provision for the process and timeframes associated with undertaking procurement processes, inductions, permits and medicals.</li> </ul>			<p>as stipulated.</p> <ul style="list-style-type: none"> <li>No alignment between Basis of Schedule documentation and the programme model.</li> </ul>
<b>Score 40</b>	<ul style="list-style-type: none"> <li>The Programme is generic, not practical and unrealistic, therefore is unlikely to satisfy project objectives or <i>Employer's</i> requirements. The tenderer has misunderstood certain aspects of the scope of the <i>Works</i> and does not deal with the critical aspects of the project.</li> </ul>	<ul style="list-style-type: none"> <li>The tenderer has addressed some critical but not all access requirements.</li> <li>The tenderer has not made an adequate allowance in timing for undertaking deliverables as stipulated within the <i>Works Information</i>.</li> <li>The tenderer has not made an adequate allowance for the approval process and timing for Health &amp; Safety, Environmental and Quality pre-requisites/requirements.</li> <li>The tenderer has not adequately demonstrated provision for the process and timeframes associated with undertaking procurement processes, inductions, permits and medicals.</li> </ul>	<ul style="list-style-type: none"> <li>The tenderer has addressed most date requirements however submission contains critical logic and sequencing errors which renders it unrealistic/unachievable.</li> <li>The tenderer has demonstrated inadequate provision for Time Risk Allowance (TRA) i.e. TRA in insufficient quantities and not assigned to specific activities and/or critical components of the scope which are known to be subject to uncertainty.</li> </ul>	<ul style="list-style-type: none"> <li>Some alignment between Programme and <i>Works Information</i>.</li> </ul>	<ul style="list-style-type: none"> <li>Critical errors and or omissions in alignment between Programme and Approach Paper.</li> <li>The Basis of the Schedule document contains sufficient detail, but critical errors exist. As such the Basis of Schedule does not fully support the programme model however the submissions contains some of the minimum requirements as stipulated.</li> <li>Critical errors in alignment between Basis of Schedule documentation and the programme model.</li> </ul>
<b>Score 60</b>	<ul style="list-style-type: none"> <li>The programme addresses certain specific project objectives but does not adequately deal with all the critical characteristics of the project.</li> </ul>	<ul style="list-style-type: none"> <li>The tenderer has addressed all access requirements.</li> <li>The tenderer has made an adequate allowance in timing and scope for undertaking deliverables as</li> </ul>	<ul style="list-style-type: none"> <li>The tenderer has addressed all date requirements correctly and submission contains logic and sequencing which is accurate, and renders the submission realistic and</li> </ul>	<p>Programme and <i>Works Information</i> are relatively aligned but the level of decomposition of the Programme is not appropriate to support the scope and associated duration estimates for the phase in question and the</p>	<ul style="list-style-type: none"> <li>Minor errors and or omissions in alignment between Programme and Approach Paper.</li> <li>The Basis of Schedule document contains sufficient detail, but minor</li> </ul>

	<ul style="list-style-type: none"> <li>The programme is complete and decomposed, as demonstrated in the project WBS which fully demonstrates the <i>Provision</i> of the <i>Works</i> and the <i>Scope of Works</i> and is in accordance with the <i>Works Information</i>;</li> <li>The programme is adequately predictive in that it contains minor errors or omissions in critical path.</li> <li>The programme contains minor errors and omissions in logic (i.e. horizontal and vertical traceability)</li> <li>The programme demonstrates the sequence, methodology and underlying approach to <i>Provision</i> of the <i>Works</i> and the <i>Scope of Works</i>, in line with the requirements of the Contract, as such adequately deals with some but not all of the critical characteristics of overall project.</li> </ul>	<p>stipulated within the <i>Works Information</i> and <i>Employer's Scope of Works</i>.</p> <ul style="list-style-type: none"> <li>The tenderer has made an adequate allowance for the approval process, timing and scope for Health &amp; Safety, Environmental and Quality pre-requisites/requirements.</li> <li>The tenderer has not adequately demonstrated provision for the process and timeframes associated with undertaking procurement processes, inductions, permits and medicals.</li> </ul>	<p>achievable.</p> <ul style="list-style-type: none"> <li>The tenderer has demonstrated inadequate provision for Time Risk Allowance (TRA) i.e. TRA in insufficient quantities, and not assigned to specific activities and/or critical components of the scope which are known to be subject to uncertainty.</li> </ul>	<p>project overall.</p>	<p>errors still exist, however critical aspects of the Programme model are adequately substantiated .</p> <ul style="list-style-type: none"> <li>Minor errors and or omissions exist in alignment of the Basis of Schedule document and the Programme model.</li> </ul>
<b>Score 80</b>	<ul style="list-style-type: none"> <li>The programme addresses specific project objectives and critical aspects.</li> <li>The programme is complete and sufficiently decomposed, as</li> </ul>	<ul style="list-style-type: none"> <li>The tenderer has addressed all access requirements.</li> <li>The tenderer has made an adequate allowance in timing and scope for</li> </ul>	<ul style="list-style-type: none"> <li>The tenderer has addressed all date requirements correctly and submission contains logic and sequencing which is accurate, and renders the submission realistic and</li> </ul>	<ul style="list-style-type: none"> <li>Programme and <i>Works Information</i> are fully aligned and the level of decomposition of the Programme is appropriate to support the scope and</li> </ul>	<ul style="list-style-type: none"> <li>Programme and Approach Paper are fully aligned and submission contains no critical errors or omissions.</li> <li>The Basis of the Schedule document contains sufficient detail, no critical errors or</li> </ul>

	<p>demonstrated in the project WBS which fully demonstrates the <i>Provision</i> of the <i>Works</i> and the Scope of <i>Works</i> and is in accordance with the <i>Works Information</i> and /or encompasses project scope as detailed but not limited to the Scope of <i>Works</i>.</p> <ul style="list-style-type: none"> <li>▪ The programme is adequately predictive in that it provides meaningful critical path(s) and forms an accurate/realistic model of project risk, the latter as demonstrated in activity duration estimates;</li> <li>▪ The programme contains logic that is horizontally, vertically traceable as supported by realistic duration estimates.</li> <li>▪ The programme adequately demonstrates the sequence, methodology, and underlying approach to <i>Provision</i> of the <i>Works</i> and the Scope of <i>Works</i>, in line with the requirements of the <i>Works information</i> as such adequately deals with the critical characteristics of overall project.</li> </ul>	<p>undertaking deliverables as stipulated within the <i>Works Information</i> and <i>Employer's Scope of Works</i>.</p> <ul style="list-style-type: none"> <li>▪ The tenderer has made an adequate allowance for the approval process, timing and scope for Health &amp; Safety, Environmental and Quality pre-requisite/requirements.</li> <li>▪ The tenderer has adequately demonstrated provision for the process and timeframes associated with undertaking procurement processes, inductions, permits and medicals i.e. all items considered and sufficient timeframes allowed.</li> </ul>	<p>achievable.</p> <ul style="list-style-type: none"> <li>▪ The tenderer has demonstrated adequate provision for Time Risk Allowance (TRA) i.e. TRA in sufficient quantities, correctly assigned to specific activities and/or critical components of the scope which are known to be subject to uncertainty.</li> </ul>	<p>associated duration estimates for the phase in question and the project overall.</p>	<p>omissions and as such fully supports the Programme model. In addition the submissions contains the minimum requirements as stipulated.</p> <ul style="list-style-type: none"> <li>▪ Basis of Schedule document and Programme model are fully aligned.</li> </ul>
<b>Score 100</b>	Besides meeting the above	Besides meeting the "80" rating,	Besides meeting the "80" rating,	Besides meeting the "80" rating,	Besides meeting the "80" rating,

	"80" rating, the important issues are approached in an innovative and efficient way.	the tenderer has exceeded the required expectations.	the tenderer has exceeded the required expectations.	the tenderer has exceeded the required expectations.	the tenderer has exceeded the required expectations.
--	--	--	--	--	--

The undersigned, who warrants that he / she is duly authorised to do so on behalf of the enterprise, confirms that the contents of this schedule are within my personal knowledge and are to the best of my belief both true and correct.

Signed

.....

Name

.....

Tenderer

.....

Date

.....

Position

.....

## T2.2-07: Evaluation Schedule: Previous Experience

### Note to tenderers:

Tenderers are required to demonstrate performance in comparable projects of similar size and nature by supplying the following:

1. A list of past / current comparable projects.
2. Execution of similar works as detailed in the Works Information with reference to:
  - Previous Experience of tarmacadam paving, sub-grade preparation, palisade fencing, stack markings projects by tenderer, or their partner/ subcontractor over the past five years with a minimum value of R4 000 000. References to provide letter of reference, to be traceable and contactable to allow verification of track record provided.
  - Sufficient references to substantiate experience indicated (Client name and contact details, project description, duration and contract value)

### Index of documentation attached to this schedule

	DOCUMENT NAME
1.	
2.	
3.	
4.	
5.	

#	Name of Previous Customer	Contact Details	Nature of Civil work	Value	Year
1.					
2.					
3.					
4.					
5.					

The scoring of the Previous Experience will be as follows:

	<b>SCORE</b>
	<ol style="list-style-type: none"> <li>1. A list of past / current comparable projects.</li> <li>2. Execution of similar works as detailed in the Works Information with reference to: <ul style="list-style-type: none"> <li>• Previous Experience of tarmacadam paving, sub-grade preparation, palisade fencing, stack markings projects by tenderer, or their partner/ subcontractor over the past five years with a minimum value of R4 000 000. References to provide letter of reference, to be traceable and contactable to allow verification of track record provided.</li> <li>• Sufficient references to substantiate experience indicated (Client name and contact details, project description, duration and contract value).</li> </ul> </li> </ol>
<b>Maximum Score is 15</b>	<b>15</b>
	<b>Formulae:</b> $Points = \frac{Score}{100} \times 10$
<b>Score 0</b>	The Tenderer failed to address the question / issue. Has not submitted the required information.
<b>Score 20</b>	The Tenderer's previous experience presented has no relevance to the scope of this project and did not address any of the required categories. Tenderers generally have experience in <b>one (1)</b> project relating to the scope of works. The tenderer has limited or poor evidence of previous experience.
<b>Score 40</b>	<p>The Tenderer's previous experience presented has some relevance to the project but lacks detail i.e. Description of previous projects, value and references. Tenderers generally have experience in <b>three (3)</b> projects relating to scope of works.</p> <p>The tenderer lacks convincing evidence of knowledge of previous experience, specific to the works.</p>
<b>Score 60</b>	The Tenderer's previous experience presented demonstrates sufficient knowledge and experience to successfully execute this project scope. Tenderers generally have experience in <b>four (4)</b> projects relating to the scope of works. The tenderer has reasonable and relevant previous experience to the particular requirements of the works.
<b>Score 80</b>	The Tenderer's previous experience presented demonstrates a real understanding and substantial evidence of the ability meet the stated project requirements. Tenderers generally have experience in <b>five (5)</b> projects relating to the scope of works. The tenderer has extensive previous experience in relation to the works.
<b>Score 100</b>	The Tenderer's previous experience presented demonstrates real confidence extensive understanding in all of the categories as required. Tenderers generally have experience in <b>more than five (5) projects</b> relating to the scope of works. The tenderer has comprehensive previous experience in projects of a similar nature.

## T2.2-08: Evaluation Schedule: Health and Safety Management

Submit the following documents as a minimum with your tender:

1. The Tenderer must provide their Contract specific health and safety plan.
2. Safety, Health & Environmental Policy signed by the Chief Executive Officer. List the five elements -
  - Commitment to Safety, prevention of pollution,
  - Continual improvement,
  - Compliance to legal requirements, appropriate to the nature of contractor's activities,
  - Hold management accountable for development of the safety systems
  - Include objectives and targets.
3. Roles & Responsibilities, such as S16.2 CEO, CR8.1 Construction manager, CR8.2 Assistant Construction manager, CR8.5 Safety officer, CR8.7 Construction Supervisor – Civils, Construction and Electrical, CR8.8 Construction assistant supervisor, CR12 Temporal Works Designer, CR9.1 Risk Assessor, 17.1 SHE Reps, etc. as per the Occupational health and safety Act 85 of 1993 and COVID-19 Compliance Officer.
4. List of job categories for project and competencies required per category and develop a training Matrix for all employees who will be working on the project. This matrix must include Management and highlight training planned dates.
5. Overview of the project specific Baseline Risk Assessment (RA), indicating major activities of the project namely: **demolition, excavations and earthworks, disposal of material; road and stacking markings and palisade fencing, etc.**
6. One year synopsis of SHE incidents, description, type and action taken to prevent re-occurrence.
7. Complete and return with tender documentation the Contractor Safety Questionnaire included to this Evaluation Schedule as a returnable.
8. Evidence that the Principal Contractor have made adequate provisions for the cost of Health & Safety "Bill of quantities": CR 3(5) (b)(iii) read with CR 5(1)(g)

The scoring of the Tender's Health and Safety criteria is as follows:

	<b>Project Specific Safety Plan</b>	<b>Policy (State points allocated)</b>	<b>Roles &amp; Responsibilities</b>	<b>Training Matrix</b>	<b>Overview of the Baseline</b>	<b>One year synopsis</b>	<b>Safety Questionnaire</b>	<b>Cost Breakdown Sheet</b>
	Documented Health and Safety Plan in accordance with Transnet Project Health and Safety Specifications.	<ol style="list-style-type: none"> <li>1. Commitment to Safety, prevention of pollution,</li> <li>2. Continual improvement,</li> <li>3. Compliance to legal requirements, appropriate to the nature of contractor's activities,</li> <li>4. Hold management accountable for development of the safety systems,</li> <li>5. Include objectives and targets.</li> </ol>	S16.2 CEO, CR8.1 Construction manager, CR8.2 Assistant Construction manager, CR8.5 Safety officer Registered with the SACPCMP, CR8.7 Construction Supervisor, CR8.8 Construction assistant supervisor, CR12. Temporary Works Designer, CR9.1 Risk Assessor, S.17.1 SHE Reps, etc. as per the Occupational health and safety Act 85 of 1993 and COVID-19 Compliance Officer	List of job categories for project and competencies required per category and develop a training Matrix for all employees who will be working on the project. This matrix must include Management and highlight training planned dates.	Indicating major activities of the project namely: <b>Demolition, Excavations and earthworks, disposal of material; storm water drainage, road and stacking markings and fencing, etc.</b>	SHE incidents, description, type and action taken to prevent re-occurrence.	Complete and return with tender documentation the Contractor with required supporting documentation included as an Annexure.	Submission of completed cost breakdown sheet.
<b>Points</b>	<b>3</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>2</b>



<b>(score 0)</b>	The Tenderer has submitted no information or inadequate information to determine a score.							
<b>(score 20)</b>	Information supplied is totally insignificant / inadequate to meet Employer's requirements	1 of the 5 key policy components are recognized and meet the <i>Employer's</i> requirement.	Roles and responsibilities do not meet the Occupational health and safety Act as per construction regulations and Transnet Project health and safety Specifications.	Key responsible persons are not included on training matrix as per proposed organogram structure.	Information supplied is totally insignificant / inadequate to achieve the required standard of service.	Information supplied is totally insignificant / inadequate to achieve the Employers Works information.	Information supplied is totally insignificant / inadequate to achieve the required standard of service.	Health and safety Budget submitted is totally insignificant / inadequate to achieve the required standard of service, 0, 1 to 1% allocated.
<b>(score 40)</b>	Health and Safety Plan submission unlikely to ensure compliance with stated Employer's Works Information	2 of the 5 key policy components are recognized and meet the <i>Employer's</i> requirement.	Roles and responsibilities are unlikely to ensure compliance as per the Works information and not in line with OHS Act and Transnet Project health and safety Specifications.	Not all key responsible persons are included in the training matrix. Trainings matrix submitted does not cover all SHE training listed on Health and Safety Specifications. Training matrix not signed by responsible personnel.	Poor response/answer /solution lacks convincing evidence, medium risk that stated <i>employer's</i> requirements will not be met.	Poor response /answer/solution lacks convincing evidence, medium risk that stated <i>Employer's</i> requirements will not be met.	Poor response /answer/solution lacks convincing evidence, medium risk that stated <i>Employer's</i> requirements will not be met.	Health and safety Budget submitted is insignificant / inadequate /answer /solution to the returnable, Employer's health and safety requirements will not be met, 1 – 2% allocated.
<b>(score 60)</b>	Health and Safety Plan submission possibly able to ensure compliance with stated Employer's	3 of the 5 key policy components are recognized and meet the <i>Employer's</i> requirements.	Satisfactory response on roles and responsibilities as per Employer's requirements.	Satisfactory response on the list of job categories and trainings as per proposed project organogram	Satisfactory response/answer /solution to the particular aspect of the requirement, evidence given that the stated	Satisfactory response /answer/solution to the particular aspect of the requirement, evidence given that the stated	Satisfactory response /answer/solution to the particular aspect of the requirement, evidence given	Health and safety Budget submitted is Satisfactory response /answer/solution to the returnable, Employer's health and safety

	Works Information.			structure. Training matrix covers most of the trainings listed on Transnet Health and safety Specifications.	<i>Employer's</i> requirements will be met.	<i>Employer's</i> requirements will be met.	that the stated <i>Employer's</i> requirements will be met.	requirements will be met, 2 – 3% allocated.
<b>(score 80)</b>	Health and Safety Plan submission likely to ensure compliance with stated Employer's Works Information.	4 of the five key policy components are recognized and meets the <i>Employer's</i> requirements.	Roles and responsibilities are likely to ensure compliance as per Works Information, OHS Act and Transnet Project health and safety Specifications.	Most of key persons listed on the training matrix as per proposed project organogram structure. Trainings specified on the matrix are in line with Transnet health and safety Specifications.	Good response/answer /solution which demonstrates real understanding and evidence of ability to meet stated <i>Employer's</i> requirements.	Good response /answer/solution which demonstrates real understanding and evidence of ability to meet stated <i>Employer's</i> requirements.	Good response /answer/solution n which demonstrates real understanding and evidence of ability to meet stated <i>Employer's</i> requirements.	Health and safety Budget submitted is Good response /answer/solution to the returnable, Employer's health and safety requirements will be met, 3 – 4% - above allocated.
<b>(score 100)</b>	Health and Safety Plan submission most likely to ensure compliance with stated Employer's Works Information.	All 5 key policy components are recognized and meets the <i>Employer's</i> requirements	Roles and Responsibilities most likely to ensure compliance as per requirements of OHS Act and Transnet Project Health and Safety Specifications.	Training matrix include Management and all employees /personnel in the project. Training matrix had been signed by responsible personnel.	Very good response /answer/solution gives real confidence that the tenderer is most likely to ensure compliance with stated <i>Employer's</i> requirements.	Very good response /answer/solution gives real confidence that the tenderer is most likely to ensure compliance with stated <i>Employer's</i> requirements.	Very good response /answer/solution n gives real confidence that the tenderer is most likely to ensure compliance with stated <i>Employer's</i> requirements	Health and safety Budget submitted is Very good response /answer/solution to the returnable, Employer's health and safety requirements will be met, 4% - above allocated.

**Attached submissions to this schedule:**

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## T2.2-09: Authority to submit a Tender

Indicate the status of the tenderer by ticking the appropriate box hereunder. The tenderer must complete the certificate set out below for his category of organisation or alternatively attach a certified copy of a company / organisation document which provides the same information for the relevant category as requested here.

A - COMPANY	B - PARTNERSHIP	C - JOINT VENTURE	D - SOLE PROPRIETOR

### A. Certificate for Company

I, \_\_\_\_\_ chairperson of the board of directors \_\_\_\_\_, hereby confirm that by resolution of the board taken on \_\_\_\_\_ (date), Mr/Ms \_\_\_\_\_, acting in the capacity of \_\_\_\_\_, was authorised to sign all documents in connection with this tender offer and any contract resulting from it on behalf of the company.

Signed

Date

Name

Position

Chairman of the Board of Directors

**B. Certificate for Partnership**

We, the undersigned, being the **key partners** in the business trading as \_\_\_\_\_

\_\_\_\_\_ hereby authorise Mr/Ms \_\_\_\_\_

acting in the capacity of \_\_\_\_\_, to sign all documents in connection with the tender offer for Contract \_\_\_\_\_ and any contract resulting from it on our behalf.

Name	Address	Signature	Date

**NOTE:** This certificate is to be completed and signed by the full number of Partners necessary to commit the Partnership. Attach additional pages if more space is required.

### C. Certificate for Joint Venture

We, the undersigned, are submitting this tender offer in Joint Venture and hereby authorise

Mr/Ms \_\_\_\_\_, an authorised signatory of the company

\_\_\_\_\_, acting in the capacity of lead

partner, to sign all documents in connection with the tender offer for Contract \_\_\_\_\_

\_\_\_\_\_ and any contract resulting from it on our behalf.

This authorisation is evidenced by the attached power of attorney signed by legally authorised signatories of all the partners to the Joint Venture.

Furthermore we attach to this Schedule a copy of the joint venture agreement which incorporates a statement that all partners are liable jointly and severally for the execution of the contract and that the lead partner is authorised to incur liabilities, receive instructions and payments and be responsible for the entire execution of the contract for and on behalf of any and all the partners.

Name of firm	Address	Authorising signature, name (in caps) and capacity

**TRANSNET PORT TERMINAL**Tender Number: **iCLM HQ 728/TPT**

Description of the works: **UPGRADE OF EMPTY STACK (AREA 100) AT PIER 1, DURBAN CONTAINER TERMINAL FOR TRANSNET SOC LTD (REG. NO 1990/000900/30) OPERATING AS TRANSNET PORT TERMINALS (HEREINAFTER REFERRED TO AS "TPT")**

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**D. Certificate for Sole Proprietor**

I, \_\_\_\_\_, hereby confirm that I am the sole owner of the business trading as \_\_\_\_\_.

Signed

Date

Name

Position

Sole Proprietor

## T2.2-10: Record of Addenda to Tender Documents

This schedule as submitted confirms that the following communications received from the *Employer* before the submission of this tender offer, amending the tender documents, have been taken into account in this specific tender offer:

	Date	Title or Details
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		

Attach additional pages if more space is required.



## **T2.2-11 Letter/s of Good Standing with the Workmen's Compensation Fund**

Attached to this schedule is the Letter/s of Good Standing.

**1.**

**2.**

**3.**

**4.**

Name of Company/Members of Joint Venture:

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**TRANSNET PORT TERMINAL**

Tender Number: **ICLM HQ 728/TPT**

Description of the works: **UPGRADE OF EMPTY STACK (AREA 100) AT PIER 1, DURBAN CONTAINER TERMINAL FOR TRANSNET SOC LTD (REG. NO 1990/000900/30) OPERATING AS TRANSNET PORT TERMINALS (HEREINAFTER REFERRED TO AS "TPT")**

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TRANSNET



## T2.2-12: Risk Elements

Tenderers to identify and evaluate the potential risk elements associated with the Works and possible mitigation thereof. The risk elements and the mitigation as identified thereof by the Tenderer are to be submitted.

If No Risks are identified "No Risks" must be stated on this schedule.

Tenderers are also to evaluate any risk/s stated by the *Employer* in Contract Data Part C1, and provide possible mitigation thereof.

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There is a vertical margin line on the left side, creating a narrow left margin. The paper appears to be from a notebook or a standard ruled document.

Tenders to note: Notwithstanding this information, all costs related to risk elements which are at the Contractor's risk are deemed to be included in the tenderer's offered total of the Prices.

The Tenderer to submit a list of all Equipment and other resources that will be used to execute the *works* as described in the Works Information.

[illegible]

## T2.2-14: Schedule of Proposed Subcontractors

The tenderer is required to provide details of all the sub-contractors that will be utilised in the execution of the *works*.

### Note to tenderers:

- In terms of PPPFA Regulation 6 (5), A tenderer may not be awarded points for B-BBEE status level of contributor if the tender documents indicate that the tenderer intends subcontracting more than 25% of the value of the contract to any other person not qualifying for at least the points that the tenderer qualifies for, unless the intended subcontractor is an EME that has the capability to execute the subcontract.
- In terms of PPPFA Regulation 12 (3), A person awarded a contract may not subcontract more than 25% of the value of the contract to any other enterprise that does not have an equal or higher B-BBEE status level of contributor that the person concerned, unless the contract is subcontracted to an EME that has the capability and ability to execute the contract.

**Tenderer to note that after award, any deviations from this list of proposed sub-contractors will be subject to acceptance by the *Project Manager* in terms of the Conditions of Contract.**

Provide information of the Sub-contractors below:

Name of Proposed Subcontractor			Address		Nature of work		Amount of Worked	Percentage of work	
% Black Owned	EME	QSE	Youth	Women	Disabilities	Rural/ Underdeveloped areas/ Townships		Military Veterans	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	

Name of Proposed Subcontractor			Address		Nature of work		Amount of Worked	Percentage of work	
% Black Owned	EME	QSE	Youth	Women	Disabilities		Rural/ Underdeveloped areas/ Townships		Military Veterans
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
Name of Proposed Subcontractor			Address		Nature of work		Amount of Worked	Percentage of work	

**TRANSNET PORT TERMINAL**Tender Number: **ICLM HQ 728/TPT**Description of the works: **UPGRADE OF EMPTY STACK (AREA 100) AT PIER 1, DURBAN CONTAINER TERMINAL FOR TRANSNET SOC LTD (REG. NO 1990/000900/30) OPERATING AS TRANSNET PORT TERMINALS (HEREINAFTER REFERRED TO AS "TPT")**

% Black Owned	EME	QSE	Youth	Women	Disabilities	Rural/ Underdeveloped areas/ Townships	Military Veterans
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Name of Proposed Subcontractor			Address		Nature of work		Amount of Worked	Percentage of work	
% Black Owned	EME	QSE	Youth	Women	Disabilities	Rural/ Underdeveloped areas/ Townships		Military Veterans	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	

## T2.2-15: Site Establishment Requirements

Tenderers to indicate their Site establishment area requirements:

[illegible]

## T2.2-16: ANNEX G Compulsory Enterprise Questionnaire

The following particulars hereunder must be furnished.

In the case of a Joint Venture, separate enterprise questionnaires in respect of each partner/member must be completed and submitted.

**Section 1: Name of enterprise:** \_\_\_\_\_

**Section 2: VAT registration number, if any:** \_\_\_\_\_

**Section 3: CIDB registration number, if any:** \_\_\_\_\_

**Section 4: CSD number:** \_\_\_\_\_

**Section 5: Particulars of sole proprietors and partners in partnerships**

Name	Identity number	Personal income tax number

\* Complete only if sole proprietor or partnership and attach separate page if more than 3 partners

**Section 6: Particulars of companies and close corporations**

Company registration number \_\_\_\_\_

Close corporation number \_\_\_\_\_

Tax reference number: \_\_\_\_\_

**Section 7: The attached SBD4 must be completed for each tender and be attached as a tender requirement.**

**Section 8: The attached SBD 6 must be completed for each tender and be attached as a requirement.**





The undersigned, who warrants that he / she is duly authorised to do so on behalf of the enterprise:

- i) authorizes the Employer to obtain a tax clearance certificate from the South African Revenue Services that my / our tax matters are in order;
- ii) confirms that the neither the name of the enterprise or the name of any partner, manager, director or other person, who wholly or partly exercises, or may exercise, control over the enterprise appears on the Register of Tender Defaulters established in terms of the Prevention and Combating of Corrupt Activities Act of 2004;
- iii) confirms that no partner, member, director or other person, who wholly or partly exercises, or may exercise, control over the enterprise appears, has within the last five years been convicted of fraud or corruption;
- iv) confirms that I / we are not associated, linked or involved with any other tendering entities submitting tender offers and have no other relationship with any of the tenderers or those responsible for compiling the scope of work that could cause or be interpreted as a conflict of interest; and
- v) confirms that the contents of this questionnaire are within my personal knowledge and are to the best of my belief both true and correct.

Signed

Date

Name

Position

Enterprise  
name

**SBD 6.1****PREFERENCE POINTS CLAIM FORM**

This preference form must form part of all bids invited. It contains general information and serves as a claim for preference points for Broad-Based Black Economic Empowerment [B-BBEE] Status Level of Contribution.

Transnet will award preference points to companies who provide valid proof of their B-BBEE status using either the latest version of the generic Codes of Good Practice or Sector Specific Codes (if applicable).

**1. GENERAL CONDITIONS**

1.1 The following preference point systems are applicable to all bids:

- the 80/20 system for requirements with a Rand value of up to R50 000 000 (all applicable taxes included); and
- the 90/10 system for requirements with a Rand value above R50 000 000 (all applicable taxes included).

1.2 The value of this bid is estimated to **exceed/not exceed** **[Delete what is not applicable]** R50 000 000 (all applicable taxes included) and therefore the ..... preference point system shall be applicable. Despite the stipulated preference point system, Transnet shall use the lowest acceptable bid to determine the applicable preference point system in a situation where all received acceptable bids are received outside the stated preference point system.

**OR**

**Either the 80/20 or 90/10 preference point system will apply [This clause is to be used where it is unclear as to which preference point system will be applicable – lowest acceptable bid will determine the preference point system. Delete if not applicable]**

1.3 Preference points for this bid shall be awarded for:

- (a) Price; and
- (b) B-BBEE Status Level of Contribution.

1.4 The maximum points for this bid are allocated as follows:

	<b>POINTS</b>
<b>PRICE</b>	<b>80/90</b>
<b>B-BBEE STATUS LEVEL OF CONTRIBUTION</b>	<b>20/10</b>
<b>Total points for Price and B-BBEE must not exceed</b>	<b>100</b>

- 1.5 Failure on the part of a bidder to submit proof of B-BBEE status level of contributor together with the bid will be interpreted to mean that preference points for B-BBEE status level of contribution are not claimed.
- 1.6 The purchaser reserves the right to require of a bidder, either before a bid is adjudicated or at any time subsequently, to substantiate any claim in regard to preferences, in any manner required by the purchaser.

## 2. DEFINITIONS

- (a) **"all applicable taxes"** includes value-added tax, pay as you earn, income tax, unemployment insurance fund contributions and skills development levies;
- (b) **"B-BBEE"** means broad-based black economic empowerment as defined in section 1 of the Broad-Based Black Economic Empowerment Act;
- (c) **"B-BBEE status level of contributor"** means the B-BBEE status received by a measured entity based on its overall performance using the relevant scorecard contained in the Codes of Good Practice on Black Economic Empowerment, issued in terms of section 9(1) of the Broad-Based Black Economic Empowerment Act;
- (d) **"bid"** means a written offer in a prescribed or stipulated form in response to an invitation by an organ of state for the supply/provision of services, works or goods, through price quotations, advertised competitive bidding processes or proposals;
- (e) **"Broad-Based Black Economic Empowerment Act"** means the Broad-Based Black Economic Empowerment Act, 2003 (Act No. 53 of 2003);
- (f) **"EME"** means an Exempted Micro Enterprise as defines by Codes of Good Practice under section 9 (1) of the Broad-Based Black Economic Empowerment Act, 2003 (Act No. 53 of 2003);
- (g) **"functionality"** means the ability of a bidder to provide goods or services in accordance with specification as set out in the bid documents
- (h) **"Price"** includes all applicable taxes less all unconditional discounts.
- (i) **"Proof of B-BBEE Status Level of Contributor"**
  - i) the B-BBBEE status level certificate issued by an authorised body or person;
  - ii) a sworn affidavit as prescribed by the B-BBEE Codes of Good Practice; or
  - iii) any other requirement prescribed in terms of the B-BBEE Act.
- (j) **"QSE"** means a Qualifying Small EEnterprise as defines by Codes of Good Practice under section 9 (1) of the Broad-Based Black Economic Empowerment Act, 2003 (Act No. 53 of 2003);
- (k) **"rand value"** means the total estimated value of a contract in South African currency, calculated at the time of bid invitations, and includes all applicable taxes and excise duties.

## 3. POINTS AWARDED FOR PRICE



### 3.1 THE 80/20 OR 90/10 PREFERENCE POINT SYSTEMS

A maximum of 80 or 90 points is allocated for price on the following basis:

80/20 or 90/10

$$P_s = 80 \left( 1 - \frac{P_t - P_{\min}}{P_{\min}} \right) \quad \text{or} \quad P_s = 90 \left( 1 - \frac{P_t - P_{\min}}{P_{\min}} \right)$$

Where

$P_s$  = Points scored for comparative price of bid under consideration

$P_t$  = Comparative price of bid under consideration

$P_{\min}$  = Comparative price of lowest acceptable bid

## 4. POINTS AWARDED FOR B-BBEE STATUS LEVEL OF CONTRIBUTION

4.1 preference points must be awarded to a bidder for attaining the B-BBEE status level of contribution in accordance with the table below:

B-BBEE Status Level of Contributor	Number of points (90/10 system)	Number of points (80/20 system)
1	10	20
2	9	18
3	6	14
4	5	12
5	4	8
6	3	6
7	2	4
8	1	2
Non-compliant contributor	0	0

4.2 The table below indicates the required proof of B-BBEE status depending on the category of enterprises:

Enterprise	B-BBEE Certificate & Sworn Affidavit
Large	Certificate issued by SANAS accredited verification agency
QSE	Certificate issued by SANAS accredited verification agency Sworn Affidavit signed by the authorised QSE representative and attested by a Commissioner of Oaths confirming annual turnover and black ownership (only black-owned QSEs - 51% to 100% Black owned) [Sworn affidavits must substantially comply with the format that can be obtained on the DTI's website at <a href="http://www.dti.gov.za/economic_empowerment/bee_codes.jsp">www.dti.gov.za/economic_empowerment/bee_codes.jsp</a> .]



<b>EME<sup>1</sup></b>	<p>Sworn Affidavit signed by the authorised EME representative and attested by a Commissioner of Oaths confirming annual turnover and black ownership</p> <p>Certificate issued by CIPC (formerly CIPRO) confirming annual turnover and black ownership</p> <p>Certificate issued by SANAS accredited verification agency only if the EME is being measured on the QSE scorecard</p>
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- 4.3 A trust, consortium or joint venture (including unincorporated consortia and joint ventures) must submit a consolidated B-BBEE Status Level verification certificate for every separate bid.
- 4.4 Tertiary Institutions and Public Entities will be required to submit their B-BBEE status level certificates in terms of the specialized scorecard contained in the B-BBEE Codes of Good Practice.
- 4.5 A person will not be awarded points for B-BBEE status level if it is indicated in the bid documents that such a bidder intends sub-contracting more than 25% of the value of the contract to any other enterprise that does not qualify for at least the points that such a bidder qualifies for, unless the intended sub-contractor is an EME that has the capability and ability to execute the sub-contract.
- 4.6 A person awarded a contract may not sub-contract more than 25% of the value of the contract to any other enterprise that does not have an equal or higher B-BBEE status level than the person concerned, unless the contract is sub-contracted to an EME that has the capability and ability to execute the sub-contract.
- 4.7 Bidders are to note that the rules pertaining to B-BBEE verification and other B-BBEE requirements may be changed from time to time by regulatory bodies such as National Treasury or the DTI. It is the Bidder's responsibility to ensure that his/her bid complies fully with all B-BBEE requirements at the time of the submission of the bid.

## **5. BID DECLARATION**

- 5.1 Bidders who claim points in respect of B-BBEE Status Level of Contribution must complete the following:

## **6. B-BBEE STATUS LEVEL OF CONTRIBUTION CLAIMED IN TERMS OF PARAGRAPHS 1.4 AND 6.1**

- 6.1 B-BBEE Status Level of Contribution: . = .....(maximum of **10 or 20** points)

(Points claimed in respect of paragraph 6.1 must be in accordance with the table reflected in paragraph 4.1 and must be substantiated by relevant proof of B-BBEE status level of contributor.

<sup>1</sup> In terms of the Implementation Guide: Preferential Procurement Regulations, 2017, Version 2, paragraph 11.11 provides that in the Transport Sector, EMEs can provide a letter from accounting officer or get verified and be issued with a B-BBEE certificate by SANAS accredited professional or agency as the Transport Sector Code has not been aligned to the generic Codes. EMEs in the Transport Sector are not allowed to provide a sworn affidavit as the generic codes are not applicable to them.

**(Tick applicable box)**

YES		NO	
-----	--	----	--

- i) What percentage of the contract will be subcontracted.....%
- ii) The name of the sub-contractor.....
- iii) The B-BBEE status level of the sub-contractor.....
- iv) Whether the sub-contractor is an EME or QSE.

YES		NO	
-----	--	----	--


#### 8.4 TYPE OF COMPANY/ FIRM

- ☐ Partnership/Joint Venture / Consortium
- ☐ One person business/sole propriety
- ☐ Close corporation
- ☐ Company
- ☐ (Pty) Limited

## 8.5 DESCRIBE PRINCIPAL BUSINESS ACTIVITIES



## 8.6 COMPANY CLASSIFICATION

- ☐ Manufacturer  
☐ Supplier  
☐ Professional **Supplier/Service provider**  
☐ Other **Suppliers/Service providers**, e.g. transporter, etc.

[ TICK APPLICABLE BOX ]

8.7 Total number of years the company/firm has been in business:.....

8.8 I/we, the undersigned, who is / are duly authorised to do so on behalf of the company/firm, certify that the points claimed, based on the B-BBE status level of contribution indicated in paragraphs 1.4 and 6.1 of the foregoing certificate, qualifies the company/ firm for the preference(s) shown and I / we acknowledge that:

- i) The information furnished is true and correct;
- ii) The preference points claimed are in accordance with the General Conditions as indicated in paragraph 1 of this form;
- iii) In the event of a contract being awarded as a result of points claimed as shown in paragraph 1.4 and 6.1, the contractor may be required to furnish documentary proof to the satisfaction of the purchaser that the claims are correct;
- iv) If a bidder submitted false information regarding its B-BBEE status level of contributor,, which will affect or has affected the evaluation of a bid, or where a bidder has failed to declare any subcontracting arrangements or any of the conditions of contract have not been fulfilled, the purchaser may, in addition to any other remedy it may have
  - (a) disqualify the person from the bidding process;
  - (b) recover costs, losses or damages it has incurred or suffered as a result of that person's conduct;
  - (c) cancel the contract and claim any damages which it has suffered as a result of having to make less favourable arrangements due to such cancellation;
  - (d) if the successful bidder subcontracted a portion of the bid to another person without disclosing it, Transnet reserves the right to penalise the bidder up to 10 percent of the value of the contract;
  - (e) recommend that the bidder or contractor, its shareholders and directors, or only the shareholders and directors who acted on a fraudulent basis, be restricted by the National Treasury from obtaining business from any organ of state for a period not exceeding 10 years, after the audi alteram partem (hear the other side) rule has been applied; and
  - (f) forward the matter for criminal prosecution.

## WITNESSES

1. ....

2. ....

.....

SIGNATURE(S) OF BIDDERS(S)

DATE: .....

**BIDDER'S DISCLOSURE****1. PURPOSE OF THE FORM**

Any person (natural or juristic) may make an offer or offers in terms of this invitation to bid. In line with the principles of transparency, accountability, impartiality, and ethics as enshrined in the Constitution of the Republic of South Africa and further expressed in various pieces of legislation, it is required for the bidder to make this declaration in respect of the details required hereunder.

Where a person/s are listed in the Register for Tender Defaulters and / or the List of Restricted Suppliers, that person will automatically be disqualified from the bid process.

**2. Bidder's declaration**

2.1 Is the bidder, or any of its directors / trustees / shareholders / members / partners or any person having a controlling interest<sup>2</sup> in the enterprise, employed by the state? **YES/NO**

2.1.1 If so, furnish particulars of the names, individual identity numbers, and, if applicable, state employee numbers of sole proprietor/ directors / trustees / shareholders / members/ partners or any person having a controlling interest in the enterprise, in table below.

Full Name	Identity Number	Name of State institution

<sup>2</sup> the power, by one person or a group of persons holding the majority of the equity of an enterprise, alternatively, the person/s having the deciding vote or power to influence or to direct the course and decisions of the enterprise.






2.2 Do you, or any person connected with the bidder, have a relationship with any person who is employed by the procuring institution? **YES/NO**

2.2.1 If so, furnish particulars:

.....  
 .....

2.3 Does the bidder or any of its directors / trustees / shareholders / members / partners or any person having a controlling interest in the enterprise have any interest in any other related enterprise whether or not they are bidding for this contract? **YES/NO**

2.3.1 If so, furnish particulars:

.....  
 .....

### 3 DECLARATION

I, \_\_\_\_\_ the \_\_\_\_\_ undersigned,  
 (name)..... in submitting  
 the accompanying bid, do hereby make the following statements that I certify to  
 be true and complete in every respect:

3.1 I have read and I understand the contents of this disclosure;

3.2 I understand that the accompanying bid will be disqualified if this disclosure is found not to be true and complete in every respect;

3.3 The bidder has arrived at the accompanying bid independently from, and without consultation, communication, agreement or arrangement with any competitor. However, communication between partners in a joint venture or consortium<sup>3</sup> will

<sup>3</sup> Joint venture or Consortium means an association of persons for the purpose of combining their expertise, property, capital, efforts, skill and knowledge in an activity for the execution of a contract.

- not be construed as collusive bidding.
- 3.4 In addition, there have been no consultations, communications, agreements or arrangements with any competitor regarding the quality, quantity, specifications, prices, including methods, factors or formulas used to calculate prices, market allocation, the intention or decision to submit or not to submit the bid, bidding with the intention not to win the bid and conditions or delivery particulars of the products or services to which this bid invitation relates.
- 3.4 The terms of the accompanying bid have not been, and will not be, disclosed by the bidder, directly or indirectly, to any competitor, prior to the date and time of the official bid opening or of the awarding of the contract.
- 3.5 There have been no consultations, communications, agreements or arrangements made by the bidder with any official of the procuring institution in relation to this procurement process prior to and during the bidding process except to provide clarification on the bid submitted where so required by the institution; and the bidder was not involved in the drafting of the specifications or terms of reference for this bid.
- 3.6 I am aware that, in addition and without prejudice to any other remedy provided to combat any restrictive practices related to bids and contracts, bids that are suspicious will be reported to the Competition Commission for investigation and possible imposition of administrative penalties in terms of section 59 of the Competition Act No 89 of 1998 and or may be reported to the National Prosecuting Authority (NPA) for criminal investigation and or may be restricted from conducting business with the public sector for a period not exceeding ten (10) years in terms of the Prevention and Combating of Corrupt Activities Act No 12 of 2004 or any other applicable legislation.

I CERTIFY THAT THE INFORMATION FURNISHED IN PARAGRAPHS 1, 2 and 3 ABOVE IS CORRECT.

I ACCEPT THAT THE STATE MAY REJECT THE BID OR ACT AGAINST ME IN TERMS OF PARAGRAPH 6 OF PFMA SCM INSTRUCTION 03 OF 2021/22 ON PREVENTING AND COMBATING ABUSE IN THE SUPPLY CHAIN MANAGEMENT SYSTEM SHOULD THIS DECLARATION PROVE TO BE FALSE.

.....	.....
Signature	Date
.....	.....
Position	Name of bidder

**TRANSNET PORT TERMINAL**

Tender Number: **iCLM HQ 728/TPT**

Description of the works: **UPGRADE OF EMPTY STACK (AREA 100) AT PIER 1, DURBAN CONTAINER TERMINAL FOR TRANSNET SOC LTD (REG. NO 1990/000900/30) OPERATING AS TRANSNET PORT TERMINALS (HEREINAFTER REFERRED TO AS "TPT")**

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**TRANSNET**



**T2.2-18: RFP DECLARATION FORM**

NAME OF COMPANY: \_\_\_\_\_

We \_\_\_\_\_ do hereby certify that:

1. Transnet has supplied and we have received appropriate tender offers to any/all questions (as applicable) which were submitted by ourselves for tender clarification purposes;
2. we have received all information we deemed necessary for the completion of this Tender;
3. at no stage have we received additional information relating to the subject matter of this tender from Transnet sources, other than information formally received from the designated Transnet contact(s) as nominated in the tender documents;
4. we are satisfied, insofar as our company is concerned, that the processes and procedures adopted by Transnet in issuing this tender and the requirements requested from tenderers in responding to this tender have been conducted in a fair and transparent manner; and
5. furthermore, we acknowledge that a direct relationship exists between a family member and/or an owner / member / director / partner / shareholder (unlisted companies) of our company and an employee or board member of the Transnet Group as indicated below:

*[Respondent to indicate if this section is not applicable]*

FULL NAME OF OWNER/MEMBER/DIRECTOR/

PARTNER/SHAREHOLDER:

ADDRESS:

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Indicate nature of relationship with Transnet:

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*[Failure to furnish complete and accurate information in this regard may lead to the disqualification of your response and may preclude a Respondent from doing future business with Transnet]*

We declare, to the extent that we are aware or become aware of any relationship between ourselves and Transnet (other than any existing and appropriate business relationship with Transnet) which could unfairly advantage our company in the forthcoming adjudication process, we shall notify Transnet immediately in writing of such circumstances.

6. We accept that any dispute pertaining to this tender will be resolved through the Ombudsman process and will be subject to the Terms of Reference of the Ombudsman. The Ombudsman process must first be exhausted before judicial review of a decision is sought. (Refer "Important Notice to respondents" below).
7. We further accept that Transnet reserves the right to reverse a tender award or decision based on the recommendations of the Ombudsman without having to follow a formal court process to have such award or decision set aside.
8. We have acquainted ourselves and agree with the content of **T2.2-XX** "Service Provider Integrity Pact".

For and on behalf of  .....  duly authorised thereto
Name:
Signature:
Date:

### IMPORTANT NOTICE TO TENDERERS

- Transnet has appointed a Procurement Ombudsman to investigate any material complaint in respect of tenders exceeding R5,000,000.00 (five million S.A. Rand) in value. Should a Tenderer have any material concern regarding an tender process which meets this value threshold, a complaint may be lodged with Transnet's Procurement Ombudsman for further investigation.
- It is incumbent on the Tenderer to familiarise himself/herself with the Terms of Reference for the Transnet Procurement Ombudsman, details of which are available for review at Transnet's website [www.transnet.net](http://www.transnet.net).

- An official complaint form may be downloaded from this website and submitted, together with any supporting documentation, within the prescribed period, to [procurement.ombud@transnet.net](mailto:procurement.ombud@transnet.net)
- For transactions below the R5,000,000.00 (five million S.A. Rand) threshold, a complaint may be lodged with the Chief Procurement Officer of the relevant Transnet Operating Division.
- All Tenderers should note that a complaint must be made in good faith. If a complaint is made in bad faith, Transnet reserves the right to place such a tenderer on its List of Excluded Bidders.



## T2.2-18: REQUEST FOR PROPOSAL – BREACH OF LAW

NAME OF COMPANY: \_\_\_\_\_

I / We \_\_\_\_\_ do hereby certify that ***I/we have/have not been*** found guilty during the preceding 5 (five) years of a serious breach of law, including but not limited to a breach of the Competition Act, 89 of 1998, by a court of law, tribunal or other administrative body. The type of breach that the Tenderer is required to disclose excludes relatively minor offences or misdemeanours, e.g. traffic offences.

*Where found guilty of such a serious breach, please disclose:*

NATURE OF BREACH:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

DATE OF BREACH: \_\_\_\_\_

Furthermore, I/we acknowledge that Transnet SOC Ltd reserves the right to exclude any Tenderer from the tendering process, should that person or company have been found guilty of a serious breach of law, tribunal or regulatory obligation.

Signed on this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_

\_\_\_\_\_  
SIGNATURE OF TENDERER

## **T2.2-20 Certificate of Acquaintance with Tender Documents**

NAME OF TENDERING ENTITY:

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1. By signing this certificate I/we acknowledge that I/we have made myself/ourselves thoroughly familiar with, and agree with all the conditions governing this RFP. This includes those terms and conditions of the Contract, the Supplier Integrity Pact, Non-Disclosure Agreement etc. contained in any printed form stated to form part of the documents thereof, but not limited to those listed in this clause.
2. I/we furthermore agree that Transnet SOC Ltd shall recognise no claim from me/us for relief based on an allegation that I/we overlooked any tender/contract condition or failed to take it into account for the purpose of calculating my/our offered prices or otherwise.
3. I/we understand that the accompanying Tender will be disqualified if this Certificate is found not to be true and complete in every respect.
4. For the purposes of this Certificate and the accompanying Tender, I/we understand that the word "competitor" shall include any individual or organisation, other than the Tenderer, whether or not affiliated with the Tenderer, who:
  - a) has been requested to submit a Tender in response to this Tender invitation;
  - b) could potentially submit a Tender in response to this Tender invitation, based on their qualifications, abilities or experience; and
  - c) provides the same Services as the Tenderer and/or is in the same line of business as the Tenderer
5. The Tenderer has arrived at the accompanying Tender independently from, and without consultation, communication, agreement or arrangement with any competitor. However communication between partners in a joint venture or consortium will not be construed as collusive Tendering.
6. In particular, without limiting the generality of paragraph 5 above, there has been no consultation, communication, agreement or arrangement with any competitor regarding:
  - a) prices;



- b) geographical area where Services will be rendered [market allocation]
  - c) methods, factors or formulas used to calculate prices;
  - d) the intention or decision to submit or not to submit, a Tender;
  - e) the submission of a tender which does not meet the specifications and conditions of the tender; or
  - f) Tendering with the intention not winning the tender.
7. In addition, there have been no consultations, communications, agreements or arrangements with any competitor regarding the quality, quantity, specifications and conditions or delivery particulars of the Services to which this tender relates.
8. The terms of the accompanying tender have not been, and will not be, disclosed by the Tenderer, directly or indirectly, to any competitor, prior to the date and time of the official tender opening or of the awarding of the contract.
9. I/We am/are aware that, in addition and without prejudice to any other remedy provided to combat any restrictive practices related to tenders and contracts, tenders that are suspicious will be reported to the Competition Commission for investigation and possible imposition of administrative penalties in terms of section 59 of the Competition Act No 89 of 1998 and/or may be reported to the National Prosecuting Authority [NPA] for criminal investigation. In addition, Tenderers that submit suspicious tenders may be restricted from conducting business with the public sector for a period not exceeding 10 [ten] years in terms of the Prevention and Combating of Corrupt Activities Act No 12 of 2004 or any other applicable legislation.

Signed on this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_

\_\_\_\_\_  
SIGNATURE OF TENDERER

## **T2.2-21 Service Provider Integrity Pact**

**Important Note: All potential tenderers must read this document and certify in the RFP Declaration Form that that have acquainted themselves with, and agree with the content.**

**The contract with the successful tenderer will automatically incorporate this Integrity Pact and shall be deemed as part of the final concluded contract.**

### **INTEGRITY PACT**

Between

**TRANSNET SOC LTD**

Registration Number: 1990/000900/30

("Transnet")

and

The Contractor (hereinafter referred to as the "Tenderer/Service Providers/Contractor")

## **PREAMBLE**

Transnet values full compliance with all relevant laws and regulations, ethical standards and the principles of economical use of resources, fairness and transparency in its relations with its Tenderers/Service Providers/Contractors.

In order to achieve these goals, Transnet and the Tenderer/Service Provider/Contractor hereby enter into this agreement hereinafter referred to as the "Integrity Pact" which will form part of the Tenderer's/Service Provider's/Contractor's application for registration with Transnet as a vendor.

The general purpose of this Integrity Pact is to agree on avoiding all forms of dishonesty, fraud and corruption by following a system that is fair, transparent and free from any undue influence prior to, during and subsequent to the currency of any procurement and/or reverse logistics event and any further contract to be entered into between the Parties, relating to such event.

All Tenderers/Service Providers/Contractor's will be required to sign and comply with undertakings contained in this Integrity Pact, should they want to be registered as a Transnet vendor.

## **1 OBJECTIVES**

- 1.1 Transnet and the Tenderer/Service Provider/Contractor agree to enter into this Integrity Pact, to avoid all forms of dishonesty, fraud and corruption including practices that are anti-competitive in nature, negotiations made in bad faith and under-pricing by following a system that is fair, transparent and free from any influence/unprejudiced dealings prior to, during and subsequent to the currency of the contract to be entered into with a view to:
  - a) Enable Transnet to obtain the desired contract at a reasonable and competitive price in conformity to the defined specifications of the works, goods and services; and
  - b) Enable Tenderers/Service Providers/Contractors to abstain from bribing or participating in any corrupt practice in order to secure the contract.

## **2 COMMITMENTS OF TRANSNET**

Transnet commits to take all measures necessary to prevent dishonesty, fraud and corruption and to observe the following principles:

- 2.1 Transnet hereby undertakes that no employee of Transnet connected directly or indirectly with the sourcing event and ensuing contract, will demand, take a promise for or accept directly or through intermediaries any bribe, consideration, gift, reward, favour or any material or immaterial benefit or any other advantage

from the Tenderer, either for themselves or for any person, organisation or third party related to the contract in exchange for an advantage in the tendering process, Tender evaluation, contracting or implementation process related to any contract.

- 2.2 Transnet will, during the registration and tendering process treat all Tenderers/ Service Providers/Contractor with equity, transparency and fairness. Transnet will in particular, before and during the registration process, provide to all Tenderers/ Service Providers/Contractors the same information and will not provide to any Tenderers/Service Providers/Contractors confidential/additional information through which the Tenderers/Service Providers/Contractors could obtain an advantage in relation to any tendering process.
- 2.3 Transnet further confirms that its employees will not favour any prospective Tenderers/Service Providers/Contractors in any form that could afford an undue advantage to a particular Tenderer during the tendering stage, and will further treat all Tenderers/Service Providers/Contractors participating in the tendering process in a fair manner.
- 2.4 Transnet will exclude from the tender process such employees who have any personal interest in the Tenderers/Service Providers/Contractors participating in the tendering process.

### **3 OBLIGATIONS OF THE TENDERER / SERVICE PROVIDER**

- 3.1 Transnet has a '**Zero Gifts**' Policy. No employee is allowed to accept gifts, favours or benefits.
  - a) Transnet officials and employees **shall not** solicit, give or accept, or from agreeing to solicit, give, accept or receive directly or indirectly, any gift, gratuity, favour, entertainment, loan, or anything of monetary value, from any person or juridical entities in the course of official duties or in connection with any operation being managed by, or any transaction which may be affected by the functions of their office.
  - b) Transnet officials and employees **shall not** solicit or accept gifts of any kind, from vendors, suppliers, customers, potential employees, potential vendors, and suppliers, or any other individual or organisation irrespective of the value.
  - c) Under **no circumstances** should gifts, business courtesies or hospitality packages be accepted from or given to prospective suppliers participating in a tender process at the respective employee's Operating Division, regardless of retail value.
  - d) Gratuities, bribes or kickbacks of any kind must never be solicited, accepted or offered, either directly or indirectly. This includes money, loans, equity, special

privileges, personal favours, benefit or services. Such favours will be considered to constitute corruption.

- 3.2 The Tenderer/Service Provider/Contractor commits itself to take all measures necessary to prevent corrupt practices, unfair means and illegal activities during any stage of its Tender or during any ensuing contract stage in order to secure the contract or in furtherance to secure it and in particular the Tenderer/Service Provider/Contractor commits to the following:
- a) The Tenderer/Service Provider/Contractor will not, directly or through any other person or firm, offer, promise or give to Transnet or to any of Transnet's employees involved in the tendering process or to any third person any material or other benefit or payment, in order to obtain in exchange an advantage during the tendering process; and
  - b) The Tenderer/Service Provider/Contractor will not offer, directly or through intermediaries, any bribe, gift, consideration, reward, favour, any material or immaterial benefit or other advantage, commission, fees, brokerage or inducement to any employee of Transnet, connected directly or indirectly with the tendering process, or to any person, organisation or third party related to the contract in exchange for any advantage in the tendering, evaluation, contracting and implementation of the contract.
- 3.3 The Tenderer/Service Provider/Contractor will not collude with other parties interested in the contract to preclude a competitive Tender price, impair the transparency, fairness and progress of the tendering process, Tender evaluation, contracting and implementation of the contract. The Tenderer / Service Provider further commits itself to delivering against all agreed upon conditions as stipulated within the contract.
- 3.4 The Tenderer/Service Provider/Contractor will not enter into any illegal or dishonest agreement or understanding, whether formal or informal with other Tenderers/Service Providers/Contractors. This applies in particular to certifications, submissions or non-submission of documents or actions that are restrictive or to introduce cartels into the tendering process.
- 3.5 The Tenderer/Service Provider/Contractor will not commit any criminal offence under the relevant anti-corruption laws of South Africa or any other country. Furthermore, the Tenderer/Service Provider/Contractor will not use for illegitimate purposes or for restrictive purposes or personal gain, or pass on to others, any information provided by Transnet as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.

- 3.6 A Tenderer/Service Provider/Contractor of foreign origin shall disclose the name and address of its agents or representatives in South Africa, if any, involved directly or indirectly in the registration or tendering process. Similarly, the Tenderer / Service Provider / Contractor of South African nationality shall furnish the name and address of the foreign principals, if any, involved directly or indirectly in the registration or tendering process.
- 3.7 The Tenderer/Service Provider/Contractor will not misrepresent facts or furnish false or forged documents or information in order to influence the tendering process to the advantage of the Tenderer/Service Provider/Contractor or detriment of Transnet or other competitors.
- 3.8 Transnet may require the Tenderer/Service Provider/Contractor to furnish Transnet with a copy of its code of conduct. Such code of conduct must address the compliance programme for the implementation of the code of conduct and reject the use of bribes and other dishonest and unethical conduct.
- 3.9 The Tenderer/Service Provider/Contractor will not instigate third persons to commit offences outlined above or be an accessory to such offences.
- 3.10 The Tenderer/Service Provider/Contractor confirms that they will uphold the ten principles of the United Nations Global Compact (UNGC) in the fields of Human Rights, Labour, Anti-Corruption and the Environment when undertaking business with Transnet as follows:
- a) Human Rights
- Principle 1: Businesses should support and respect the protection of internationally proclaimed human rights; and
  - Principle 2: make sure that they are not complicit in human rights abuses.
- b) Labour
- Principle 3: Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining;
  - Principle 4: the elimination of all forms of forced and compulsory labour;
  - Principle 5: the effective abolition of child labour; and
  - Principle 6: the elimination of discrimination in respect of employment and occupation.
- c) Environment

- Principle 7: Businesses should support a precautionary approach to environmental challenges;
  - Principle 8: undertake initiatives to promote greater environmental responsibility; and
  - Principle 9: encourage the development and diffusion of environmentally friendly technologies.
- d) Anti-Corruption
- Principle 10: Businesses should work against corruption in all its forms, including extortion and bribery.

#### **4 INDEPENDENT TENDERING**

- 4.1 For the purposes of that Certificate in relation to any submitted Tender, the Tenderer declares to fully understand that the word "competitor" shall include any individual or organisation, other than the Tenderer, whether or not affiliated with the Tenderer, who:
- a) has been requested to submit a Tender in response to this Tender invitation;
  - b) could potentially submit a Tender in response to this Tender invitation, based on their qualifications, abilities or experience; and
  - c) provides the same Goods and Services as the Tenderer and/or is in the same line of business as the Tenderer.
- 4.2 The Tenderer has arrived at his submitted Tender independently from, and without consultation, communication, agreement or arrangement with any competitor. However communication between partners in a joint venture or consortium will not be construed as collusive tendering.
- 4.3 In particular, without limiting the generality of paragraph 5 above, there has been no consultation, communication, agreement or arrangement with any competitor regarding:
- a) prices;
  - b) geographical area where Goods or Services will be rendered [market allocation];
  - c) methods, factors or formulas used to calculate prices;
  - d) the intention or decision to submit or not to submit, a Tender;
  - e) the submission of a Tender which does not meet the specifications and conditions of the RFP; or
  - f) tendering with the intention of not winning the Tender.

- 4.4 In addition, there have been no consultations, communications, agreements or arrangements with any competitor regarding the quality, quantity, specifications and conditions or delivery particulars of the Goods or Services to which his/her tender relates.
- 4.5 The terms of the Tender as submitted have not been, and will not be, disclosed by the Tenderer, directly or indirectly, to any competitor, prior to the date and time of the official Tender opening or of the awarding of the contract.
- 4.6 Tenderers are aware that, in addition and without prejudice to any other remedy provided to combat any restrictive practices related to Tenders and contracts, Tenders that are suspicious will be reported to the Competition Commission for investigation and possible imposition of administrative penalties in terms of section 59 of the Competition Act No 89 of 1998 and/or may be reported to the National Prosecuting Authority [**NPA**] for criminal investigation and/or may be restricted from conducting business with the public sector for a period not exceeding 10 [ten] years in terms of the Prevention and Combating of Corrupt Activities Act No 12 of 2004 or any other applicable legislation.
- 4.7 Should the Tenderer find any terms or conditions stipulated in any of the relevant documents quoted in the Tender unacceptable, it should indicate which conditions are unacceptable and offer alternatives by written submission on its company letterhead, attached to its submitted Tender. Any such submission shall be subject to review by Transnet's Legal Counsel who shall determine whether the proposed alternative(s) are acceptable or otherwise, as the case may be.

## **5 DISQUALIFICATION FROM TENDERING PROCESS**

- 5.1 If the Tenderer/Service Provider/Contractor has committed a transgression through a violation of section 3 of this Integrity Pact or in any other form such as to put its reliability or credibility as a Tenderer/Service Provider/Contractor into question, Transnet may reject the Tenderer's / Service Provider's / Contractor's application from the registration or tendering process and remove the Tenderer/Service Provider/Contractor from its database, if already registered.
- 5.2 If the Tenderer/Service Provider/Contractor has committed a transgression through a violation of section 3, or any material violation, such as to put its reliability or credibility into question. Transnet may after following due procedures and at its own discretion also exclude the Tenderer/Service Provider /Contractor from future tendering processes. The imposition and duration of the exclusion will be determined by the severity of the transgression. The severity



will be determined by the circumstances of the case, which will include amongst others the number of transgressions, the position of the transgressors within the company hierarchy of the Tenderer/Service Provider/Contractor and the amount of the damage. The exclusion will be imposed for up to a maximum of 10 (ten) years. However, Transnet reserves the right to impose a longer period of exclusion, depending on the gravity of the misconduct.

- 5.3 If the Tenderer/Service Provider/Contractor can prove that it has restored the damage caused by it and has installed a suitable corruption prevention system, or taken other remedial measures as the circumstances of the case may require, Transnet may at its own discretion revoke the exclusion or suspend the imposed penalty.

## **6 TRANSNET'S LIST OF EXCLUDED TENDERERS (BLACKLIST)**

- 6.1 The process of restriction is used to exclude a company/person from conducting future business with Transnet and other organs of state for a specified period. No Tender shall be awarded to a Tenderer whose name (or any of its members, directors, partners or trustees) appear on the Register of Tender Defaulters kept by National Treasury, or who have been placed on National Treasury's List of Restricted Suppliers. Transnet reserves the right to withdraw an award, or cancel a contract concluded with a Tenderer should it be established, at any time, that a tenderer has been restricted with National Treasury by another government institution.
- 6.2 All the stipulations on Transnet's restriction process as laid down in Transnet's Supply Chain Policy and Procurement Procedures Manual (CPM included) are included herein by way of reference. Below follows a condensed summary of this restriction procedure.
- 6.3 On completion of the restriction procedure, Transnet will submit the restricted entity's details (including the identity number of the individuals and registration number of the entity) to National Treasury for placement on National Treasury's Database of Restricted Suppliers for the specified period of exclusion. National Treasury will make the final decision on whether to restrict an entity from doing business with any organ of state for a period not exceeding 10 years and place the entity concerned on the Database of Restricted Suppliers published on its official website.
- 6.4 The decision to restrict is based on one of the grounds for restriction. The standard of proof to commence the restriction process is whether a "*prima facie*" (i.e. on the face of it) case has been established.

- 6.5 Depending on the seriousness of the misconduct and the strategic importance of the Goods/Services, in addition to restricting a company/person from future business, Transnet may decide to terminate some or all existing contracts with the company/person as well.
- 6.6 A Service Provider or Contractor to Transnet may not subcontract any portion of the contract to a blacklisted company.
- 6.7 Grounds for blacklisting include: If any person/Enterprise which has submitted a Tender, concluded a contract, or, in the capacity of agent or subcontractor, has been associated with such Tender or contract:
- a) Has, in bad faith, withdrawn such Tender after the advertised closing date and time for the receipt of Tenders;
  - b) has, after being notified of the acceptance of his Tender, failed or refused to sign a contract when called upon to do so in terms of any condition forming part of the Tender documents;
  - c) has carried out any contract resulting from such Tender in an unsatisfactory manner or has breached any condition of the contract;
  - d) has offered, promised or given a bribe in relation to the obtaining or execution of the contract;
  - e) has acted in a fraudulent or improper manner or in bad faith towards Transnet or any Government Department or towards any public body, Enterprise or person;
  - f) has made any incorrect statement in a certificate or other communication with regard to the Local Content of his Goods or his B-BBEE status and is unable to prove to the satisfaction of Transnet that:
    - (i) he made the statement in good faith honestly believing it to be correct; and
    - (ii) before making such statement he took all reasonable steps to satisfy himself of its correctness;
  - g) caused Transnet damage, or to incur costs in order to meet the contractor's requirements and which could not be recovered from the contractor;
  - h) has litigated against Transnet in bad faith.

- 6.8 Grounds for blacklisting include a company/person recorded as being a company or person prohibited from doing business with the public sector on National Treasury's database of Restricted Service Providers or Register of Tender Defaulters.
- 6.9 Companies associated with the person/s guilty of misconduct (i.e. entities owned, controlled or managed by such persons), any companies subsequently formed by the person(s) guilty of the misconduct and/or an existing company where such person(s) acquires a controlling stake may be considered for blacklisting. The decision to extend the blacklist to associated companies will be at the sole discretion of Transnet.

## **7 PREVIOUS TRANSGRESSIONS**

- 7.1 The Tenderer/Service Provider/Contractor hereby declares that no previous transgressions resulting in a serious breach of any law, including but not limited to, corruption, fraud, theft, extortion and contraventions of the Competition Act 89 of 1998, which occurred in the last 5 (five) years with any other public sector undertaking, government department or private sector company that could justify its exclusion from its registration on the Tenderer's/Service Provider's/Contractor's database or any tendering process.
- 7.2 If it is found to be that the Tenderer/Service Provider/Contractor made an incorrect statement on this subject, the Tenderer/Service Provider/Contractor can be rejected from the registration process or removed from the Tenderer/Service Provider/Contractor database, if already registered, for such reason (refer to the Breach of Law Returnable Form contained in the document.)

## **8 SANCTIONS FOR VIOLATIONS**

- 8.1 Transnet shall also take all or any one of the following actions, wherever required to:
- a) Immediately exclude the Tenderer/Service Provider/Contractor from the tendering process or call off the pre-contract negotiations without giving any compensation the Tenderer/Service Provider/Contractor. However, the proceedings with the other Tenderer/Service Provider/Contractor may continue;
  - b) Immediately cancel the contract, if already awarded or signed, without giving any compensation to the Tenderer/Service Provider/Contractor;
  - c) Recover all sums already paid by Transnet;
  - d) Encash the advance bank guarantee and performance bond or warranty bond, if furnished by the Tenderer/Service Provider/Contractor, in order to recover the payments, already made by Transnet, along with interest;

- e) Cancel all or any other contracts with the Tenderer/Service Provider/Contractor; and
- f) Exclude the Tenderer/ Service Provider/Contractor from entering into any Tender with Transnet in future.

## **9 CONFLICTS OF INTEREST**

9.1 A conflict of interest includes, inter alia, a situation in which:

- a) A Transnet employee has a personal financial interest in a tendering / supplying entity; and
- b) A Transnet employee has private interests or personal considerations or has an affiliation or a relationship which affects, or may affect, or may be perceived to affect his / her judgment in action in the best interest of Transnet, or could affect the employee's motivations for acting in a particular manner, or which could result in, or be perceived as favouritism or nepotism.

9.2 A Transnet employee uses his / her position, or privileges or information obtained while acting in the capacity as an employee for:

- a) Private gain or advancement; or
- b) The expectation of private gain, or advancement, or any other advantage accruing to the employee must be declared in a prescribed form.

Thus, conflicts of interest of any Tender committee member or any person involved in the sourcing process must be declared in a prescribed form.

9.3 If a Tenderer/Service Provider/Contractor has or becomes aware of a conflict of interest i.e. a family, business and / or social relationship between its owner(s)/ member(s)/director(s)/partner(s)/shareholder(s) and a Transnet employee/ member of Transnet's Board of Directors in respect of a Tender which will be considered for the Tender process, the Tenderer/Service Provider/ Contractor:

- a) must disclose the interest and its general nature, in the Request for Proposal ("RFX") declaration form; or
- b) must notify Transnet immediately in writing once the circumstances has arisen.

9.4 The Tenderer/Service Provider/Contractor shall not lend to or borrow any money from or enter into any monetary dealings or transactions, directly or indirectly, with any committee member or any person involved in the sourcing process, where this is done, Transnet shall be entitled forthwith to rescind the contract and all other contracts with the Tenderer/Service Provider/Contractor.

## **10 DISPUTE RESOLUTION**

10.1 Transnet recognises that trust and good faith are pivotal to its relationship with its Tenderer / Service Provider / Contractor. When a dispute arises between

Transnet and its Tenderer / Service Provider / Contractor, the parties should use their best endeavours to resolve the dispute in an amicable manner, whenever possible. Litigation in bad faith negates the principles of trust and good faith on which commercial relationships are based. Accordingly, following a blacklisting process as mentioned in paragraph 6 above, Transnet will not do business with a company that litigates against it in bad faith or is involved in any action that reflects bad faith on its part. Litigation in bad faith includes, but is not limited to the following instances:

- a) **Vexatious proceedings:** these are frivolous proceedings which have been instituted without proper grounds;
- b) **Perjury:** where a Tenderer / Service Provider / Contractor make a false statement either in giving evidence or on an affidavit;
- c) **Scurrilous allegations:** where a Tenderer / Service Provider / Contractor makes allegations regarding a senior Transnet employee which are without proper foundation, scandalous, abusive or defamatory; and
- d) **Abuse of court process:** when a Tenderer / Service Provider / Contractor abuses the court process in order to gain a competitive advantage during a Tender process.

## 11 GENERAL

- 11.1 This Integrity Pact is governed by and interpreted in accordance with the laws of the Republic of South Africa.
- 11.2 The actions stipulated in this Integrity Pact are without prejudice to any other legal action that may follow in accordance with the provisions of the law relating to any civil or criminal proceedings.
- 11.3 The validity of this Integrity Pact shall cover all the tendering processes and will be valid for an indefinite period unless cancelled by either Party.
- 11.4 Should one or several provisions of this Integrity Pact turn out to be invalid the remainder of this Integrity Pact remains valid.
- 11.5 Should a Tenderer/Service Provider/Contractor be confronted with dishonest, fraudulent or corruptive behaviour of one or more Transnet employees, Transnet expects its Tenderer/Service Provider/Contractor to report this behaviour directly to a senior Transnet official/employee or alternatively by using Transnet's "Tip-Off Anonymous" hotline number 0800 003 056, whereby your confidentiality is guaranteed.

**TRANSNET PORT TERMINAL**

Tender Number: **ICLM HQ 728/TPT**

Description of the works: **UPGRADE OF EMPTY STACK (AREA 100) AT PIER 1, DURBAN CONTAINER TERMINAL FOR TRANSNET SOC LTD (REG. NO 1990/000900/30) OPERATING AS TRANSNET PORT TERMINALS (HEREINAFTER REFERRED TO AS "TPT")**

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The Parties hereby declare that each of them has read and understood the clauses of this Integrity Pact and shall abide by it. To the best of the Parties' knowledge and belief, the information provided in this Integrity Pact is true and correct.

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I ..... duly authorised by the tendering entity, hereby certify that the tendering entity are **fully acquainted** with the contents of the Integrity Pact and further **agree to abide by it** in full.

Signature .....

Date .....

## T2.2-22 : Supplier Code of Conduct

Transnet SOC Limited aims to achieve the best value for money when buying or selling goods and obtaining services. This however must be done in an open and fair manner that supports and drives a competitive economy. Underpinning our process are several acts and policies that any supplier dealing with Transnet must understand and support. These are:

- The Transnet Procurement Policy – A guide for Tenderers.
- Section 217 of the Constitution - the five pillars of Public PSCM (Procurement and Supply Chain Management): fair, equitable, transparent, competitive and cost effective;
- The Public Finance Management Act (PFMA);
- The Broad Based Black Economic Empowerment Act (BBBEE)
- The Prevention and Combating of Corrupt Activities Act (PRECCA); and
- The Construction Industry Development Board Act (CIDB Act).

This code of conduct has been included in this contract to formally appraise Transnet Suppliers of Transnet's expectations regarding behaviour and conduct of its Suppliers.

### ***Prohibition of Bribes, Kickbacks, Unlawful Payments, and Other Corrupt Practices***

Transnet is in the process of transforming itself into a self-sustaining State Owned Enterprise, actively competing in the logistics industry. Our aim is to become a world class, profitable, logistics organisation. As such, our transformation is focused on adopting a performance culture and to adopt behaviours that will enable this transformation.

#### ***1. Transnet SOC Limited will not participate in corrupt practices. Therefore, it expects its suppliers to act in a similar manner.***

- Transnet and its employees will follow the laws of this country and keep accurate business records that reflect actual transactions with, and payments to, our suppliers.
- Employees must not accept or request money or anything of value, directly or indirectly, from suppliers.
- Employees may not receive anything that is calculated to:

- Illegally influence their judgement or conduct or to ensure the desired outcome of a sourcing activity;
- Win or retain business or to influence any act or decision of any person involved in sourcing decisions; or
- Gain an improper advantage.
- There may be times when a supplier is confronted with fraudulent or corrupt behaviour of Transnet employees. We expect our Suppliers to use our "Tip-offs Anonymous" Hot line to report these acts. (0800 003 056).

**2. *Transnet SOC Limited is firmly committed to the ideas of free and competitive enterprise.***

- Suppliers are expected to comply with all applicable laws and regulations regarding fair competition and antitrust practices.
- Transnet does not engage with non-value adding agents or representatives solely for the purpose of increasing BBBEE spend (fronting).

**3. *Transnet's relationship with suppliers requires us to clearly define requirements, to exchange information and share mutual benefits.***

- Generally, suppliers have their own business standards and regulations. Although Transnet cannot control the actions of our suppliers, we will not tolerate any illegal activities. These include, but are not limited to:
  - Misrepresentation of their product (origin of manufacture, specifications, intellectual property rights, etc);
  - Collusion;
  - Failure to disclose accurate information required during the sourcing activity (ownership, financial situation, BBBEE status, etc.);
  - Corrupt activities listed above; and
  - Harassment, intimidation or other aggressive actions towards Transnet employees.
- Suppliers must be evaluated and approved before any materials, components, products or services are purchased from them. Rigorous due diligence is conducted and the supplier is expected to participate in an honest and straight forward manner.



- Suppliers must record and report facts accurately, honestly and objectively. Financial records must be accurate in all material respects.

***Conflicts of Interest***

A conflict of interest arises when personal interests or activities influence (or appear to influence) the ability to act in the best interests of Transnet SOC Limited.

- Doing business with family members.
- Having a financial interest in another company in our industry

Where possible, contracts will be negotiated to include the above in the terms of such contracts. To the extent such terms are not included in contractual obligations and any of the above code is breached, then Transnet reserves its right to review doing business with these suppliers.

I, \_\_\_\_\_ of \_\_\_\_\_  
*(insert name of Director or as per Authority Resolution from Board of Directors)* *(insert name of Company)*

hereby acknowledge having read, understood and agree to the terms and conditions set out in the "Transnet Supplier Code of Conduct."

Signed this on day \_\_\_\_\_ at

\_\_\_\_\_

\_\_\_\_\_  
Signature

## T2.2-23: Insurance provided by the *Contractor*

Clause 84.1 in NEC3 Engineering & Construction Contract (June 2005)(amended June 2006 and April 2013) requires that the *Contractor* provides the insurance stated in the insurance table except any insurance which the *Employer* is to provide as stated in the Contract Data.

Please provide the following details for insurance which the *Contractor* is still to provide. Notwithstanding this information all costs related to insurance are deemed included in the tenderer's rates and prices.

Insurance against (See clause 84.2 of the ECC)	Name of Insurance Company	Cover	Premium
Liability for death of or bodily injury to employees of the <i>Contractor</i> arising out of and in the course of their employment in connection with this contract			
Motor Vehicle Liability Insurance comprising (as a minimum) "Balance of Third Party" Risks including Passenger and Unauthorised Passenger Liability indemnity with a minimum indemnity limit of R5 000 000/R10 000 000.			
Insurance in respect of loss of or damage to own property and equipment.			
Marine Craft Hull insurance in respect of all marine craft or vessels utilised in performance of the Works for a sum sufficient to provide for their replacement			
Protection and Indemnity Insurance in respect of all marine craft or vessels utilised in performance of the Works extended for Specialist Operations with a minimum indemnity limit of R 20,000,000			
(Other)			

## T2.2-24: Form of Intent to Provide a Performance Guarantee

It is hereby agreed by the Tenderer that a Performance Guarantee drafted **exactly** as provided in the tender documents will be provided by the Guarantor named below, which is a **bank or insurer registered in South Africa**:

Name of Guarantor  
(Bank/Insurer)

Address

The Performance Guarantee shall be provided within **2 (Two)** weeks after the Contract Date defined in the contract unless otherwise agreed to by the parties.

Signed

Name

Capacity

On behalf of (name of  
tenderer)

Date

### Confirmed by Guarantor's Authorised Representative

Signature(s)

Name (print)

Capacity

On behalf of Guarantor  
(Bank/insurer)

Date

## **T2.2-25: Forecast Rate of Invoicing**

Tenderer to submit the forecast rate of invoicing (cash-flow) based on the Tender Price and Tender Programme.

### **Index of documentation attached to this schedule:**

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## **T2.2-26: Three (3) years audited financial statements**

Attached to this schedule is the last three (3) years audited financial statements of the single tenderer/members of the Joint Venture.

NAME OF COMPANY/IES and INDEX OF ATTACHMENTS:

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## **Part C1: Agreement and Contract Data**

**TRANSNET PORT TERMINAL**

Tender Number: : iCLM HQ 728/TPT

Description of the works: **UPGRADE OF EMPTY STACK (AREA 100) AT PIER 1, DURBAN CONTAINER TERMINAL FOR TRANSNET SOC LTD (REG. NO 1990/000900/30) OPERATING AS TRANSNET PORT TERMINALS (HEREINAFTER REFERRED TO AS "TPT")**



## C1.1: Form of Offer & Acceptance

### Offer

The Employer, identified in the Acceptance signature block, has solicited offers to enter into a contract for the procurement of:

**UPGRADE OF EMPTY STACK (AREA 100) AT PIER 1, DURBAN CONTAINER TERMINAL FOR TRANSNET SOC LTD (REG. NO 1990/000900/30) OPERATING AS TRANSNET PORT TERMINALS (HEREINAFTER REFERRED TO AS "TPT")**

The tenderer, identified in the Offer signature block, has examined the documents listed in the Tender Data and addenda thereto as listed in the Returnable Schedules, and by submitting this Offer has accepted the Conditions of Tender.

By the representative of the tenderer, deemed to be duly authorised, signing this part of this Form of Offer and Acceptance the tenderer offers to perform all of the obligations and liabilities of the *Contractor* under the contract including compliance with all its terms and conditions according to their true intent and meaning for an amount to be determined in accordance with the *conditions of contract* identified in the Contract Data.

The offered total of the Prices exclusive of VAT is	<b>R</b>
Value Added Tax @ 15% is	<b>R</b>
The offered total of the Prices inclusive of VAT is	<b>R</b>
(in words)	

This Offer may be accepted by the Employer by signing the Acceptance part of this Form of Offer and Acceptance and returning one copy of this document including the Schedule of Deviations (if any) to the tenderer before the end of the period of validity stated in the Tender Data, or other period as agreed, whereupon the tenderer becomes the party named as the *Contractor* in the *conditions of contract* identified in the Contract Data.

Signature(s)

Name(s)

Capacity

**For the  
tenderer:**

(Insert name and address of organisation)

Name &  
signature of  
witness

Date

Tenderer's CIDB registration number:



## Acceptance

By signing this part of this Form of Offer and Acceptance, the *Employer* identified below accepts the tenderer's Offer. In consideration thereof, the *Employer* shall pay the *Contractor* the amount due in accordance with the *conditions of contract* identified in the Contract Data. Acceptance of the tenderer's Offer shall form an agreement between the *Employer* and the tenderer upon the terms and conditions contained in this agreement and in the contract that is the subject of this agreement.

The terms of the contract, are contained in:

Part C1	Agreements and Contract Data, (which includes this Form of Offer and Acceptance)
Part C2	Pricing Data
Part C3	Scope of Work: Works Information
Part C4	Site Information

and drawings and documents (or parts thereof), which may be incorporated by reference into the above listed Parts.

Deviations from and amendments to the documents listed in the Tender Data and any addenda thereto listed in the Returnable Schedules as well as any changes to the terms of the Offer agreed by the tenderer and the Employer during this process of offer and acceptance, are contained in the Schedule of Deviations attached to and forming part of this Form of Offer and Acceptance. No amendments to or deviations from said documents are valid unless contained in this Schedule.

The tenderer shall within two weeks of receiving a completed copy of this agreement, including the Schedule of Deviations (if any), contact the Employer's agent (whose details are given in the Contract Data) to arrange the delivery of any securities, bonds, guarantees, proof of insurance and any other documentation to be provided in terms of the *conditions of contract* identified in the Contract Data at, or just after, the date this agreement comes into effect. Failure to fulfil any of these obligations in accordance with those terms shall constitute a repudiation of this agreement.

Notwithstanding anything contained herein, this agreement comes into effect on the date when the tenderer receives one fully completed original copy of this document, including the Schedule of Deviations (if any).

**TRANSNET PORT TERMINAL**Tender Number: : **iCLM HQ 728/TPT**

Description of the works: **UPGRADE OF EMPTY STACK (AREA 100) AT PIER 1, DURBAN CONTAINER TERMINAL FOR TRANSNET SOC LTD (REG. NO 1990/000900/30) OPERATING AS TRANSNET PORT TERMINALS (HEREINAFTER REFERRED TO AS "TPT")**

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Unless the tenderer (now *Contractor*) within five working days of the date of such receipt notifies the Employer in writing of any reason why he cannot accept the contents of this agreement, this agreement shall constitute a binding contract between the Parties.

Signature(s)

Name(s)

Capacity

**for the  
Employer**

Transnet SOC Ltd

*(Insert name and address of organisation)*

Name &  
signature of  
witness

Date

## Schedule of Deviations

Note:

1. To be completed by the Employer prior to award of contract. This part of the Offer & Acceptance would not be required if the contract has been developed by negotiation between the Parties and is not the result of a process of competitive tendering.
2. The extent of deviations from the tender documents issued by the Employer prior to the tender closing date is limited to those permitted in terms of the Conditions of Tender.
3. A tenderer's covering letter must not be included in the final contract document. Should any matter in such letter, which constitutes a deviation as aforesaid be the subject of agreement reached during the process of Offer and Acceptance, the outcome of such agreement shall be recorded here and the final draft of the contract documents shall be revised to incorporate the effect of it.

No.	Subject	Details
1		
2		
3		
4		

By the duly authorised representatives signing this Schedule of Deviations below, the Employer and the tenderer agree to and accept this Schedule of Deviations as the only deviations from and amendments to the documents listed in the Tender Data and any addenda thereto listed in the Tender Schedules, as well as any confirmation, clarification or changes to the terms of the Offer agreed by the tenderer and the Employer during this process of Offer and Acceptance.

It is expressly agreed that no other matter whether in writing, oral communication or implied during the period between the issue of the tender documents and the receipt by the tenderer of a completed signed copy of this Form shall have any meaning or effect in the contract between the parties arising from this Agreement.

	For the tenderer:	For the Employer
Signature	_____	_____
Name	_____	_____
Capacity	_____	_____
On behalf of	<i>(Insert name and address of organisation)</i>	Transnet SOC Ltd
Name & signature of witness	_____	_____
Date	_____	_____

## C1.2 Contract Data

### Part one - Data provided by the *Employer*

Clause	Statement	Data
1	<p><b>General</b></p> <p>The <i>conditions of contract</i> are the core clauses and the clauses for main Option</p>	<p><b>A: Priced contract with activity schedule</b></p>
	dispute resolution Option	<b>W1: Dispute resolution procedure</b>
	and secondary Options	
		<p><b>X2 Changes in the law</b></p> <p><b>X7: Delay damages</b></p> <p><b>X13: Performance Bond</b></p> <p><b>X16: Retention</b></p> <p><b>X18: Limitation of liability</b></p> <p><b>X20: Key performance indicators</b></p> <p><b>Z: <i>Additional conditions of contract</i></b></p>
	of the NEC3 Engineering and Construction Contract June 2005 (amended June 2006 and April 2013)	
10.1	The <i>Employer</i> is:	<p><b>Transnet SOC Ltd</b></p> <p><b>(Registration No. 1990/000900/30)</b></p>

**TRANSNET PORT TERMINALS**Tender Number: **iCLM HQ 728/TPT**Description of the works: **UPGRADE OF EMPTY STACK (AREA 100) AT PIER 1, DURBAN CONTAINER TERMINAL FOR TRANSNET SOC LTD (REG. NO 1990/000900/30) OPERATING AS TRANSNET PORT TERMINALS (HEREINAFTER REFERRED TO AS "TPT")**

	Address	Registered address: <b>Transnet Corporate Centre 138 Eloff Street Braamfontein Johannesburg 2000</b>
	Having elected its Contractual Address for the purposes of this contract as:	<b>Transnet Port Terminals 2nd Floor, 202 Anton Lembede Street, Durban Central Durban, 4001</b>
10.1	The <i>Project Manager</i> is: (Name)	<b>Nolan Reddy</b>
	Address	<b>Transnet Port Terminals 2nd Floor, 202 Anton Lembede Street, Durban Central Durban, 4001</b>
	Tel	<b>031 361 7872</b>
	e-mail	Nolan.Reddy@transnet.net
10.1	The <i>Supervisor</i> is: (Name)	<b>Sanele Biyela</b>
	Address	<b>Transnet Port Terminals 2nd Floor, 202 Anton Lembede Street, Durban Central Durban, 4001.</b>
	Tel No.	<b>031 361 6745</b>
	e-mail	<b>Sanele.Biyela@transnet.net</b>
11.2(13)	The <i>works</i> are	<b>UPGRADE OF EMPTY STACK (AREA 100) AT PIER 1, DURBAN CONTAINER TERMINAL FOR TRANSNET SOC LTD (REG. NO 1990/000900/30) OPERATING AS TRANSNET PORT TERMINALS (HEREINAFTER REFERRED TO AS "TPT")</b>
11.2(14)	The following matters will be included in the Risk Register	<b>NONE</b>

**TRANSNET PORT TERMINALS**

Tender Number: **iCLM HQ 728/TPT**

Description of the works: **UPGRADE OF EMPTY STACK (AREA 100) AT PIER 1, DURBAN CONTAINER TERMINAL FOR TRANSNET SOC LTD (REG. NO 1990/000900/30) OPERATING AS TRANSNET PORT TERMINALS (HEREINAFTER REFERRED TO AS "TPT")**


11.2(15)	The <i>boundaries of the site</i> are	<b>As stated in Part C4.1. "Description of the Site and it surroundings"</b>	
11.2(16)	The Site Information is in	<b>Part C4</b>	
11.2(19)	The Works Information is in	<b>Part C3</b>	
12.2	The <i>law of the contract</i> is the law of	<b>the Republic of South Africa subject to the jurisdiction of the Courts of South Africa.</b>	
13.1	The <i>language of this contract</i> is	<b>English</b>	
13.3	The <i>period for reply</i> is	<b>2 weeks</b>	
<b>2</b>	<b>The <i>Contractor's</i> main responsibilities</b>	<b>No additional data is required for this section of the <i>conditions of contract</i>.</b>	
<b>3</b>	<b>Time</b>		
11.2(3)	The <i>completion date</i> for the whole of the <i>works</i> is	<b>10 June 2024</b>	
11.2(9)	The <i>key dates</i> and the <i>conditions</i> to be met are:	<b><i>Condition to be met</i></b>	<b><i>key date</i></b>
		<b>1 Kick off Meeting</b>	<b>05 Sept 2023</b>
		<b>2 SHEQ File Approval</b>	<b>19 Oct 2023</b>
		<b>3 Safety Inductions</b>	<b>26 Oct 2023</b>
30.1	The <i>access dates</i> are	<b>Part of the Site</b>	<b>Date</b>
		<b>1 Stack Area 100</b>	<b>26 October 2023</b>
31.1	The <i>Contractor</i> is to submit a first programme for acceptance within	<b>2 weeks of the Contract Date.</b>	
31.2	The <i>starting date</i> is	<b>22 August 2023</b>	
32.2	The <i>Contractor</i> submits revised programmes at intervals no longer than	<b>2 weeks.</b>	
<b>4</b>	<b>Testing and Defects</b>		
42.2	The <i>defects date</i> is	<b>52 (fifty two) weeks after Completion of the whole of the <i>works</i>.</b>	

**TRANSNET PORT TERMINALS**Tender Number: **iCLM HQ 728/TPT**Description of the works: **UPGRADE OF EMPTY STACK (AREA 100) AT PIER 1, DURBAN CONTAINER TERMINAL FOR TRANSNET SOC LTD (REG. NO 1990/000900/30) OPERATING AS TRANSNET PORT TERMINALS (HEREINAFTER REFERRED TO AS "TPT")**

43.2	The <i>defect correction period</i> is	<b>2 weeks</b>
<b>5</b>	<b>Payment</b>	
50.1	The <i>assessment interval</i> is monthly on the	<b>25<sup>th</sup> (twenty fifth) day of each successive month.</b>
51.1	The <i>currency of this contract</i> is the	<b>South African Rand.</b>
51.2	The period within which payments are made is	<b>Payment will be effected on or before the last day of the month following the month during which a valid Tax Invoice and Statement were received.</b>
51.4	The <i>interest rate</i> is	<b>the prime lending rate of Standard Bank of South Africa.</b>
<b>6</b>	<b>Compensation events</b>	
60.1(13)	The <i>weather measurements</i> to be recorded for each calendar month are,	<b>the cumulative rainfall (mm)</b>  <b>the number of days with rainfall more than 10 mm</b>  <b>the number of days with minimum air temperature less than 0 degrees Celsius</b>  <b>the number of days with snow lying at 08:00 hours South African Time</b>  <b>and these measurements:</b>  The place where weather is to be recorded (on the Site ) is: <b>The <i>Contractor's</i> Site establishment area</b>  The <i>weather data</i> are the records of past <i>weather measurements</i> for each calendar month which ..... were recorded at:  and which are available from: <b>South African Weather Service 012 367 6023 or <a href="mailto:info3@weathersa.co.za">info3@weathersa.co.za</a>.</b>
<b>7</b>	<b>Title</b>	<b>No additional data is required for this section of the <i>conditions of contract</i>.</b>

## 8 Risks and insurance

80.1 These are additional *Employer's* risks **None**

84.1 The *Employer* provides these insurances from the Insurance Table

1 Insurance against:	<b>Loss of or damage to the <i>works</i>, Plant and Materials is as stated in the Insurance policy for Contract Works/ Public Liability.</b>
Cover / indemnity:	<b>to the extent as stated in the insurance policy for Contract Works / Public Liability</b>
The deductibles are:	<b>as stated in the insurance policy for Contract Works / Public Liability</b>
2 Insurance against:	<b>Loss of or damage to property (except the <i>works</i>, Plant and Materials &amp; Equipment) and liability for bodily injury to or death of a person (not an employee of the <i>Contractor</i>) arising out of or in connection with the performance of the Contract as stated in the insurance policy for Contract Works / Public Liability</b>
Cover / indemnity	<b>Is to the extent as stated in the insurance policy for Contract Works / Public Liability</b>
The deductibles are	<b>as stated in the insurance policy for Contract Works / Public Liability</b>
3 Insurance against:	<b>Loss of or damage to Equipment (Temporary Works only) as stated in the insurance policy for contract Works and Public Liability</b>
Cover / indemnity	<b>Is to the extent as stated in the insurance policy for Contract Works / Public Liability</b>
The deductibles are:	<b>As stated in the insurance policy for Contract Works / Public Liability</b>



**TRANSNET PORT TERMINALS**

Tender Number: **iCLM HQ 728/TPT**

Description of the works: **UPGRADE OF EMPTY STACK (AREA 100) AT PIER 1, DURBAN CONTAINER TERMINAL FOR TRANSNET SOC LTD (REG. NO 1990/000900/30) OPERATING AS TRANSNET PORT TERMINALS (HEREINAFTER REFERRED TO AS "TPT")**



4 Insurance against:	<b>Contract Works SASRIA insurance subject to the terms, exceptions and conditions of the SASRIA coupon</b>
Cover / indemnity	<b>Cover / indemnity is to the extent provided by the SASRIA coupon</b>
The deductibles are	<b>The deductibles are, in respect of each and every theft claim, 0,1% of the contract value subject to a minimum of R2,500 and a maximum of R25,000.</b>
Note:	<b>The deductibles for the insurance as stated above are listed in the document titled "Certificate of Insurance: Transnet (SOC) Limited Principal Controlled Insurance."</b>

84.1 The minimum limit of indemnity for insurance in respect of death of or bodily injury to employees of the *Contractor* arising out of and in the course of their employment in connection with this contract for any one event is

**The *Contractor* must comply at a minimum with the provisions of the Compensation for Occupational Injuries and Diseases Act No. 130 of 1993 as amended.**

The *Contractor* provides these additional Insurances

- 1 Where the contract requires that the design of any part of the *works* shall be provided by the *Contractor* the *Contractor* shall satisfy the *Employer* that professional indemnity insurance cover in connection therewith has been affected**
- 2 Where the contract involves manufacture, and/or fabrication of Plant & Materials, components or other goods to be incorporated into the *works* at premises other than the site, the *Contractor* shall satisfy the *Employer* that such plant & materials, components or other goods for incorporation in the *works* are adequately insured during manufacture and/or fabrication and transportation to the site.**

- 
- 3 Should the *Employer* have an insurable interest in such items during manufacture, and/or fabrication, such interest shall be noted by endorsement to the *Contractor's* policies of insurance as well as those of any sub-contractor
  - 4 Motor Vehicle Liability Insurance comprising (as a minimum) "Balance of Third Party" Risks including Passenger and Unauthorised Passenger Liability indemnity with a minimum indemnity limit of R 5 000 000/R10 000 000.
  - 5 Marine Craft Hull insurance in respect of all marine craft or vessels utilised in performance of the Works for a sum sufficient to provide for their replacement
  - 6 Protection and Indemnity Insurance in respect of all marine craft or vessels utilised in performance of the Works extended for Specialist Operations with a minimum indemnity limit of R 20,000,000
  - 7 The insurance coverage referred to in 1, 2, 3, 4, 5 and 6 above shall be obtained from an insurer(s) in terms of an insurance policy approved by the *Employer*. The *Contractor* shall arrange with the insurer to submit to the *Project Manager* the original and the duplicate original of the policy or policies of insurance and the receipts for payment of current premiums, together with a certificate from the insurer or insurance broker concerned, confirming that the policy or policies provide the full coverage as required. The original policy will be returned to the *Contractor*.
-

**TRANSNET PORT TERMINALS**

Tender Number: iCLM HQ 728/TPT

Description of the works: **UPGRADE OF EMPTY STACK (AREA 100) AT PIER 1, DURBAN CONTAINER TERMINAL FOR TRANSNET SOC LTD (REG. NO 1990/000900/30) OPERATING AS TRANSNET PORT TERMINALS (HEREINAFTER REFERRED TO AS "TPT")**


84.2	The minimum limit of indemnity for insurance in respect of loss of or damage to property (except the works, Plant, Materials and Equipment) and liability for bodily injury to or death of a person (not an employee of the <i>Contractor</i> ) caused by activity in connection with this contract for any one event is	<b>Whatever the <i>Contractor</i> requires in addition to the amount of insurance taken out by the <i>Employer</i> for the same risk.</b>
84.2	The insurance against loss of or damage to the works, Plant and Materials as stated in the insurance policy for contract works and public liability selected from:	<b>Principal Controlled Insurance policy for Contract</b>
<b>9</b>	<b>Termination</b>	<b>There is no additional Contract Data required for this section of the <i>conditions of contract</i>.</b>
<b>10</b>	<b>Data for main Option clause</b>	
<b>A</b>	<b>Priced contract with Activity Schedule</b>	<b>No additional data is required for this Option.</b>
60.6	The <i>method of measurement</i> is	<b>The Bill of Quantities have been measured in accordance with SANS 1200 unless indicated otherwise.</b>
<b>11</b>	<b>Data for Option W1</b>	
W1.1	The <i>Adjudicator</i> is	<b>Both parties will agree as and when a dispute arises. If the parties cannot reach an agreement on the <i>Adjudicator</i>, the Chairman of the Association of Arbitrators will appoint an <i>Adjudicator</i>.</b>
W1.2(3)	The <i>Adjudicator nominating body</i> is:  If no <i>Adjudicator nominating body</i> is entered, it is:	<b>The Chairman of the Association of Arbitrators (Southern Africa)</b>  <b>the Association of Arbitrators (Southern Africa)</b>

**TRANSNET PORT TERMINALS**

Tender Number: iCLM HQ 728/TPT

Description of the works: **UPGRADE OF EMPTY STACK (AREA 100) AT PIER 1, DURBAN CONTAINER TERMINAL FOR TRANSNET SOC LTD (REG. NO 1990/000900/30) OPERATING AS TRANSNET PORT TERMINALS (HEREINAFTER REFERRED TO AS "TPT")**

W1.4(2)	The <i>tribunal</i> is:	<b>Arbitration</b>
W1.4(5)	The <i>arbitration procedure</i> is	<b>The Rules for the Conduct of Arbitrations of the Association of Arbitrators (Southern Africa)</b>
	The place where arbitration is to be held is	<b>Durban , South Africa</b>
	The person or organisation who will choose an arbitrator	
	- if the Parties cannot agree a choice or	<b>The Chairman of the Association of Arbitrators (Southern Africa)</b>
	- if the arbitration procedure does not state who selects an arbitrator, is	
<b>12</b>	<b>Data for secondary Option clauses</b>	
<b>X2</b>	<b>Changes in the law</b>	<b>No additional data is required for this Option</b>
<b>X7</b>	<b>Delay damages</b>	
X7.1	Delay damages for Completion of the whole of the <i>works</i> are	<b>R5 000.00 per day</b>
<b>X13</b>	<b>Performance bond</b>	
X13.1	The amount of the performance bond is	<b>5% of the total of the Prices</b>
<b>X16</b>	<b>Retention</b>	
X16.1	The retention free amount is	<b>Nil</b>
	The retention percentage is	<b>10% on all payments certified.</b>
<b>X18</b>	<b>Limitation of liability</b>	

**TRANSNET PORT TERMINALS**Tender Number: **iCLM HQ 728/TPT**Description of the works: **UPGRADE OF EMPTY STACK (AREA 100) AT PIER 1, DURBAN CONTAINER TERMINAL FOR TRANSNET SOC LTD (REG. NO 1990/000900/30) OPERATING AS TRANSNET PORT TERMINALS (HEREINAFTER REFERRED TO AS "TPT")**

X18.1	The <i>Contractor's</i> liability to the <i>Employer</i> for indirect or consequential loss is limited to:	<b>Nil (this is the default position depending on a risk assessment, therefore this can go up to Total of the Prices)</b>
X18.2	For any one event, the <i>Contractor's</i> liability to the <i>Employer</i> for loss of or damage to the <i>Employer's</i> property is limited to:	<b>The deductible of the relevant insurance policy</b>
X18.3	The <i>Contractor's</i> liability for Defects due to his design which are not listed on the Defects Certificate is limited to:	<b>The cost of correcting the Defect</b>
X18.4	The <i>Contractor's</i> total liability to the <i>Employer</i> for all matters arising under or in connection with this contract, other than excluded matters, is limited to:	<b>The Total of the Prices</b>
X18.5	The <i>end of liability date</i> is	<b>5 years after Completion of the whole of the works</b>

## **Z2 Additional clause relating to Performance Bonds and/or Guarantees**

<b>Z2.1</b>	<b>The Performance Guarantee under X13 above shall be an irrevocable, on-demand performance guarantee, to be issued exactly in the form of the Pro Forma documents provided for this purpose under C1.3 (Forms of Securities), in favour of the <i>Employer</i> by a financial institution reasonably acceptable to the <i>Employer</i>.</b>
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## **Z3 Additional clauses relating to Joint Venture**

### **Z3.1**

**Insert the additional core clause 27.5**

**27.5. In the instance that the *Contractor* is a joint venture, the *Contractor* shall provide the *Employer* with a certified copy of its signed joint venture agreement, and in the instance that the joint venture is an 'Incorporated Joint Venture,' the Memorandum of Incorporation, within 4 (four) weeks of the Contract Date.**

**The Joint Venture agreement shall contain but not be limited to the following:**

- **A brief description of the Contract and the Deliverables;**
- **The name, physical address, communications addresses and domicilium citandi et executandi of each of the constituents and of the Joint Venture;**
- **The constituent's interests;**
- **A schedule of the insurance policies, sureties, indemnities and guarantees which must be taken out by the Joint Venture and by the individual constituents;**
- **Details of an internal dispute resolution procedure;**
- **Written confirmation by all of the constituents:**
  - i. **of their joint and several liabilities to the *Employer* to Provide the Works;**
  - ii. **identification of the lead partner in the joint venture confirming the authority of the lead partner to bind the joint venture through the *Contractor's* representative;**

iii. Identification of the roles and responsibilities of the constituents to provide the Works.

- Financial requirements for the Joint Venture:

iv. the working capital requirements for the Joint Venture and the extent to which and manner whereby this will be provided and/or guaranteed by the constituents from time to time;

v. the names of the auditors and others, if any, who will provide auditing and accounting services to the Joint Venture.

Z3.2

Insert additional core clause 27.6

27.6. The *Contractor* shall not alter its composition or legal status of the Joint Venture without the prior approval of the *Employer*.

Z4 Additional obligations in respect of Termination

Z4.1

The following will be included under core clause 91.1:

In the second main bullet, after the word 'partnership' add 'joint venture whether incorporate or otherwise (including any constituent of the joint venture)' and

Under the second main bullet, insert the following additional bullets after the last sub-bullet:

- commenced business rescue proceedings (R22)
- repudiated this Contract (R23)

<b>Z4.2</b>	<b>Termination Table</b>	<p>The following will be included under core clause 90.2 Termination Table as follows:</p>
		<p>Amend "A reason other than R1 – R21" to "A reason other than R1 – R23"</p>
<b>Z4.3</b>		<p>Amend "R1 – R15 or R18" to "R1 – R15, R18, R22 or R23."</p>
<b>Z5</b>	<p><b>Right Reserved by the <i>Employer</i> to Conduct Vetting through SSA</b></p>	
<b>Z5.1</b>		<p>The <i>Employer</i> reserves the right to conduct vetting through State Security Agency (SSA) for security clearances of any <i>Contractor</i> who has access to National Key Points for the following without limitations:</p> <ol style="list-style-type: none"> <li>1. Confidential – this clearance is based on any information which may be used by malicious, opposing or hostile elements to harm the objectives and functions of an organ of state.</li> <li>2. Secret – clearance is based on any information which may be used by malicious, opposing or hostile elements to disrupt the objectives and functions of an organ of state.</li> <li>3. Top Secret – this clearance is based on information which may be used by malicious, opposing or hostile elements to neutralise the objectives and functions of an organ of state.</li> </ol>



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**Z6 Additional Clause Relating to  
Collusion in the Construction  
Industry**

**Z6.1** The contract award is made without prejudice to any rights the *Employer* may have to take appropriate action later with regard to any declared tender rigging including blacklisting.

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**Z7 Protection of Personal  
Information Act**

**Z7.1** The *Employer* and the *Contractor* are required to process information obtained for the duration of the Agreement in a manner that is aligned to the Protection of Personal Information Act.

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## C1.2 Contract Data

### Part two - Data provided by the *Contractor*

The tendering *Contractor* is advised to read both the NEC3 Engineering and Construction Contract - June 2005 (with amendments June 2006 and April 2013) and the relevant parts of its Guidance Notes (ECC3-GN) in order to understand the implications of this Data which the tenderer is required to complete. An example of the completed Data is provided on pages 156 to 158 of the ECC3 Guidance Notes.

Completion of the data in full, according to Options chosen, is essential to create a complete contract.

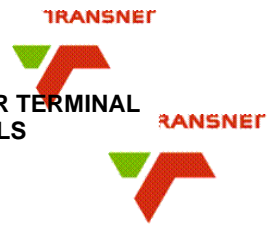
Clause	Statement	Data
10.1	The <i>Contractor</i> is (Name):	
	Address	
	Tel No.	
	Fax No.	
11.2(8)	The <i>direct fee percentage</i> is	%
	The <i>subcontracted fee percentage</i> is	%
11.2(18)	The <i>working areas</i> are the Site and	
24.1	The <i>Contractor's</i> key persons are:	
	1 Name:	
	Job:	
	Responsibilities:	
	Qualifications:	
	Experience:	
	2 Name:	
	Job	
	Responsibilities:	
	Qualifications:	
	Experience:	

**TRANSNET PORT TERMINALS**

Tender Number: iCLM HQ 728/TPT

Description of the works: **UPGRADE OF EMPTY STACK (AREA 100) AT PIER 1, DURBAN CONTAINER TERMINAL FOR TRANSNET SOC LTD (REG. NO 1990/000900/30) OPERATING AS TRANSNET PORT TERMINALS (HEREINAFTER REFERRED TO AS "TPT")**


		CV's (and further key persons data including CVs) are appended to Tender Schedule entitled .		
11.2(14)	The following matters will be included in the Risk Register			
31.1	The programme identified in the Contract Data is			
<b>A</b>	<b>Priced contract with activity schedule</b>			
11.2(20)	The <i>activity schedule</i> is in			
11.2(30)	The tendered total of the Prices is	(in figures)  (in words), excluding VAT		
	<b>Data for Schedules of Cost Components</b>	<i>Note "SCC" means Schedule of Cost Components starting on page 60 of ECC, and "SSCC" means Shorter Schedule of Cost Components starting on page 63 of ECC.</i>		
<b>A</b>	<b>Priced contract with activity schedule</b>	<b>Data for the Shorter Schedule of Cost Components</b>		
41 in SSCC	The percentage for people overheads is:	<b>%</b>		
21 in SSCC	The published list of Equipment is the last edition of the list published by			
	The percentage for adjustment for Equipment in the published list is	<b>% (state plus or minus)</b>		
22 in SSCC	The rates of other Equipment are:	<b>Equipment</b>	<b>Size or capacity</b>	<b>Rate</b>

**TRANSNET PORT TERMINALS**Tender Number: **iCLM HQ 728/TPT****Description of the works: UPGRADE OF EMPTY STACK (AREA 100) AT PIER 1, DURBAN CONTAINER TERMINAL FOR TRANSNET SOC LTD (REG. NO 1990/000900/30) OPERATING AS TRANSNET PORT TERMINALS (HEREINAFTER REFERRED TO AS "TPT")**

61	in	The hourly rates for Defined Cost of design outside the Working Areas are	<b>Category of employee</b>	<b>Hourly rate</b>
62	in	The percentage for design overheads is	<b>%</b>	
63	in	The categories of design employees whose travelling expenses to and from the Working Areas are included in Defined Cost are:		

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## C1.3 Forms of Securities

### **Pro forma Performance Guarantee**

For use with the NEC3 Engineering & Construction Contract - June 2005 (with amendments June 2006 and April 2013)

The *conditions of contract* stated in the Contract Data Part 1 include the following Secondary Option:

Option X13: Performance bond

The pro forma document for this Guarantee is provided here for convenience but is to be treated as part of the *Works Information*.

The organisation providing the Guarantee does so by copying the pro forma document onto its letterhead without any change to the text or format and completing the required details. The completed document is then given to the *Employer* within the time stated in the contract.

The Performance Bond needs to be issued by an institution that are reasonably acceptable to the *Employer*.

Transnet may choose to not to accept an Issuer. Should the issuer not being accepted, the performance bond needs to be replaced by an issuer that are acceptable to Transnet. Issuers need to be verified for acceptance by Transnet before a performance bond is issued.

## TRANSNET PORT TERMINAL

Tender Number: **iCLM HQ 728/TPT**

Description of the works: **UPGRADE OF EMPTY STACK (AREA 100) AT PIER 1, DURBAN CONTAINER TERMINAL FOR TRANSNET SOC LTD (REG. NO 1990/000900/30) OPERATING AS TRANSNET PORT TERMINALS (HEREINAFTER REFERRED TO AS "TPT")**



## Pro-forma Performance Bond (for use with Option X13)

(to be reproduced exactly as shown below on the letterhead of the Surety)

Transnet SOC Ltd  
C/o Transnet .....  
Transnet Corporate Centre  
138 Eloff Street  
Braamfontein  
Johannesburg  
2000

Date:

Dear Sirs,

### Performance Bond for Contract No. ....

With reference to the above numbered contract made or to be made between

**Transnet SOC Limited, Registration No. 1990/000900/30**

(the *Employer*) and

{Insert registered name and address of the *Contractor*}

(the *Contractor*), for

{Insert details of the *works* from the Contract Data}

(the *works*).

I/We the undersigned

on behalf of the  
Guarantor

of physical address

and duly authorised thereto do hereby bind ourselves as Guarantor and co-principal debtors in solidum for the due and faithful performance of all the terms and conditions of the Contract by the *Contractor* and for all losses, damages and expenses that may be suffered or incurred by the *Employer* as a result of non-performance of the Contract by the *Contractor*, subject to the following conditions:

1. The terms *Employer*, *Contractor*, *Project Manager*, *works* and Completion Certificate have the meaning as assigned to them by the *conditions of contract* stated in the Contract Data for the aforesaid Contract.
2. We renounce all benefits from the legal exceptions "Benefit of Excussion and Division", "No value received" and all other exceptions which might or could be pleaded against the validity of this bond, with the meaning and effect of which exceptions we declare ourselves to be fully acquainted.
3. The *Employer* has the absolute right to arrange his affairs with the *Contractor* in any manner which the *Employer* deems fit and without being advised thereof the Guarantor shall not have the right to claim his release on account of any conduct alleged to be prejudicial to the Guarantor. Without derogating from the foregoing compromise, extension of the construction period, indulgence,

**TRANSNET PORT TERMINAL**Tender Number: **iCLM HQ 728/TPT**Description of the works: **UPGRADE OF EMPTY STACK (AREA 100) AT PIER 1, DURBAN CONTAINER TERMINAL FOR TRANSNET SOC LTD (REG. NO 1990/000900/30) OPERATING AS TRANSNET PORT TERMINALS (HEREINAFTER REFERRED TO AS "TPT")**

release or variation of the *Contractor's* obligation shall not affect the validity of this performance bond.

4. This bond will lapse on the earlier of

- the date that the Guarantor receives a notice from the *Project Manager* stating that the Completion Certificate for the whole of the *works* has been issued, that all amounts due from the *Contractor* as certified in terms of the contract have been received by the *Employer* and that the *Contractor* has fulfilled all his obligations under the Contract, or
- the date that the Surety issues a replacement Performance Bond for such lesser or higher amount as may be required by the *Project Manager*.

5. Always provided that this bond will not lapse in the event the Guarantor is notified by the *Project Manager*, (before the dates above), of the *Employer's* intention to institute claims and the particulars thereof, in which event this bond shall remain in force until all such claims are paid and settled.

6. The amount of the bond shall be payable to the *Employer* upon the *Employer's* demand and no later than 7 days following the submission to the Guarantor of a certificate signed by the *Project Manager* stating the amount of the *Employer's* losses, damages and expenses incurred as a result of the non-performance aforesaid. The signed certificate shall be deemed to be conclusive proof of the extent of the *Employer's* loss, damage and expense.

7. Our total liability hereunder shall not exceed the sum of:

(say) \_\_\_\_\_

R \_\_\_\_\_

8. This Performance Bond is neither negotiable nor transferable and is governed by the laws of the Republic of South Africa, subject to the jurisdiction of the courts of the Republic of South Africa

Signed at \_\_\_\_\_ on this \_\_\_\_\_ day of \_\_\_\_\_ 201\_\_

Signature(s)

Name(s) (printed)

Position in Guarantor company

Signature of Witness(s)

Name(s) (printed)


## **Part C2: Pricing Data**



## PART 2: PRICING DATA

Document reference	Title	No of pages
C2.1	Pricing instructions: Option A	3
C2.2	Activity Schedule	1

## C2.1 Pricing instructions: Option A

### 1. The *conditions of contract*

#### 1.1. How the contract prices work and assesses it for progress payments

Clause 11 in NEC3 Engineering and Construction Contract, June 2005 (amended June 2006 and April 2013) (ECC) Option A states:

##### Identified and defined 11 terms

- 11.2 (20) The Activity Schedule is the *activity schedule* unless later changed in accordance with this contract.
- (22) Defined Cost is the cost of the components in the Shorter Schedule of Cost Components whether work is subcontracted or not excluding the cost of preparing quotations for compensation events.
- (27) The Price for Work Done to Date is the total of the Prices for
- each group of completed activities and
  - each completed activity which is not in a group
- A completed activity is one which is without Defects which would either delay or be covered by immediately following work.
- (30) The Prices are the lump sums for each of the activities on the Activity Schedule unless later changed in accordance with this contract.

#### 1.2. Measurement and Payment

- 1.2.1 The Activity Schedule provides the basis of all valuations of the Price for Work Done to Date, price adjustments for inflation and general progress monitoring.
- 1.2.2 The amount due at each assessment date is based on **completed activities** as indicated on the Activity Schedule.
- 1.2.3 The Activity Schedule work breakdown structure provided by the *Contractor* is based on the Activity Schedule provided by the *Employer*. The activities listed by the *Employer* are the minimum activities

acceptable and identify the specific activities which are required to achieve Completion. The activity schedule work breakdown structure is compiled to the satisfaction of the *Project Manager* with any additions and/or amendments deemed necessary.

1.2.4 The *Contractor's* detailed Activity Schedule summates back to the Activity Schedule provided by the *Employer* and is in sufficient detail to monitor completion of activities related to the Accepted Programme in order that payment of completed activities may be assessed.

1.2.5 The short descriptions in the Activity Schedule are for identification purposes only. All work described in the Works Information is deemed included in the activities.

1.2.6 The Activity Schedule is integrated with the Accepted Programme and where required the forecast rate of payment schedule.

1.2.6.1 General Assumptions:

- The Activity Schedule is for guidance purpose only and will be used as a method for calculating interim payments due to the *Contractor* on completion of the relevant Activities as noted in the Activity Schedule.
- The *Contractor* to make provision for all waste allowances when pricing the *works* and will use all available information in the tender document to ensure that the full scope of work is covered when pricing for the *works*.
- The lump sum prices stated for each item in the Activity Schedule shall be treated as being fully inclusive of all work , risks, liabilities, obligations, overheads, profit and everything necessary as incurred or required by the *Contractor* in carrying out or providing that item.
- Where this contract requires detailed drawings, designs or other information to be provided, and no prices are included in the Activity Schedule specifically for such matters, the *Contractor* is deemed to have allowed for all costs associated with such requirements within the tendered Price.
- An Activity against which no lump sum price is entered will be treated as covered by other lump sum prices in the Activity Schedule. If a number of items are grouped together for pricing purposes, this will be treated as a single lump sum price.
- The short descriptions of the items of payment given in the Activity Schedule are only for the purposes of identifying the items. More detail regarding the extent of the work entailed under each item is provided in the Works information.
- An activity (where applicable) will be regarded as complete when all data packs have been submitted and accepted by The *Employer*

## C2.2 Activity Schedule

The Tenderer details his Activity Schedule below or makes reference to his Activity Schedule and attaches it to this schedule.

The details given in the Activity Schedule attached serve as guidelines only

**REFER TO ATTACHMENT**

Item	Payment Clause	Activity Description	Unit	Qty	Rate	Amount
1	SANS 1200A PSA	<b><u>SECTION 1: PRELIMINARIES AND GENERAL</u></b> <b><u>SECTION NO.1</u></b> <b><u>PREAMBLES</u></b>				
1.1		<b><u>Establishment and De-establishment of Facilities on Site</u></b>				
1.1.1		Access and Access Control	Item	1		
1.1.2		Establishment of site facilities	Item	1		
1.1.2		Removal of Site Establishment	Item	1		



Item	Payment Clause	Activity Description	Page	Amount
		<u>SECTION SUMMARY</u>  Page Total brought forward	1	
		<b>TOTAL CARRIED FORWARD TO FINAL SUMMARY</b>		R -



Item	Payment Clause	Activity Description	Unit	Qty	Rate	Amount
2		<b>CIVILS WORKS</b>				
2.1		<b>SECTION NO 2</b>				
2.1.1		Prepare and Provide a Geotechnical Investigation for the Proposed resurfacing of Empty Stack area 100	Sum	1		
2.1.2		Prepare and Provide a Topographical survey for the Proposed resurfacing of Empty Stack area 100	Sum	1		
2.1.3		Provide preliminary Design to client for Empty stack area 100	Sum	1		
2.1.4		Provide Concept Design to client for Empty stack area 100	Sum	1		
2.1.5		Taking out and removing piping, sanitary fittings, rails etc. including disconnecting piping from fittings and making good all work disturbed	Sum	1		
2.1.6		Excavate in earth n.e 2m deep and cart away surplus material, Fill all necessary grading material and Compaction of ground surfaces under pavings etc. Including scarifying for a suitable depth, breaking down oversize material, adding suitable material where necessary and compacting to a required % Mod AASHTO density	Sum	1		
2.1.7		Prepare and construct a suitable Resurfacing paving at the Empty stack	Sum	1		
2.1.8		Road Markings and signage on newly constructed paving as per drawings	Sum	1		
2.1.9		Construct and tying in new stormwater drainage system including laying of pipes to different depths, manholes, bar drains etc connected to existing system for the stacking area to include kerbs and channels and testing of the whole system.	Sum	1		
<b>TOTAL CARRIED FORWARD TO FINAL SUMMARY</b>						



Item	Payment Clause	Discription	Page	Amount
		<u>CIVILS SECTION SUMMARY</u>  <u>SECTION SUMMARY</u>  Page Total brought forward	3	
		TOTAL CARRIED FORWARD TO FINAL SUMMARY	R	-



Page 5 of 5

## **Part C3: Scope of Works**

**TRANSNET PORT TERMINAL**Tender Number: **iCLM HQ 728/TPT**

Description of the works: **UPGRADE OF EMPTY STACK (AREA 100) AT PIER 1, DURBAN CONTAINER TERMINAL FOR TRANSNET SOC LTD (REG. NO 1990/000900/30) OPERATING AS TRANSNET PORT TERMINALS (HEREINAFTER REFERRED TO AS "TPT")**



Documentation	Revision No.	Distribution	Prepared By	Approved By
Scope of Work Upgrade of Empty Stack (Area 100) at Pier 1, DCT	00	Owner Approval	Nolan Reddy	Lulamile Mtetweni

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Terminal Manager – Pier 1  
Date:\_\_\_\_\_

**PART C3: SCOPE OF WORK**

Document reference	Title	No of page
C3.1	This cover page	1
	<i>Employer's Works</i> Information	60
	<b>Total number of pages</b>	<b>61</b>



### C3.1 EMPLOYER'S WORKS INFORMATION

#### Contents

PART C3: SCOPE OF WORK .....	2
Section 1 .....	4
1 Description of the Works .....	4
2 Engineering and the <i>Contractor's</i> design .....	6
3 Construction .....	10
4 Plant and Materials Standards and Workmanship .....	20
4.2 Investigation, Survey and Site Clearance .....	20
4.3 Civil Engineering .....	20
5 List of Drawings .....	34
5.1 Drawings issued by the <i>Employer</i> .....	34
SECTION 2 .....	35
6 Management and start up .....	35
7 Procurement .....	56
8 Equipment Plant and Materials standards and workmanship .....	59
9 General .....	59
10 List of Annexures .....	60
All the annexures listed hereunder shall be deemed to form part of the <i>Works</i> Information. ....	60



## SECTION 1

### 1 DESCRIPTION OF THE WORKS

#### 1.1 EXECUTIVE OVERVIEW

Pier 1, Durban Container Terminal currently utilises three (3) areas to stack empty containers, Area 100's stacking pavement is in a poor condition and is affecting operational productivity. Utilisation of the stacking area is estimated at 50% due to the poor condition of the pavement and associated infrastructure, Empty Container Handling equipment (ECH) are also experiencing breakdowns and irregular maintenance regimes due to the poor condition of the pavement. Furthermore, the current pavement conditions are considered unsafe and are not aligned to Safe Operating Procedures for operating of the ECH.

The *Works* that the *Contractor* is to perform involve civil *Works* for the Area 100 project. Area 100 is designated for stacking of empty 20 foot containers, containers are stacked four (4) high.

The scope of the *Works* includes but is not limited to the following:

- The Design, Construction, Commissioning and Hand-Over of Area 100 to Pier 1 Operations.

#### 1.2 EMPLOYER'S OBJECTIVES

The *Employer's* objectives are to appoint a suitably qualified and experienced Contractor to design, construct, commission and hand-over Area 100 to Pier 1 operations to enable 100% utilisation of the stacking area in accordance with the various regulatory statutory requirements.

In addition to the above, the *Employer's* objectives are to achieve Completion of the *Works* by meeting the Completion Date whilst still maintaining the highest environmental, quality and safety standards and whilst minimising disruptions to on-going port and terminal operations and the operations and activities of other stakeholders.

#### 1.3 INTERPRETATION AND TERMINOLOGY

The following abbreviations are used in this *Works* Information:

Abbreviation	Meaning given to the abbreviation
BBBEE	Broad Based Black Economic Empowerment
CEMP	Construction Environmental Management Plan
CD	Compact Disc
CDR	<i>Contractor</i> Documentation Register
CDS	<i>Contractor</i> Documentation Schedule
CRL	<i>Contractor</i> Review Label
CSHEO	<i>Contractor's</i> Safety, Health and Environmental Officer
CIRP	<i>Contractor's</i> Industrial Relations Practitioner
CM	Construction Manager
DCT	Durban Container Terminal
DTI	Department of Trade and Industry
DWG	Drawings
ECH	Empty Container Handling equipment



EO	Environmental Officer
HAW	Hazard Assessment Workshop
HAZOP	Hazard and Operability Study
HSSP	Health and Safety Surveillance Plan
INC	Independent Nominated Consultant
IP	Industrial Participation
IR	Industrial Relations
IPP	Industrial Participation Policy
IPO	Industrial Participation Obligation
IPS	Industrial Participation Secretariat
IRCC	Industrial Relations Co-ordinating Committee
JSA	Job Safety Analysis
Native	Original electronic file format of documentation
PES	Project Environmental Specifications
PHA	Preliminary Hazard Assessment
PIRM	Project Industrial Relations Manager
PIRPMP	Project Industrial Relations Policy and Management Plan
PLA	Project Labour Agreements
PSIRM	Project Site Industrial Relations Manager
PSPM	Project Safety Program Manager
PSSM	Project Site Safety Manager
ProgEM	Programme Environmental Manager
ProjEM	Project Environmental Manager
QA	Quality Assurance
R&D	Research and Development
SANS	South African National Standards
SASRIA	South African Special Risks Insurance Association
SES	Standard Environmental Specification
SHE	Safety, Health and Environment
SHEC	Safety, Health and Environment Co-ordinator
SIP	Site Induction Programme
SMP	Safety Management Plan
SSRC	Site Safety Review Committee
SCADA	Supervisory Control And Data Acquisition
TPT	Transnet Port Terminals
TNPA	Transnet National Ports Authority
TFR	Transnet Freight Rail
ISPS	International Ship and Port Facility Security
PSIRA	Private Security Industry Regulatory Authority.

## **2 ENGINEERING AND THE *CONTRACTOR'S* DESIGN**

### **2.1 *EMPLOYER'S* DESIGN**

#### **2.1.1 THE *EMPLOYER'S* DESIGN FOR THE *WORKS* IS:**

##### **2.1.2 CIVIL ENGINEERING:**

- Stack markings specifications
- Palisade fencing specifications

### **2.2 PARTS OF THE *WORKS* WHICH THE *CONTRACTOR* IS TO DESIGN**

All designs undertaken by the Contractor as per the below clauses are required to be endorsed by an ECSA Registered Professional Engineer/Professional Technologist suitably experienced in the Civil Engineering discipline in road/pavement infrastructure.

#### **2.2.1 THE *CONTRACTOR* IS TO DESIGN THE FOLLOWING PARTS OF THE *WORKS* AND WILL BE RESPONSIBLE IN HIS DESIGN FOR THE OVERALL INTEGRATION OF THE DESIGN OF THE *WORKS* WITH THE EXISTING ADJACENT AREAS.**

- a) Tarmacadam paving including associated layerworks required to implement all of the *Employers'* objectives. Design to cater for ECH equipment and empty container loads.
- b) Concrete mix design for islands/non stacking areas.
- c) The Contractor shall submit detailed drawings and Workshop details for all designs, both Contractor's designs and OEM designs, to the Project Manager for acceptance by the *Employer's* Consultant or the *Employer's* Engineers.
- d) All and any equipment, formwork, and temporary work associated with the provision of the Works.

#### **2.2.2 THE *CONTRACTOR* IS RESPONSIBLE IN HIS DESIGN FOR THE OVERALL INTEGRATION OF THE DESIGN OF THE *WORKS* WITH THE EXISTING ADJACENT AREAS.**

- a) All supporting infrastructure required to support the *Employers'* high level designs.
- b) Tarmacadam paving and layerworks design. The Contractor is wholly responsible for all design coordination, integration and liaison activities involved with the Works, and shall take all measures necessary and make all arrangements with the Project Manager for activities such as meetings, inspections, endorsements, and any other activities required for the timeous completion of the Works and to the appropriate quality. When these activities require the involvement of the *Employer's* Professional Engineering team or any other stakeholders, the Contractor is required to make these arrangements with due consideration of the *Employer's* Professional Engineering team's availability and the availability of other stakeholders. The Contractor shall submit detailed drawings and Workshop details for all designs, both Contractor's designs and OEM designs, to the Project Manager for acceptance by the *Employer's* Consultant or the *Employer's* Engineers.
- c) Concrete mix designs for islands/ non stacking areas.

#### **2.2.3 UNLESS EXPRESSLY STATED TO FORM PART OF THE DESIGN RESPONSIBILITY OF THE *EMPLOYER* AS STATED UNDER 2.1 *EMPLOYER'S* DESIGN ABOVE AND WHETHER OR NOT SPECIFICALLY STATED TO FORM PART OF THE DESIGN RESPONSIBILITY OF THE *CONTRACTOR* UNDER THIS PARAGRAPH 2.2, ALL RESIDUAL DESIGN**



**RESPONSIBILITY AND OVERALL RESPONSIBILITY FOR THE TOTAL DESIGN SOLUTION FOR THE *WORKS* RESTS WITH THE *CONTRACTOR*.**

- a) The Contractor shall engage the services of ECSA registered Engineers and/or Technologists for all aspects of the Works for which the Contractor is to design as per Clauses 2.2.1 and 2.2.2 above.
- b) The Contractor shall thus be wholly accountable and responsible for all aspects of his designs, including the implementation of all Statutory Safety, Health and Environmental Regulations of South Africa and the particular requirements, specifications, and regulations of the *Employer* pertaining to Health and Safety, Environment, Quality and Engineering.
- c) The Contractor shall be wholly accountable and responsible for the implementation of the aspects of his designs including commissioning, putting into service, and handover of his constructed designs to the *Employer*, and his duly appointed ECSA registered Engineers shall be held accountable and responsible for these aspects of the Works for the lifetime duration of the Works.

**2.2.4 REVIEW AND ACCEPTANCE OF THE CONTRACTORS DESIGNS:**

- a) Acceptance of documentation by the Project Manager will in no way relieve the Contractor of his responsibility for the correctness of information, or conformance with his obligation to Provide the Works. This obligation rests solely with the Contractor.
- b) After review, a copy of the original reviewed/marked-up drawing/document, with the Project Manager's consolidated comments and document status marked on the Contractor Review Label, is scanned and the copy shall be returned to the Contractor under cover of the project's Transmittal Note for revision or re-submittal as instructed.
- c) The Contractor shall allow the Project Manager 2 weeks (unless otherwise stated and agreed) to review and respond to the Contractor's submission of their documentation, i.e. from time of receipt by the project to the time of despatch. However, work shall proceed without delay in the event of late return of the documentation by the Project Manager with prior notification in writing by the Contractor.
- d) On receipt of the reviewed documentation the Contractor shall make any modifications requested/marked-up and resubmit the revised documentation to the Project Manager within 2 weeks. Queries regarding comments/changes should be addressed with the Project Manager prior to re-submittal.
- e) Any re-submittals, which have not included the changes/comments identified, will be returned to the Contractor to be corrected. The Contractor shall re-issue the revised documentation incorporating all comments and other specified details not included in the previous issue within 2 working days of receipt of the marked-up document.
- f) The Contractor is required to undertake design safety reviews with the Project Manager the NEC Supervisor, the *Employer's* Engineer's and Professional team, the *Employer's* Health and Safety Officers, the *Employer's* Environmental Officers, the *Employer's* Quality Assurance and Quality Control Officers and any other Specialists and/or Subject Matter Experts (SME) as deemed by the *Employer* necessary for the provision of the Works.

**2.2.5 OTHER REQUIREMENTS OF THE CONTRACTOR'S DESIGN:**

**2.2.5.1 The *Contractor's* design complies with the following:**

- a) All Statutes, Standards, Specifications, Policies, Conventions, Requirements as referenced in this document and all Statutes, Standards, Specifications, Policies, Conventions, Requirements as referenced in any Annexures thereto.

**2.2.6 USE OF CONTRACTOR'S DESIGN**

The *Contractor* grants the *Employer* a licence to use the copyright in all design data presented to the *Employer* in relation to the *Works* for any purpose in connection with the construction, re-construction,

refurbishment, repair, maintenance and extension of the *Works* with such licence being capable of transfer to any third party without the consent of the *Contractor*.

**2.2.6.1 The Contractor vests in the *Employer* full title guarantee in the intellectual property and copyright in the design data created in relation to the *Works* as follows:**

- a) All supporting infrastructure required to implement all of the *Employers'* high level designs.
- b) Tarmacadam paving and layerworks design.
- c) Concrete mix designs for islands/ non stacking areas.
- d) All and any equipment, formwork, and temporary work associated with the provision of the *Works*.
- e) Design of Equipment.

**2.2.6.2 The Contractor submits his design details for the following categories of his proposed principal equipment to the Project Manager for his information only:**

- a) Any formwork required to Provide the *Works*
- b) Temporary electrically powered compressed air systems and pneumatic equipment that may be required to Provide the *Works*
- c) Small electrically powered equipment
- d) Equipment designed for the lifting of personnel to access any areas necessary to provide the *Works*, which are not at ground level.
- e) Equipment designed for the lowering of personnel to access any areas necessary to Provide the *Works*, which are below ground level.

**2.2.6.3 The following principal equipment categories deployed for the Contractor to provide the *Works* require its design to be accepted by the Project Manager under ECC clause 23.1:**

- a) Temporary petrol or diesel powered compressed air systems and pneumatic equipment that may be required to Provide the *Works*
- b) Small petrol or diesel powered equipment
- c) Specialist Equipment required to Provide the *Works*
- d) Rigging platforms and specialised rigging Equipment that may be required by the Contractor to Provide the *Works*.
- e) Temporary access platforms, ladders, walkways, scaffolds, and any other temporary structures required to Provide the *Works*.

**2.2.6.4 The design of equipment is considered in terms of this Contract as Contractor's design and any and all applicable requirements of 2.2, 2.3, 2.4 of this document shall apply.**

**2.3 EQUIPMENT REQUIRED TO BE INCLUDED IN THE WORKS**

Any shuttering/formwork that is left in-situ as required by the design of the *Works*, notwithstanding it be *Employer's* Design or *Contractor's* design, and necessary for the provision of the *Works*.

**2.4 AS-BUILT DRAWINGS, OPERATING MANUALS AND MAINTENANCE SCHEDULES**

**2.4.1 THE *CONTRACTOR* PROVIDES THE FOLLOWING:**

**2.4.1.1 As-built/final documentation**

- a) In undertaking the *Works* (including all incidental services required), the Contractor shall conform and adhere to the requirements of the Contractor Document Submittal Requirements Standard included in Annexure M (Refer DOC-STD-0001 Rev 03).
- b) The Contractor prepares two (3) marked up hard copies of the latest revision of the *Employer* documents/drawings to represent the As-Built/Final status.
- c) The mark-ups shall be in RED pencil or pen and be complete and accurate. The Contractor submits same to the Project Manager under cover of a Contractor's Transmittal Note.

4 x CD Roms with Adobe Acrobat (.pdf) and "Native" formats

**2.4.1.2 As-built/final documentation**

- a) In undertaking the 'Works' (including all incidental services required), the Supplier shall conform and adhere to the requirements of the 'Contractor Document Submittal Requirements' Standard included in Annexure M (Refer DOC-STD-0001 Rev 03).

**2.4.1.3 Installation, maintenance and operating manuals and data books.**

- a) In undertaking the 'Works' (including all incidental services required), the Supplier shall conform and adhere to the requirements of the 'Data Books and Manuals' Standard included in Annexure M (Refer DOC-STD-0001 Rev 03) and the 'Contractor Documentation Submittal Requirements' Standard included in Annexure M (Refer to DOC-STD-0001 Rev 03).

### 3 CONSTRUCTION

#### 3.1 TEMPORARY *WORKS*, SITE SERVICES & CONSTRUCTION CONSTRAINTS

##### 3.1.1 THE CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS OF THE *EMPLOYER* WITH REGARD TO SITE ENTRY, SECURITY CONTROL, PERMITS, AND SITE REGULATIONS.

###### 3.1.1.1 The *Contractor* complies with the following requirements of the *Employer*:

- a) The Contractor shall attend and or conduct all necessary Safety Inductions and ensure that all personnel engaged in the provision of the Works are inducted as directed by the Project Manager, NEC Supervisor.
- b) The Contractor and all personnel engaged in the provision of the Works shall attend and or conduct all Safety Inductions as required by the Transnet Officer as directed through the Project Manager.
- c) The Contractor and all personnel engaged in the provision of the Works shall attend and or conduct all Safety Inductions as required by the *Employer's* Safety Officer, *Employer's* Engineer and/or as directed by the Project Manager.
- d) All work carried out on roadways or adjacent to railway lines shall require necessary permits or occupation.
- e) The Contractor shall make arrangements for the Transnet official (TPT manager) to arrange for the necessary permits or occupations with relevant parties during the execution of the Works.
- f) All personnel working adjacent to railway lines in shunting yards are required to daily advise the TFR Yard Master and indicate the time of entry, time of exit and the details of the work carried out.
- g) The Contractor shall obtain access permits from the TPT Permit office before accessing the site.
- h) The Contractor shall obtain the relevant work permits from the *Employer's* Representative before performing any work.
- i) The Contractor shall at all times comply with the Transnet E7/1 Safety Instructions "Specification for Works On, Over, Under or Adjacent to Railway Lines and Near High Voltage Equipment" whilst providing the Works.
- j) The Safety Inductions, Access Permits and Work Permits are part of this Contract and the Contractor shall make allowance for it in his Price and Programme.
- k) The Contractor shall ensure that all relevant safety inductions and access permits are obtained well before the Site Access Date as reflected in the Contract Data.
- l) The Contractor shall provide all staff working within the Port area of construction with Contractor identification cards which detail the person's photo, name, identity number, Job Title, date inducted and the Supervisor / Construction Manager responsible. The provision of construction personnel with ID cards is considered part of this Contract and shall be made by the Contractor to a standard acceptable to the Project Manager and the Contractor shall make allowance for it in his Price and Programme.
- m) The Contractor is to be in constant consultation and cooperation with the Port's security operations to ensure compliance with all the required security procedures and the Contractor shall make allowance for it in his Price and Programme.
- n) The Contractor shall send the Safety stats to TPT Safety Practitioner every Friday before 12:00pm.

##### 3.1.2 RESTRICTIONS TO ACCESS ON SITE, ROADS, WALKWAYS AND BARRICADES

###### 3.1.2.1 Access route to the port

- a) All vehicles are subject to security checks and all Plant and Equipment brought into the Port and leaving the Port are required to be security cleared by the relevant authorities (Project Manager and TPT Security Manager) before access or exit is granted, as the situation may require.
- b) The Contractor is required to arrange for the clearing of the items with the Project Manager and the TPT Security Manager well in advance of the access or exit requirement to avoid delays in the provision of the Works.



- c) The Contractor ensures that any of his staff, labour and Equipment moving outside of his allocated Site and Working Areas does not obstruct the *Employer's* operations. To this end access routes are allocated and co-ordinated by the Contractor in liaison with the Project Manager.
- d) The Contractor ensures the safe passage of traffic, to and around the various site and Working Areas at all times. This includes providing flagmen, protective barriers, signage, etc. for protection, direction and control of traffic.
- e) The Contractor shall provide designated, signed and demarcated walkways for all personnel who are required to traverse between the different working areas at the various site. Personnel outside of the designated walkways are required to be conducting work activities, and when traversing, are required to use the designated walkways.
- f) The Contractor plans and organises his work in such a manner so as to cause the least possible disruption to the *Employer's* operations.

### 3.1.2.2 Barricades and fencing around site

- a) The Contractor shall be responsible for providing a temporary barricade fence between the port operations, roadway and railway traffic and the construction site and maintaining, providing, and/or relocating the fence, if required for construction purposes, to ensure the boundary fence is continuous, and the Contractor shall make allowance for it in his Price and Programme.
- b) The Contractor shall ensure that his site office where equipment may be stored, prepared or refurbished has an access gate that is manned 24hrs a day for the duration of the Works and over any builder's breaks, by a Security Provider acceptable to the Project Manager and registered with the PSIRA and the Contractor shall make allowance for it in his Price and Programme.

### 3.1.2.3 Restrictions to access on site

- a) The Contractor is prohibited from entering the *Employer's* Operational Areas, unless authorised to do so.
- b) The Contractor plans and organises his work in such a manner so as to cause the least possible disruption to the *Employer's* operations.
- c) The Contractor ensures that all his construction staff, labour, and Equipment remains within his allocated and fenced off construction areas.

### 3.1.2.4 People restrictions on site; hours of work, conduct and records:

- d) The working hours shall be in accordance with the requirements of the Department of Labour or with the agreement of the relevant trade unions. This information relating to working hours shall be supplied to the Project Manager prior to commencement of the proposed working hours.
- e) The Contractor complies with a nine (9) hour a day, five (5) day a week standard work day/week for all activities to be undertaken by his people (including Sub-Contractors) employed on site.
- f) Work times (i.e. start and end times within a standard work day) shall be as mutually agreed with the Project Manager.
- g) In the event that the Contractor requests to work overtime to make up for time lost due to his own delays, the Contractor will be liable for the supervision cost required from the *Employer's* team during the Works.
- h) The Contractor keeps daily records of his people, Plant and equipment engaged on the Site and Working Areas (including Sub-Contractors) with access to such daily records available for inspection by the Project Manager at all reasonable times
- i) Minimum requirements of people employed on the Site are as follows:
  - South African identity document or passport/ visa and work permit for foreign nationals;
  - Employment of local labour only for unskilled and semi-skilled job categories as per PIRPMP;
  - Secondment of skilled core/ permanent employees if skills are not locally available;
  - Pre-employment medical examinations; and
  - Induction in IR matters and conditions of employment on the Project.
- j) The Contractor complies with the requirements of the IRCC involving the engineering construction Contractors engaged (including all future Contractors) by the *Employer*.

### 3.1.3 HEALTH AND SAFETY FACILITIES ON SITE

- a) The Contractor complies with the requirements stated under paragraph entitled "Safety Risk Management" of the *Employer's* Works Information.

### 3.1.4 ENVIRONMENTAL CONTROLS, FAUNA & FLORA, DEALING WITH OBJECTS OF HISTORICAL INTEREST

- b) The Contractor complies with the CEMP, SES and PES in the construction of the Works, all as described under paragraph "Environmental constraints and management" of the *Employer's* Works Information.

### 3.1.5 TITLE TO MATERIALS FROM DEMOLITION AND EXCAVATION

- a) The Contractor has no title to any materials arising from excavation, dismantling and demolition in the performance of the Works with title to such materials remaining with the *Employer*. The Contractor informs the Project Manager immediately upon encountering any such materials who shall then instruct the Contractor how to label, mark, set aside and/or dispose of such materials for the benefit of the *Employer* in accordance with ECC3 Clause 73.1

### 3.1.6 COOPERATING WITH AND OBTAINING ACCEPTANCE OF OTHERS

#### 3.1.6.1 THE CONTRACTOR PERFORMS THE WORKS AND CO-OPERATES WITH:

- a) The Contractor performs the Works and co-operates with the *Employer* (including the agents of the *Employer*) who operate on Site during the entire duration of the Contract period.
- b) The Contractor performs the Works and co-operates with The TPT manager and agents of TPT, as directed by the Project Manager, who operate on Site during the entire duration of the Contract period.
- c) The Contractor performs the Works and co-operates with others, of whom the Contractor is to be notified once appointed by the *Employer*, who operate on Site during the entire duration of the Contract period.

#### 3.1.6.2 PUBLICITY AND PROGRESS PHOTOGRAPHS

- a) The Contractor shall obtain the permission and approval of the Project Manager before erecting any notice boards, using the details of the Contract in any advertising media or revealing any details of the Contract to the public.
- b) The Contractor does not advertise the Contract or the project to any third party, nor communicate directly with the media (in any jurisdiction) whatsoever without the express written notification and consent of the Project Manager.
- c) The Contractor provides progress photographs at monthly intervals in digital format as part of the Contractor's monthly programme narrative report. The photos shall include detailed, close up photos of construction activities.

### 3.1.7 CONTRACTOR'S EQUIPMENT

- a) The Contractor keeps daily records of his Equipment used on Site and the Working Areas (distinguishing between owned and hired Equipment) with access to such daily records available for inspection by the Project Manager at all reasonable times.
- b) The Contractor complies with the following permissions and restrictions in the use of Equipment as required by the *Employer*:
  - Equipment used by the Contractor to Provide the Works shall be prepared, painted, assembled and disassembled within the Contractor's Work Area and Site boundaries or lay-down areas as authorised by the Project Manager.
  - The Contractor is required to remove all equipment that is not part of the Works from site after completion of the Works and before de-establishment of the site.



- All and any equipment used by the Contractor for the provision of the Works shall comply to the *Employer's* SHEQ regulations and restrictions, or any other statutory Health and Safety requirements as directed by the Project Manager in liaison with the *Employer's* Engineers or the *Employers* Consultants.

### 3.1.8 EQUIPMENT PROVIDED BY THE *EMPLOYER*

The *Employer* shall not provide any Equipment to the *Contractor* for the purposes of this Contract.

### 3.1.9 SITE SERVICES AND FACILITIES:

#### 3.1.9.1 The *Employer* provides the following facilities for the *Contractor*:

- For the duration of the Contract, the Project Manager will provide an area, free of charge, for the Contractor to establish his offices, lay down areas, stores, workshops, and other Contractor's Equipment.
- The locations of the potential lay down areas will be identified at the site clarification meeting. The Contractor may establish a site camp anywhere within the boundary of this area that does not impede the provision of the Works.
- The Contractor shall ensure that the area used has a suitable continuous security fence and the necessary access gates if required or instructed by the Project Manager.
- The Contractor shall submit details of the layout of his Site establishment to the Project Manager for his acceptance.
- All costs for preparation of the Site establishment area shall be for the Contractor's account.
- The Contractor shall provide everything else necessary for providing the Works.

#### 3.1.10 CONNECTIONS TO SERVICES FOR CONTRACTOR'S USE:

- 50mm Isolation valve for construction potable water; and circuit breaker for construction power at 380 Volts, 3-Phase and Neutral, 50 Hz.
- No connection to a sewer system will be made available and thus the Contractor will have to make provision for the containment and disposal of foul water from toilets, ablutions, basins, etc.
- The Contractor shall provide everything necessary for providing the Works in accordance with this Contract and attached Annexures.
- Wherever the *Employer* provides facilities if applicable in the context of this Contract, (including, *inter alia*, temporary power, water, waste disposal, telecommunications etc.) for the *Contractor's* use within the Working Areas and the *Contractor* adapts such facilities for use, then the *Contractor* makes good and provides full reinstatement to the land (including all apparatus of the *Employer* and Others in, on or under the land) and surrounding areas to its original standard upon dismantling of such facilities and hand-back to the *Employer*.

#### 3.1.11 FACILITIES PROVIDED BY THE CONTRACTOR:

- The Contractor ensures that the site establishment area is compliant with the relevant safety regulations and restrictions, is clearly sign posted, and has a suitable security fence, lighting and the necessary access control gates.
- All costs for preparation of the site establishment area are to be allowed for in the Contractor's Price.
- The Contractor submits details of the layout of his site establishment to the Project Manager for his acceptance.
- The Contractor installs a metering device, which is acceptable to the Project Manager and the *Employer's* Engineers, immediately downstream at each of the *Employer's* connections (if applicable in the context of this Contract) from where he draws services. The Contractor provides the Project Manager details of his monthly consumption of potable water and power.
- The Contractor is responsible for his own connection to the *Employer's* services and for the reticulation of his services from the connection point. The cost of meters, connections, reticulation and all other usage costs associated with the provision of services are included in Price.
- The Contractor provides the Project Manager with a "Certificate of Compliance" (COC), by an "Accredited" Person as defined by the OHS Act, in respect of his Construction Power electrical

installation. The Project Manager only makes construction power available upon receipt of the COC.

- g) The Supervisor (or his nominated representative) conducts routine inspections of the Contractor's construction power reticulation and power tools. If found to be un-safe and / or non-compliant with statutory requirements, the electrical power supply is disconnected until the Contractor rectifies all defaults.
- h) The Contractor shall be responsible for providing water and power for all other Working Areas where not provided by *Employer*.
- i) The Contractor provides, at his cost, a sufficient number of toilets and maintains them in a clean and sanitary working condition.
- j) The Contractor provides temporary lighting and fencing around every section occupied by him during the construction of the Works.
- k) Such fencing demarcates and secures the construction area. The fencing is erected before any work starts and is removed only upon completion of the work in that area.
- l) The Contractor includes for all costs for such lighting and fencing, including access control into and out of these restricted areas.
- m) Wherever the Contractor provides facilities (either his own or for the Project Manager and/or Supervisor) and all items of equipment, involving, inter alia, offices, accommodation, laboratories, materials storage, etc., within the Working Areas, then the Contractor makes good and provides full reinstatement to the land (including all apparatus of the *Employer* and Others in, on or under the land) and surrounding areas to its original standard, upon dismantling of such facilities and items of Equipment.
- n) Upon Completion the Contractor completely removes from the Site and Working Areas all his Equipment, including the foundations of any structures, stores, office accommodation or any other asset belonging to him, and leaves the Site and Working Areas in a tidy condition to the satisfaction of the Project Manager.
- o) No excess or discarded materials or equipment may be buried or dumped within the port boundary.
- p) Demolition of all temporary structures, surfaces etc. shall be first approved by the Project Manager prior to the work being carried out.
- q) The *Employer* does not provide any security for the Site and Working Areas. The Contractor provides same and indemnifies and holds indemnified the Project Manager and *Employer* against any claims and actions that may arise out of Site and Working Area security.
- r) No housing is available for the Contractor's employees. The Contractor makes his own arrangements to house his employees and transports them to Site in a closed vehicle specifically designed for passenger transport (bus or similar) accepted by the Project Manager.
- s) Wherever the *Employer* provides facilities for the Contractor's use and the Contractor adapts such facilities for use, then the Contractor makes good and provides full reinstatement to the land (including all apparatus of the *Employer* and Others in, on or under the land) and surrounding areas to its original standard upon dismantling of such facilities and hand-back to the *Employer*.
- t) The Contractor shall provide, maintain and remove lockable portable chemical type toilets.
- u) The Contractor shall provide a suitably sized construction power supply by means of either municipal supply, or Generation Plant equipment, as required.
- v) The Contractor shall be wholly responsible for the provision of this power supply, and shall make all the necessary arrangements for the supply, and the maintenance of the supply for the duration of the Works.
- w) Wherever the Contractor provides facilities (either his own or for the Project Manager and/or Supervisor) and all items of Equipment, involving, inter alia, offices, accommodation, laboratories, Materials storage, compound areas etc., within the Working Areas, then the Contractor makes good and provides full reinstatement to the land (including all apparatus of the *Employer* and Others in, on or under the land) and surrounding areas to its original standard, upon dismantling of such facilities and items of Equipment.
- x) Unless explicitly stated as a responsibility of the *Employer*, Site services and facilities, Connections to Services for Contractors' use and all residual requirements for the provision of facilities and all items of Equipment necessary for the Contractor to Provide the Works remains the responsibility of the Contractor.



### 3.1.12 EXISTING PREMISES, INSPECTION OF ADJOINING PROPERTIES AND CHECKING WORK OF OTHERS

- a) The Contractor will be held responsible for any damage to the existing structures and surfacing caused by the Contractor during the execution of this Contract; fair wear and tear excluded, and shall repair it to the satisfaction of the Supervisor on conclusion of the Works.
- b) For this purpose a joint inspection with the Supervisor will be carried out prior to occupation of the site(s) and any existing damage noted.
- c) The Contractor is required to forward a photographic report following the inspection to the Project Manager for record purposes.

### 3.1.13 EXCAVATIONS AND ASSOCIATED WATER CONTROL

#### 3.1.13.1 The *Contractor* complies with the following requirements:

- a) Where applicable, the Contractor protects all excavations against any water ingress whether by seepage, rains, storms, floods or any other means.
- b) Where applicable, the Contractor immediately removes any water found in the excavation by pumping and / or bailing and provides all necessary Equipment (pumps, pipes, etc.) to do so.
- c) Water is cleared in such a way that it cannot slip or flow back into the excavations.
- d) The Contractor shall install shoring where necessary, and in all deep excavations to ensure that the sides of the excavation does not collapse.
- e) The Contractor shall comply with the *Employer's* SHEQ policy in all respects for the Provision of the Works involving deep excavations.
- f) All activities related to excavations and water control forms part of this Contract, and the Contractor shall make allowance for these activities in his Price and Programme.

### 3.1.14 UNDERGROUND SERVICES, OTHER EXISTING SERVICES, CABLE AND PIPE TRENCHES AND COVERS

#### 3.1.14.1 Where the *Contractor* encounters existing underground services or existing service cables, the *Contractor* undertakes the following:

- a) The Contractor is required to liaise with the Project Manager, and the Supervisor and the *Employer's* Engineers, and establish as accurately as possible the location of the various existing services situated within the Work Area and record all such information on a suitable "marked-up" drawing for reference at all times.
- b) In addition to the above, the Contractor shall consult the Project Manager, the Supervisor and the *Employer's* Engineers, prior to undertaking any excavation work.
- c) Where the Contractor encounters existing underground services / existing services cables / pipe trenches, the Contractor is to notify the Project Manager, the Supervisor and the *Employers* Engineers.
- d) Where the encountered services are causing a delay in the provision of the Works, the Contractor shall approach the Project Manager, the Supervisor and the *Employer's* Engineers for a decision by submitting a Field Engineering Query (FEQ).
- e) The Contractor shall then provide the solution described in the answered FEQ.
- f) The Contractor must thereafter exercise due care and attention in carrying out the agreed excavation Works and any Works as may be directed by the Project Manager to avoid damage or disruption to existing services.
- g) The Contractor shall be liable for all claims arising out of any damage caused by such excavation if the Contractor fails to exercise the requisite care and attention in carrying out the excavation.
- h) The cost of locating and protecting, if necessary, services shall be included in the rates for the services intersecting and adjoining the trenches.
- i) A group of cables intersecting or adjoining a trench will be regarded as one service.
- j) The existing services shall be protected when excavating.
- k) The costs of protecting these services shall be included in the rates for excavation and compaction.



- l) All existing services shall be treated as in service and "live". All necessary Safety Instructions of the *Employer* and statutory requirements as per the OHS Act and its Regulations shall be complied with in the handling of the "live" service.
- m) In the case of electrical services the Contractor shall trace, locate and identify all cables within the service and record the information as per this Works Information above.

### 3.1.15 CONTROL OF NOISE, DUST, WATER AND WASTE

#### 3.1.15.1 The Contractor complies with the following:

- a) Before moving Equipment onto the Site and Working Areas and commencing the Works, the Contractor submits his proposed methods of construction which demonstrate the measures taken to avoid and or reduce any environmental and health issues arising from dust, noise and vibration for acceptance by the Project Manager.

### 3.1.16 SEQUENCES OF CONSTRUCTION OR INSTALLATION

#### 3.1.16.1 The Contractor complies with the following:

- a) Area 100 is a 24 hour operational area, the Contractor will not be given 100% occupation of Area 100. The Contractor is required to develop an Occupation Plan indicating the sectional area/s and the associated extent (m2) of required occupation, the Occupation Plan must be aligned to the Programme and Method Statement.
- b) The Contractor is hereby informed of the requirements of maintaining the continuity of lighting supply to Area 100, and is required to arrange and sequence his Works so as to ensure that there is no disruption to the operations.
- c) Should it be impossible to avoid a disruption as described in (b) above, the Contractor shall notify the Project Manager, Supervisor and the *Employers* Engineers 21 days before the anticipated disruption and request authorization to commence with the aspect of the Works that will cause the disruption. The Contractor shall not proceed without said authorization to proceed.

### 3.1.17 GIVING NOTICE OF WORK TO BE COVERED UP

- a) The Contractor notifies the Supervisor in writing of any elements of the Works which are to be covered up. This notification is given not less than 48 (forty eight) hours prior to the proposed covering up.
- b) The Contractor shall not cover the Works without the authorization of the Supervisor.
- c) The Contractor shall make the Project Manager and Supervisor aware of any tests and inspections required by the *Employer's* Quality Management Procedures. Notification of required test and/or the *Employers* Engineers inspections to be given 24 (twenty four) hours in advance.

## 3.2 COMPLETION, TESTING, COMMISSIONING AND CORRECTION OF DEFECTS

### 3.2.1 THE WORK TO BE DONE BY THE COMPLETION DATE

- a) On or before the Completion Date or Sectional Completion Date, the Contractor shall have done everything required to Provide the Works including removal of his establishment and equipment from the respective site but excluding the work listed below which may be done after the Completion Date but in any case before the dates stated.
- b) The Project Manager cannot certify Completion until all the work except that listed below has been done and is also free of Defects, which would have, in his opinion, prevented the *Employer* from using the Works and Others from doing their work.

Item of work	To be completed by
As built drawings as specified in the Works information	14 days prior to Completion
Performance testing of the Works	Sectional Completion dates

### 3.2.2 USE OF THE WORKS BEFORE COMPLETION HAS BEEN CERTIFIED

#### 3.2.2.1 The *Employer* uses the following part / parts of the *Works* before completion is certified by the *Project Manager* which do not constitute take over by the *Employer* for the reason(s) stated:

- a) Sectional areas as per the accepted Occupation Plan.

### 3.2.3 MATERIALS FACILITIES AND SAMPLES FOR TESTS AND INSPECTIONS

#### 3.2.3.1 The Contractor provides the *Employer* with the following materials, facilities and samples during the provision of the *Works*, as per ECC clause 40.2:

- a) The Contractor shall furnish samples of any Plant and Materials that is other than, or different to, that specified by the *Employer's* Engineers, to the Supervisor for Acceptance by the *Employer's* Engineers. The Contractor is prohibited from installing said Plant without the required prior authorization from the *Employer's* Engineers.
- b) The Contractor shall furnish samples of any Plant and Materials that is other than, or different to, that required by the *Employer's* Engineering Specifications, that shall be utilised in the Contractor's Designs, to the Supervisor for Acceptance by the *Employer's* Engineers. The Contractor is prohibited from installing said Plant without the required prior authorization from the *Employer's* Engineers.
- c) The Contractor shall supply concrete mix designs to Transnet specifications, concrete cube tests, compaction results, steelwork shop detail drawings for approval, steelwork material certificates.
- d) The Contractor shall furnish samples of any Plant and Materials that is proposed to be used in the Contractor's Designs, to the Supervisor for Acceptance by the *Employer's* Engineers. The Contractor is prohibited from designing with, and subsequently installing said Plant and Materials without the required prior authorization from the *Employer's* Engineers.
- e) Samples, tests and inspections required of the Contractor, shall be as specified in Paragraph 4 of C3.1 or any other standards, specifications or statutory requirements referred to therein or annexed thereto.
- f) The Contractor shall give notice to the Supervisor of the required inspection not less than 48 hours before the inspection is required.
- g) The *Employer* will not provide any materials or facilities for the use of the Contractor, to perform tests and inspections.

### 3.2.4 PRE-COMMISSIONING TESTS AND COMMISSIONING

- a) The Contractor shall provide adequate and competent personnel for testing and commissioning of every particular installation and for the full duration of the commissioning process.
- b) The Contractor shall prove the full operation, working and compliance of the installation in accordance with the specifications.
- c) A detailed programme of the planned commissioning procedures shall be submitted to the Project Manager and *Employer's* Engineers at least 4 weeks before commissioning commences.

The commissioning programme shall include but is not limited to:

- A schedule of equipment to be commissioned, the proposed tests to be conducted and the testing methods and the range of acceptable results,
- Commissioning check sheets,
- Commissioning programme dates and duration



- d) The Contractor shall supply all relevant test equipment, monitoring devices, network analysers, protocol testers/analysers etc. required to test and commission the complete Works.
- e) An accurate record of all commissioning and testing is to be taken and included in the handover documentation as a permanent record.
- f) The Contractor shall perform any and all tests as required by any Sections or Clauses of the Works Information and any and all tests required by the *Employers* Specifications annexed thereto, and any and all tests required by any applicable SANS Standard, or other Standard, and/or as directed by the *Employer's* Engineers and the Project Manager.
- g) Testing and commissioning is considered part of the Works and is to be done before completion.

### 3.2.5 TAKE OVER PROCEDURES

#### 3.2.6 The *Contractor* provides the following assistance to the *Employer*:

- a) The Contractor ensures that all the required documentation as described in the Works Information is presented to the Project Manager before Completion.
- b) The Contractor ensures that the Project Manager has a full and accurate dossier of As-built documents that represent the completed Works to present to the *Employer*.

### 3.2.7 ACCESS GIVEN BY THE *EMPLOYER* FOR CORRECTION OF DEFECTS

#### 3.2.7.1 The Contractor complies with the following constraints and procedures of the *Employer* where the Project Manager arranges access for the Contractor after completion:

- a) Access into areas already handed over by the Contractor for correction of any defect shall be subject to the approval of Port's Operations, and these times shall be communicated to the Contractor by the Project Manager.
- b) The areas required by the Contractor will need to be temporarily barricaded by the Contractor before the Contractor commences with any corrective work.

#### 3.2.7.2 The Contractor complies with the following constraints and procedures of the *Employer* where the Project Manager arranges access for the Contractor after completion:

- a) Where the Contractor has to return to Site after Completion to rectify notified Defects, the *Employer* may either impose the same Site access / egress restrictions as communicated elsewhere under C3.1 *Employer's* Works Information at the starting date / access date stated under Contract Data - Part One, or as the Works are now in use or the *Employer's* occupation of the Site may be incrementally or substantially changed post Completion, there may be further access / egress restrictions as required by the *Employer* and/The Port Terminal.

### 3.2.8 PERFORMANCE TESTS AFTER COMPLETION

#### 3.2.8.1 The *Contractor* performs the following performance tests after completion of the *Works*:

- a) None.

### 3.2.9 TRAINING AND TECHNOLOGY TRANSFER

#### 3.2.9.1 The *Contractor* facilitates the following requirements for training Workshops after completion for the *Works* in use:

- a) None.

### 3.2.10 OPERATIONAL MAINTENANCE AFTER COMPLETION

#### 3.2.10.1 The *Contractor* performs the following operational maintenance in relation to the *Works* after completion:

**TRANSNET PORT TERMINAL**Tender Number: **iCLM HQ 728/TPT**

Description of the works: **UPGRADE OF EMPTY STACK (AREA 100) AT PIER 1, DURBAN CONTAINER TERMINAL FOR TRANSNET SOC LTD (REG. NO 1990/000900/30) OPERATING AS TRANSNET PORT TERMINALS (HEREINAFTER REFERRED TO AS "TPT")**

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- a) None.

## 4 PLANT AND MATERIALS STANDARDS AND WORKMANSHIP

### 4.1 Plant and Materials

- 4.1.1 The *Contractor* provides Plant and Materials for inclusion in the *Works* in accordance with the Standard Specifications and/or Project Specifications, unless otherwise stated elsewhere in the *Works* Information provided by the *Employer*. All Plant and Materials are new, unless the use of old or refurbished goods and/or Materials are expressly permitted as stated elsewhere in this *Works* Information or as may be subsequently instructed by the *Project Manager*.
- 4.1.2 The *Contractor* replaces any Plant and Materials subject to breakages (whether in the Working Areas or not) or any Plant and Materials not conforming to standards or specifications stated and notifies the *Project Manager* and the *Supervisor* on each occasion where replacement is required.
- 4.1.3 No Plant or Materials will be provided "free issue" by the *Employer*.
- 4.1.4 The *Contractor* provides all Plant and Materials necessary for the *Works*.
- 4.1.5 The *Contractor* supplies all certification including test certificates, user manuals, maintenance manuals and data books with respect to Plant and Materials procured for the *Works*.

### 4.2 Investigation, Survey and Site Clearance

- 4.2.1 The *Contractor* will be responsible for setting out the *Works*.
- 4.2.2 The *Contractor* validates the information provided by the *Project Manager* and records all existing and final levels on a survey drawing and presents this to the *Project Manager* for acceptance.
- 4.2.3 Prior to commencing the *Works* the *Contractor* records any defects or inaccuracies related to the existing structures, paving, etc. and presents this record to the *Project Manager* for acceptance. Only items recorded in this manner will be accepted as having pre-existed the *Works* and the remedying of all other damage will be the *Contractor's* responsibility and for his cost.
- 4.2.4 The *Contractor* is required to prove the existing services prior to construction.
- 4.2.5 The *Contractor* is required to verify the position of the temporary park homes/ablutions prior to construction.

### 4.3 Civil Engineering

#### 4.3.1 Standard Specifications applicable to the *Works*

- a) The SANS 1200 Series of Specifications are applicable to all Civil Engineering and Structural *Works* associated with this contract. The following interpretations and meanings shall apply:
- b) In case of any conflict in interpretation, ambiguity or discrepancy between any SANS 1200 Specification (whether standard or written as a particular project specification) contained in the *Works* Information and the conditions of contract, the conditions of contract take precedence within the ECC3 contract.
- c) In case of any conflict in interpretation, ambiguity or discrepancy between any SANS 1200 Specification (whether standard or written as a particular project specification) contained in this paragraph 4.3 of the *Employer's Works* Information and specific statements contained elsewhere in C3.1 *Employer's Works* Information, the specific statements contained elsewhere shall prevail, without prejudice to the Project Manager's express duty to resolve any ambiguity or inconsistency in the *Works* Information under ECC3 Clause 17.1.
- d) Within SANS 1200 A: GENERAL, the following amendments and interpretations shall apply:  
Where the word or expression "*Employer*" is used, read "*Employer*";  
Where the word or expression "*Contractor*" is used, read "*Contractor*";



- Where the word or expression "Engineer" is used, read "*Project Manager*" or "*Supervisor*" as the context requires;
- Where the word or expression "schedule of quantities" is used, this is deleted in entirety. Assessment and payment is in accordance with the *conditions of contract* (and the ECC main and secondary options stated therein);
- e) Within SANS 1200 A: GENERAL 2.3 DEFINITIONS, the following apply:
- "Acceptable. Approved (Approval)" is interpreted as either a *Project Manager* or a *Supervisor* communication or instruction in relation to *Works* Information compliance, consistent with the *conditions of contract* as the context requires;
- "Adequate" is deleted. The *Project Manager* notifies the *Contractor* where the *Contractor* has not complied with the *Works* Information;
- "Measurement and payment" and the further definitions contained within 6.3 c) are deleted. Assessment and payment is in accordance with the conditions of contract (and the ECC main and secondary options stated therein);
- f) Within SANS 1200 A: GENERAL 2.6 APPROVAL, the following applies:
- "Approval" by either the *Project Manager* and/or the *Supervisor* is without prejudice to ECC Clause 14.1 and, inter alia, ECC Clauses 13.1, 14.3 and 27.1.
- g) SANS 1200 A: GENERAL 2.8 ITEMS IN SCHEDULE OF QUANTITIES, is deleted in entirety. Assessment and payment is in accordance with the *conditions of contract* (and the ECC main and secondary options stated therein).
- h) SANS 1200 A: GENERAL 3.2 STRUCTURES AND NATURAL MATERIAL ON SITE, applies only to the extent that it is consistent with paragraph 3.1.6 of C3.1 *Employer's Works* Information.
- i) Within SANS 1200 A: GENERAL 7.1 PLANT, the following applies:
- Where the word or expression "Plant" is used, read "Equipment".
- j) SANS 1200 A: GENERAL 7.2 *CONTRACTOR'S* OFFICES, STORES AND SERVICES, applies but the *Project Manager* resolves any inconsistency with statements included within paragraph 3.1.12 of C3.1 *Employer's Works* Information.
- k) SANS 1200 A: GENERAL 3.1 SURVEY, applies only to the extent that it is consistent with paragraph 3.1.14 of C3.1 *Employer's Works* Information.
- l) Within SANS 1200 A: GENERAL 3.2 WATCHING, BARRICADING, LIGHTING AND TRAFFIC CROSSINGS, the following applies:
- Where the word or expression "specification" is used, read "*Works* Information".
- m) SANS 1200 A: GENERAL 3.4 PROTECTION OF OVERHEAD AND UNDERGROUND SERVICES applies only to the extent that it is consistent with the specific statements made elsewhere in C3.1 *Employer's Works* Information and in any case and at all times consistent with the *conditions of contract*.
- n) Within SANS 1200 A: GENERAL 5 TESTING, the following applies:
- Where the word or expression "Engineer" is used, read "*Supervisor*".
- o) SANS 1200 A: GENERAL 8 MEASUREMENT AND PAYMENT, is deleted in entirety. Assessment and payment is in accordance with the conditions of contract (and the ECC main and secondary options stated therein).
- p) The principles, meanings and interpretation stated and established within paragraphs 6.3.1 to 6.3.15 with respect to SANS 1200 series and to SANS 1200 A: GENERAL equally apply to the other SANS 1200 specification references used within this paragraph 6.3 of C3.1 *Employer's Works* Information.

#### 4.3.2 DEMOLITION AND EARTHWORKS

##### a) Scope of work

4.3.2.a.1 This part covers the demolition of the existing premix.

##### b) Supporting Specifications

SANS 1200 DA -	EARTHWORKS (SMALL WORKS)
SANS 1200 DB -	EARTHWORKS (PIPE TRENCHES)
SANS 1200 M -	ROADS (GENERAL)
SANS 1200 MF -	BASE
SANS 1200 ME -	SUBBASE
SANS 1200 MFL-	BASE (LIGHT PAVEMENT STRUCTURES)

##### c) Existing services

All services are unknown due to the lack of adequate as-built records, the *Contractor* will be required to prove services prior to removal. The *Contractor* shall take the necessary precautions to ensure that the services are not damaged.

4.3.2.c.1 As soon as any underground service is discovered, it shall be brought to the attention of the *Supervisor*. The *Contractor* must in collaboration with the *Supervisor*, ascertain whether or not the service is live. The *Contractor* shall not uplift any such service unless he is instructed to do so.

4.3.2.c.2 The *Contractor* shall be held responsible for any damage to known services (i.e. services that are within the site of the *Works*) and he shall take all necessary measures to protect them. In the event of a service being damaged, the *Contractor* shall immediately notify the *Supervisor*. The *Contractor* shall not repair any such service unless he is instructed to do so.

##### d) Excavation

4.3.2.d.1 The material to be excavated consists of mainly tarmacadam paving with a crusher run sub-grade.

4.3.2.d.2 For the purposes of uplifting of underground pipes, a trench width of 1m shall be used.

##### e) Compaction of insitu material

The insitu material shall be trimmed, levelled out and compacted.

##### f) Imported Backfill material

4.3.2.f.1 Backfill material shall be selected from the commercial sources and placed in layers and compacted. No clay shall be used as backfill.

##### g) Base Course

4.3.2.g.1 Contractor's design.

#### 4.3.3 SITE CLEARANCE, EARTHWORKS & LAYER WORKS

##### a) Scope of work



4.3.3.a.1 The *Works* for the site clearance, earthworks and layerworks include the following:

4.3.3.a.1.1 Clearing of site.

4.3.3.a.1.2 Exposing of existing services where indicated by *Project Manager*.

4.3.3.a.1.3 Excavation and treatment of in-situ material.

4.3.3.a.1.4 Construction of sub base from commercial sources.

4.3.3.a.1.5 Construction of crushed stone base from commercial sources.

4.3.3.a.1.6 And any other work arising out of or incidental to the above, or required of the *Contractor* for the proper completion of the *Works*.

b) **Supporting Specifications**

SANS 1200 DM	EARTH <i>WORKS</i> (ROADS, SUB GRADE)
SANS 1200 M	ROADS GENERAL
SANS 1200 ME	SUBBASE
SANS 1200 MF	BASE
SANS 1200 MK	KERBING
SANS 1200 MJ	SEGMENTED PAVING
SANS 1200 C	SITE CLEARANCE
SANS 1200 D	EARTH <i>WORKS</i>
SANS 1200 MH	ASPHALT SURFACING
SANS 1200 MM	ANCILLARY ROAD <i>WORKS</i>

c) **Earthworks (SANS 1200D)**

4.3.3.c.1 **Spoil site**

4.3.3.c.1.1.1 The existing damaged pavement layers are required to be excavated and carted to a spoil site of the *Contractor's* choice. The nature of the material varies and includes asphalt, crusher-run, etc.

4.3.3.c.1.2 All excess material shall be spoiled off site in a spoil area to be identified by the *Contractor*. The *Contractor* is to allow for everything necessary to load, haul, tip, and spread and compact if necessary. Spoiling on Transnet property shall not be permitted unless a specific authority is obtained in writing. The *Contractor* shall provide written confirmation that permission has been obtained from the operator /owner of the spoil site that they have accepted the material and all obligations in regarding to the spoiling of material has been met.

4.3.3.c.1.3 Where hazardous or contaminated material needs to be spoiled, the *Contractor* shall do so at an approved disposal site. The *Contractor* shall be responsible for receipt of a spoil certificate from the spoil site, which he shall copy to the *Project Manager*

4.3.3.c.2 **Exposing existing services**

- 4.3.3.c.2.1 A multitude of services are unknown over the whole area of the *Works*. Prior to commencing work in any area the *Contractor* shall consult the *Project Manager* in regard to the location of services and shall assist him when required in locating the exact position and depths of services by means of hand excavated test holes. The location and depth of all services discovered by the foregoing investigations shall be recorded and plotted by the *Contractor* on an "as-built" copy of the services plan.
- 4.3.3.c.2.2 The *Contractor* shall assist when required in alterations to services by providing labour, Plant and material and shall carry out the necessary work as instructed by the *Project Manager*.
- 4.3.3.c.2.3 Test holes to locate services shall be excavated at least 2 weeks ahead of construction in order to allow time for alterations to services or amendments to the design of the *Works*. Once the services have been located the test holes are to be backfilled.
- 4.3.3.c.2.4 Responsibility for protection of all known services shall rest solely with the *Contractor* and he shall bear all costs, which may arise as a result of any damage which he may cause to such services or which may arise as a result of his operations.
- 4.3.3.c.3 **Bulk excavation**
- 4.3.3.c.3.1 The existing damaged pavement layers are required to be excavated and carted to spoil site of the *Contractor's* choice. The nature of the material varies and includes asphalt, crusher-run, etc.
- 4.3.3.c.4 **Disposal of material**
- 4.3.3.c.4.1 All vegetation, trees, etc. resulting from site clearance shall be removed off site to a disposal dump to be selected by the *Contractor*. The haulage, dump costs and any levies etc. shall be deemed to be included in his tendered rates. Burning of materials on site shall not be permitted.
- 4.3.3.c.5 **Subgrade**
- Preparation of the in-situ subgrade will be by means of ripping and compaction.
- 4.3.3.c.6 **Sub-base**
- Contractor's design.
- 4.3.3.c.7 **Base**
- Contractor's design.
- d) **Construction**
- 4.3.3.d.1 **Base**
- 4.3.3.d.1.1 Any portion of stabilized base that is too high shall be lowered, harrowed and reconstructed to such depth that, after compaction, the base layer is of the same standard and thickness throughout, and falls and level shall comply.
- 4.3.3.d.1.2 Density is required of least 96% of the Marshall density of the mix.
- 4.3.3.d.2 **Acceptance of Mix Designs**

4.3.3.d.2.1 The *Contractor* shall submit the mix details and properties of the design mixes for both the wearing and levelling courses for approval together with the properties for mixes having bitumen contents 0, 5% above and below that of the proposed mix.

#### 4.3.3.d.3 **Removing unsuitable material**

4.3.3.d.3.1 Any material which is considered by the *Project Manager* to be of a quality that would be detrimental to the performance shall be removed to widths and depths as instructed by the *Project Manager* and shall be disposed of as prescribed. The excavated area shall then be backfilled with approved imported material compacted to the required density.

#### 4.3.3.d.4 **Tolerances**

##### 4.3.3.d.4.1 **Paving as laid**

4.3.3.d.4.1.1 The finished paved surface shall present the smooth surface suitable for container stacking within designated stack markings.

#### 4.3.3.d.5 **Testing**

##### 4.3.3.d.5.1 **Checking**

4.3.3.d.5.1.1 The *Contractor* shall carry out sufficient checks to satisfy himself that the materials used and the workmanship (construction, tolerances and strength) attained comply consistently with the specified requirements. The *Supervisor* will carry out checks and the result made available to the *Contractor*.

#### 4.3.3.d.6 **Quality Control**

4.3.3.d.6.1 Workmanship, tolerances and frequency of testing shall be in accordance with the relevant specifications.

#### 4.3.3.d.7 **Method statement**

4.3.3.d.7.1 The *Contractor* shall submit a detailed method statement setting out what quality control procedures will be implemented with respect to:-

4.3.3.d.7.1.1 Quality assurance during the batching and mixing process. The *Contractor* shall indicate what certification, if any, they have in terms of SANS or ISP quality assurance schemes.

4.3.3.d.7.1.2 Procedures, methods and Plant for the transportation of hot asphalt to site.

4.3.3.d.7.1.3 Procedures, methods and Plant to be used for placing and compacting asphalt on site.

### 4.3.4 **ROAD AND STACKING MARKINGS**

#### a) **Scope of work**

4.3.4.a.1 The *Works* for the road and stacking markings include the following:

4.3.4.a.1.1 Any road markings needed of vehicle driving areas for example road information, warning signs and directional arrows.

4.3.4.a.1.2 Painting of any markings needed for container stacking layout areas.

4.3.4.a.1.3 Painting of any markings needed for designated areas used for certain operations.

4.3.4.a.1.4 And any other work arising out of or incidental to the above, or required of the *Contractor* for the proper completion of the *Works*.

b) **Supporting Specifications**

The Contractor shall provide all plant required to execute the works. The lines or markings are to be painted with Plascon - Hysheen Road and Runway Paint or similar approved, at an application rate the rate of 0.42 l per m<sup>2</sup>. All paint shall conform to SANS 731-1.

The following must be noted by the Contractor in terms of SANS 731-1:

The paint shall be a Type 2 Paint

The paint shall be suitable for use in a parking area on a segmented concrete surface

The paint is not required to be retro reflective

Drying time classification shall be Class 1

The colours required for the completion of the contract shall be:

- White
- Red
- Golden Yellow (BS381C-356 or CKS 279 – D26)
- Black

All the above colours to meet classifications according to SANS 1091

#### 4.3.5 FENCING

a) **Scope of work**

4.3.5.a.1 The *Works* for the steel palisade fencing include the following and shall be completed according to the Transnet Specification for Security Fencing:

4.3.5.a.1.1 Fabrication, galvanising and installation of steel palisade fencing.

4.3.5.a.1.2 Fabrication, galvanising and installation of security gates where needed.

4.3.5.a.1.3 The connecting of the new fence and tying into the existing palisade fence on site.

4.3.5.a.1.4 And any other work arising out of or incidental to the above, or required of the *Contractor* for the proper completion of the *Works*.

b) **Supporting Specifications**

This part shall be read in conjunction with the following SANS and Transnet standard specifications.

SANS 1200 AH	GENERAL (STRUCTURAL)
SANS 0214	PALISADE FENCING
ISO 1461:1999	HOT DIPPED GALVANIZING

#### 4.3.6. Concrete Works

##### 4.3.6.1 Scope of Work

The scope of work for concrete works shall include for the delivery to site of all materials necessary to complete the *works*, off-loading on site, storage on-site, setting out, installation, testing, commissioning and handover.

The *works* includes for the following:

- Resurfacing of the required pavement area.
- Earthworks, including excavation, dewatering, preparation of base and foundations
- Reinforcing and formwork
- Casting of concrete

And any other work arising out of or incidental to the above, or required of the *Contractor* for the proper completion of the *works*.

This section, "Concrete Works", must be read in conjunction with the following specifications:

- |                     |   |
|---------------------|---|
| • SANS 1200 G       | Concrete  |
| • SANS 1083:1994    | Aggregates from natural sources   |
| • SANS 10100-2:1992 | The Structural use of concrete – Part 2 :<br>Materials and execution of work  |
| • SANS 50197-1      | Cement – composition, specifications and conformity criteria. Part 1: Common cements  |
| • SANS 1491-1       | Portland cement extenders – Part 1 Ground granulated blast furnace slag   |
| • SANS 1491-2       | Portland cement extenders – Part 2 Fly ash.   |
| • SANS 1491-3       | Portland cement extenders – Part 3<br>Condensed Silica Fume   |
| • SANS 110          | Sealing compounds for the building industry, two-component, polysulphide base   |
| • SANS 1023         | Preformed Elastomeric Compression Joint<br>Seals  |
| • ASTM C309         | Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete  |
| • BS 8110 Part 1    | Structural use of Concrete  |
| • AASHTO M153       | Standard Specification for Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction |

##### 4.3.6.2 Cementitious Binders

Cements, complying with SANS 50197-1 shall be used for all concrete work. The use of masonry cements shall not be allowed.

#### 4.3.6.3 Coastal Zone

Where the *Works* is within one kilometre from the sea, one or more of the following cementitious binders shall be used in all concrete applications.

- Blast furnace cement, Type III/A, certified as containing not less than 40% and not more than 50% milled granulated blast furnace slag (MGBS), or
- A blend of Type 1 Portland cement with not less than 40% and not more than 50% MGBS. MGBS shall comply with SANS 1491 Part 1., or
- Fly ash cement Type II/B-V or Portland fly ash cement Type II/B-W, certified as containing not less than 25% and not more than 30% fly ash shall comply with SANS 1491 Part 2.

#### 4.3.6.4 Alkali Reactive Concrete

Alkali Reactive Aggregates shall not be used in this project. The equivalent Na<sub>2</sub>O content of the concrete shall not exceed 2,0 kg/m<sup>3</sup> where % Na<sub>2</sub>O equivalent = % Na<sub>2</sub>O + (0,658 x %K<sub>2</sub>O)

#### 4.3.6.5 Aggregates

Fine and coarse aggregate shall comply with the relevant clauses of SANS 1083.

If required by the *Project Manager*, the *Contractor* shall submit 40kg samples for approval at least 6 weeks prior to the start of concrete construction. No aggregate shall be delivered for use in the works until approval is given.

#### 4.3.6.6 Admixtures

Admixtures containing chlorides will not be permitted in reinforced concrete. Where applicable, and as indicated on the drawings, water-retaining structures shall have 'Penetron Admix' as an additive to the concrete mix to 0.8% of cement content by weight by a certified Penetron batching plant.

#### 4.3.6.7 Cover Blocks

Cover blocks used to ensure the cover to reinforcement shall be made of cement mortar.

Cover blocks shall be dense and have a minimum 28 day crushing strength of 50 Mpa and shall be cured in water for at least 14 days before being used.

Cover/spacer blocks made of plastic will not be permitted.

#### 4.3.6.8 Concrete Quality

The *Contractor* shall submit a quality assurance plan which will ensure compliance with specification and provide acceptable documentary evidence that all specified operations have been carried out satisfactorily.

Where the minimum dimension to be placed during a single pour is larger than 600mm, and the cement content of the reinforced concrete exceeds the following:

- Cement Types I and II/ \* S: 400 kg/m<sup>3</sup>
- Cement Types II/B-V and II/B-W: 450 kg/m<sup>3</sup>

The *Project Manager* may require that measures be instituted to reduce heat development in the concrete.

#### 4.3.6.9 Batching

All cementitious binders shall be batched by full sack or by mass batching with approved precision weighing equipment.

All aggregates shall be precisely measured by mass using approved precision weigh-batching equipment, unless otherwise approved by the *Project Manager*.

Should any variation in the composition of the aggregate become apparent, the *Project Manager* shall be notified and a further sample of aggregate submitted immediately for his approval.

#### **4.3.6.10 Concrete Placing**

The *Supervisor* shall approve the size, shape and depth of any excavation before concrete is placed.

Unless otherwise approved by the *Supervisor*, no concrete shall be placed until the fixed reinforcement has been accepted and confirmed in writing by a Release Certificate signed off by:

- The *Supervisor*
- The Surveyor - It shall be the responsibility of the *Contractor* to call the Surveyor prior to pouring concrete to verify and confirm all levels, co-ordinates and alignment of the structure to be cast.

No concrete shall be placed unless both the above signatories appear on the Pour Release Certificate.

#### **4.3.6.11 Construction Joints**

Unless otherwise shown on the drawings, the exact position of horizontal construction joints shall be marked on the formwork by means of grout checks in order to obtain truly horizontal joints. Stub columns, stub walls and stays on footings shall be cast integrally with the footing and not afterwards, even where another class of concrete is being used. Joint lines shall be so arranged that they coincide with features of the finished work. Where new concrete is to be cast against a hardened concrete surface, neat cement slurry mixed to a creamy consistency shall be brushed onto the cleaned concrete surface. Contraction joints shall be smooth and shall have one coat of lime wash or PVA applied to the older surface prior to casting the fresher concrete.

#### **4.3.6.12 Finishes**

Classification of finishes (Sub clause 5.2.1) - The surface condition required on all exposed finished concrete shall be smooth.

#### **4.3.6.13 Curing Compound**

Unless otherwise directed by the *Project Manager*, the curing compound shall be:

- An approved trafficable, resin-based, white pigmented, membrane forming for slopes flatter than 1:1.
- An approved clear, aesthetically acceptable, membrane forming for all other concrete surfaces, including beam and slab soffits.

The curing compound shall comply with specification ASTM C309, except that the maximum permissible water loss in the test shall be 0,40 kg/m<sup>2</sup>.

Alternatively, the curing compound shall be acceptable if the treated concrete retains 90% or more of its mixing water when subject to the test set out in BS 8110 Part 1 – Chapter 6.6.

#### **4.3.6.14 Curing Compound Application**

The total application rate of the curing compound shall be the greater of the supplier's specification or 0,90 l/m<sup>2</sup>. On textured concrete surfaces, the total application rate shall be 0,90 l/m<sup>2</sup>.

In cases of concrete surfaces with run-off problems, it may be necessary to apply more than one coat of membrane forming curing compound to obtain the specified total or cumulative application rate.



Curing in accordance with SABS 1200 G shall commence on all concrete surfaces as soon as it is practical in the opinion of the *Supervisor*.

On unformed surfaces the curing compound shall be applied after finishing and as soon as the free water on the surface has disappeared and no water sheen is visible, but no so late that the liquid curing compound will be absorbed into the concrete.

On formed surfaces, the exposed concrete shall be wet with water immediately after the forms are removed and kept moist until the curing compound is applied.

Application of the curing compound shall begin once the concrete has reached a uniformly damp appearance with no free water on the surface.

Application of the compound may be done by hand or power spray.

The compound shall be applied at a uniform rate with two applications at right angles to each other to ensure complete coverage.

Pigmented compounds, without a thixotropic agent, shall be adequately stirred to assure even distribution of the pigment during application.

Unless otherwise directed by the *Supervisor*, the initial 24 hour curing of concrete surfaces not covered by formwork shall be carried out by ponding, covering with constantly wetted sand or mats, or continuous spraying in accordance with SABS 1200 G when the following climatic conditions occur:

- Wind velocity greater than 5 m/s and/or
- Ambient temperature is above 25 °C and/or
- The relative humidity is below 60 %

If plastic shrinkage occurs, the concrete, while still plastic, shall be re-vibrated, floated and recoated with curing compound as if no curing has previously taken place.

#### 4.3.6.15 Curing Period

The curing period for concrete containing only CEM 1 shall be 7 days.

The curing period for concrete containing CEM 1 plus cement extenders (MGBS, FA) shall be 10 days.

The curing period will start on completion of the concrete pour and for formed surfaces shall include the time for which forms are still in place after the pour.

#### 4.3.6.16 Concrete Records

The *Contractor* shall maintain the following daily records for every part of the concrete structure and shall make these available at all times during the progress of the work for inspection by the *Supervisor* or *Project Manager*.

- The date and time during which concrete was placed
- Identification of the part of the structure in which the concrete was placed
- The mixed proportions and specified strength
- The type and brand of cement
- The slump of the concrete
- The identifying marks of test cubes made
- Curing procedure applied to concrete placed
- The times when shuttering was stripped and props removed
- The date of despatch of the cubes to the testing laboratory
- The test results.

The records shall be delivered to the *Project Manager* each week except in the case of substandard concrete, when the *Project Manager* shall be informed immediately.



#### **4.3.6.17 Tolerances**

Deviations shall be within the limits listed in SANS 1200 G for degree of accuracy II unless otherwise specified.

#### **4.3.6.18 Testing and Monitoring**

Frequency of sampling and testing shall be as specified in SANS 1200 G.

- If the quantity of concrete from which samples were taken exceeds 40 m<sup>3</sup>, it shall be subject to the testing of a minimum of 3 sets of samples per day from each grade of concrete placed in each independent structure.
- If the quantity of concrete from which samples were taken is less than 40 m<sup>3</sup>, it shall be subject to the testing of a minimum of 2 sets of samples per day from each grade of concrete placed in each independent structure.

#### **4.3.6.19 Formwork (Clause 5.2)**

All exposed concrete corners shall be provided with 20mm x 20mm chamfers.

### **4.3.7. Drainage**

#### **4.3.7.1 Scope of Work**

The scope of work for the construction of a storm water drainage system required for this project shall include for the delivery to site, off-loading and storage on-site, setting out, execution of the works, testing, commissioning and handing over.

The *works* for the Storm-water drainage include the following:

- Excavation, layer works bedding and backfill for Storm-water pipes, channels, manholes and any other stormwater infrastructure required to complete the *works*.
  - Supply and lay concrete Storm-water pipes, channels, manholes and any other stormwater infrastructure required to complete the *works*.
  - Tying into any existing stormwater infrastructure as required to complete the *works*.
- And any other work arising out of or incidental to the above, or required of the *Contractor* for the proper completion of the *works*.

#### **4.3.7.2 Materials**

The supply and delivery to site of the storm water concrete pipes shall conform to specifications detailed in the arrangement drawings and to SANS 677.

#### **4.3.7.3 Brickwork Manholes and Catch Pit's**

The construction of the brickwork manholes and Catch Pit's shall conform the specifications and requirements detailed in the drawings.

All brickwork shall be built in manhole bond i.e. stretchers only on the inside face, using cement mortar as specified.

Bricks shall be well soaked before use and the previous course shall be wetted before bricks are laid thereon.

All joints on the internal face (and the external face above ground) shall be half round recessed and shall be well rubbed with a standard jointing tool of suitable size to ensure that the entire exposed surface on the joint presents a smooth and polished appearance.

Intersecting walls shall be properly toothed with each other and all angles levelled and plumbed. Should cement bricks be utilised, then all internal surfaces shall be plastered with a 12mm thick 3:1 cement sand mortar mix.

When brick built manholes are constructed in wet ground, the external surfaces shall be rendered with 12mm thick 3:1 cement sand mortar mix.

#### 4.3.7.4 Pipe crossings

Where pipes cross with a vertical height difference of less than 150mm, a polystyrene block spacer shall be placed between the pipes.

The fill material around the pipes shall be thoroughly moistened and compacted.

The *Contractor* will be held responsible for any damage to pipes resulting from the construction of a pipe crossing.

#### 4.3.7.5 Cut pipe ends

Ends may be cut on site using the appropriate cutting machinery. Reinforcement exposed by such cutting is to be protected with 20mm thick cement mortar.

#### 4.3.7.6 Pipe Laying and Jointing

Pipes that have been exposed for several hours to direct sunlight and have become hot should not be laid until they have cooled to a temperature of approximately 25°C.

Rubber ring jointing may be carried out in the trench. The pipeline should be laid directly on to the prepared bedding in the trench, and bricks or other hard bodies must not be placed under the pipeline for either temporary or permanent support. Rubber rings used must be those supplied by the pipe or fitting manufacturer. All spigots must be checked to ensure that they are free from burrs, and spigots, sockets and rings must be cleaned with a dry cloth. The pipe end must be chamfered to an angle of approximately 15° and the depth of entry must be marked on the spigot. This mark must be so positioned as to allow a 6mm clearance between the spigot and the bottom of the socket. A thin film of a lubricant recommended by the manufacturer should be applied to each rubber ring and each spigot.

### 4.3.8. Rail - Perway

#### 4.3.8.1 Scope of Work

This part covers all perway-related works.

#### 4.3.8.2 Lifting Existing Track

Existing track to be uplifted, the extent to be confirmed on site.

Rails shall be cut into lengths to allow loading onto a rail train. Solely disc cutting shall be allowed.

Rail cuts shall be 30 mm from the edge of each thermit weld on track and 25 mm in the case of turnouts.

Offloaded rails are to be secured against the adjacent track in accordance with the uplifted rail securing method diagram.

Sleepers shall be removed and placed alongside clear of earthworks or on the adjacent surface drains for removal to stack when the ballast has been uplifted.

Placement of released material between tracks, irrespective of track centres, may not be undertaken without written authority of the *Employer*.

Due care shall be exercised by the *Contractor* to prevent damage to any existing concrete, signals, track or other structure in existence whilst moving material. In particular, the rail of the adjacent track shall be protected from sleeper contact whilst sleepers are moved across track.

The *Contractor* shall also ensure that the signalling to the adjacent tracks is not interrupted by short-circuiting the two rail legs whilst conveying material across any line (if applicable).

Pins, pads and clips shall be removed from the sleepers and transported to suitable storage sites within 72 hours of release. Items to be appropriately sorted and stored. The steel ferrules of sleepers to be to be appropriately sorted and stored. The costs for loading, transporting, offloading, sorting,

packaging and securing as well as for wire brushing of the steel ferrules shall be included in the rate for removal of pins, pads and fastenings.

#### **4.4 COMPLIANCE CERTIFICATE**

- a) The *Contractor* shall submit a full set of completed and valid compliance certificates to the *Employer*, if required.

## **5 LIST OF DRAWINGS**

### **5.1 Drawings issued by the *Employer***

The list of drawings and drawing pack will be issued by the Contractor during construction.

Note: The Contractor should be able to bid without the design drawings from the *Employer*.

## SECTION 2

### 6 MANAGEMENT AND START UP

#### 6.1 MANAGEMENT MEETINGS

It is the *Employer's* specific intention that the Parties and their agents use the techniques of partnering to manage the Contract by holding meetings designed to pro-actively and jointly manage the administration of the Contract with the objective of minimising the adverse effects of risks and surprises for both parties.

Depending on the size and complexities of the *Works*, it is probably beneficial for the *Employer* to hold a weekly risk register meeting (Clause 16.2). This could be used to discuss safety, environmental, compensation events, sub-contracting, overall co-ordination and other matters of a general nature. Separate meetings for specialist activities such as programming, engineering and design management, may also be warranted.

#### Types of Management Meetings

Title and purpose	Approximate time & interval	Location	Attendance by:
Risk register and compensation events	4 hours Weekly on (or at shorter intervals if required)	On site	<i>Project Manager, Supervisor, Contractor</i> and appropriate key persons
Overall Contract progress and feedback	3 hours Every two weeks	On site	<i>Employer, Project Manager, Supervisor, Contractor</i> and appropriate key persons
Technical Meetings	1 hour Daily	On site	<i>Project Manager, Supervisor, Contractor</i> and appropriate key persons
SHE meetings	2 hours Every two weeks	On site	Appointed <i>Contractor</i> and appropriate key persons
Safety and environmental review meetings	1 hour Weekly	On site	Appointed <i>Contractor</i> and appropriate key persons

Meetings of a specialist nature may be convened as specified elsewhere in this *Works* Information or if not so specified by persons and at times and locations to suit the Parties, the nature and the progress of the *Works*. Records of these meetings are to be submitted to the *Project Manager* by the person convening the meeting within five days of the meeting.

All meetings are to be recorded using minutes or a register prepared and circulated by the person who convened the meeting. Such minutes or register are not to be used for the purpose of confirming actions or instructions under the Contract as these are to be done separately by the person identified in the conditions of Contract to carry out such actions or instructions.

The *Contractor* attends management meetings at the *Project Manager's* request as set out in the table above. At these meetings the *Contractor* presents all relevant data including safety, health

and environmental issues, progress reports, quality plans, sub-contractor management reports, as may be required.

## 6.2 DOCUMENTATION CONTROL

Each supplier of documentation and data to the Project is responsible for ensuring that all documentation and data submitted is accurate in terms of numbering, uniqueness, quality, accuracy, format, completeness and currency of information. Data not meeting these requirements will be cause for rejection and returned to the Contractor for corrective action and re-submission.

The Contractor shall submit all documentation (including correspondence and drawings) to Transnet (*Employers*) standards and to the Project Manager's requirements in accordance with the Project Manager's document control procedure. The *Employer* shall use his own suitable document control system for the control, maintenance and handling of all relevant documentation and drawings issued to him.

Should any change be made to documentation or data, which has already been submitted to the Project, then new or revised documentation or data shall be issued to replace the outdated information.

It is the responsibility of all Project participants undertaking work on the Project to ensure they obtain and comply with the relevant requirements to suit their deliverables and Scope of Work. The Contractor is to ensure that the latest versions of the required application software and a suitable 'IT' Infrastructure are in place to support the electronic transmission of documentation. Electronic files submitted to the Project shall be clear of known viruses and extraneous "macros". The supplier of documentation is required to have, at all times, the latest generation of virus protection software and up-to-date virus definitions.

The required number of copies of documentation and data shall be specified in the 'Contractor Documentation Schedule' (CDS). The required number of copies shall be a minimum of two (2) (1 x original + 1 x hard copies), with the corresponding PDF and 'Native' file formats upon final submission.

The Contractor shall ensure adequate resources are available to manage and execute the Document Control function as per the requirements of the Project.

The following documentation shall be provided by the Bidder:

Post implementation the Contractor shall document the logical and physical configuration of the system providing a thorough description of the following information,

Physical information

Equipment Configuration

Post Contract award the Contractor shall provide documented procedures to be followed during setup of all equipment, Documents should be specifically related to the installation performed at each of the Transnet Port Terminals site.

## 6.3 PROCEDURE FOR SUBMISSION AND ACCEPTANCE OF *CONTRACTOR'S* DESIGN

The *Contractor's* documentation shall be issued to the *Project Manager* under cover of the *Contractor's* Transmittal Note indicating all Contract references (i.e. Project No, Contract No, etc.) as well as the *Contractor's* Project Document Number, Revision Number, Title and chronological listing of transmitted documentation. Formats of *Contractor* data submitted is dependent on the project procedure and shall be specified by the *Project Manager*, upon the notified request of the *Contractor*.

The *Contractor* shall deliver both hard copies and electronic media copies (CD Rom) to the *Project Manager* either at the address stated within the Contract Data or at the Project site office.

All electronic documentation shall be submitted by the *Contractor* in Adobe Acrobat (.PDF) and native file format

Acceptance of documentation by the *Project Manager* will in no way relieve the *Contractor* of him undertaking the Works (including all incidental services required).

## 6.4 AS-BUILT DRAWINGS, OPERATING MANUALS AND DATA PACKS

### 6.4.1 THE *CONTRACTOR* PROVIDES THE FOLLOWING:

#### 6.4.2 RED LINE/FINAL DOCUMENTATION

- All Red Line information to be signed off by the *Contractor's* responsible Professional/Technologist before issuing to the *Employer*.

#### **Installation, Maintenance and Operating Manuals and Data Books**

- The Contractor provides manuals in an A4 hard covered, red, grease and waterproof binder, using 2 ring type binders. The manuals are well indexed and user friendly and include a summarized Table of Contents.
- Drawings and charts larger than A4 are folded and those greater than A3 are enclosed in an A4 plastic pocket of adequate strength.
- The Contractor submits the draft Table of Contents to the Project Manager for acceptance prior to the compilation and official submittal of the manuals.
- The originals of all brochures shall be issued to the Project Manager. When a general brochure is applicable to a range of equipment, then the specific item, catalogue number or model number shall be stated, which is best achieved by introducing a separate index page, which cross-references the specific item to a tag number.
- The address, phone numbers, fax numbers and reference numbers of all Sub-Contractors is provided
- Where manuals include drawings that still need to be revised to "As-Built" status, and such manuals are required prior to 'As-Built' status, the manual will not be considered to be in its final form until the "As-Built" version of each such drawing has been incorporated. The required number of copies of the manual (s) shall be as specified by the *Project Manager* and submitted per type or model number of equipment included in the Contract, or as specified by the *Project Manager*.
- All electronic copies (pdf) of Data Packs to be properly indexed.
- A typical example of what the binder/file (s) shall be marked with on the spine and the front cover is as follows: -
  - Project No./Name
  - Manual Title, e.g. Installation, Maintenance and Operating Manual
  - FBS No. and Title
  - Manual Numbering (e.g. Volume 1 of 2, etc.)
  - Contract Number
  - *Contractor* Name
- Unless otherwise stated in the CDS, the required number of copies of all As-Built/Final/Data Packs shall be:
  - 3 x hard copies (Full size)
  - 3 x CD Roms with Adobe Acrobat (.pdf) and "Native" formats

## 6.5 SAFETY RISK MANAGEMENT

#### **Health and Safety Standard**

- The Contractor must comply with the requirements of the Project Health and Safety Specification – PHSS-0001 and OHS Act No. 85 of 1993 and its applicable Regulations.



- The Contractor must comply with Post COVID-19 Lockdown Construction Site Health and Safety Guidelines- TPT-IMS-HS-SOP-009.001 and Disaster Management Act: Regulations relating to COVID-19.

### 6.5.1 **CONTRACTOR'S GENERAL REQUIREMENTS FOR HEALTH AND SAFETY**

The *Contractor* is solely responsible for carrying out the work under the Contract having the highest regard for the health and safety of its employees, Transnet's employees and persons at or in the vicinity of the Site, the *Works*, temporary work, materials, the property of third parties and any purpose relating to the *Contractor* carrying out its obligations under this Contract.

The *Contractor* must initiate and maintain safety precautions and programs to conform to all applicable Health and Safety laws or other requirements, including requirements of any applicable government instrumentality and client corporate, business unit and site requirements. The *Contractor* must, at its own cost, erect and maintain safeguards for the protection of workers and the public. The *Contractor* must manage all reasonably foreseeable hazards created by performance of the work. The *Contractor* must:

- Provide all things and take all measures necessary for maintaining proper personal hygiene, ensuring safety of persons and property and protecting the environment at or near the Site.
- Avoid unnecessary interference with the passage of people and property at or near the Site.
- Prevent nuisance and excessive noises and unreasonable disturbances in performing the Services.
- Be responsible for the adequacy, stability and safety of all of its site operations, of all its methods of design, construction and work and be responsible for all of the work, irrespective of any acceptance, recommendation or consent by the *Employer*, its *Contractors*, employees, agents and invitees, or any Government Body.

### 6.5.2 **COSTS FOR THE ABOVE ARE BORNE BY THE CONTRACTOR.**

The *Contractor* must comply and is responsible for ensuring that all of its Sub-*Contractors* comply with the relevant legislation(s) and statutory regulations for health and safety, the Transnet Health and Safety requirements included in the Contract and other document pertaining to health & safety contained in the Programme Health & Safety Management System and include standards, policies, procedures, guidelines and safe work instructions.

### 6.5.3 **CONTRACTOR'S HEALTH AND SAFETY MANAGEMENT**

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 *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;
- Sub-contractor Alignment procedures – a process must be in place for the assessment of sub-*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. Site Supervision
- The *Contractor* shall comply with OH&S Act – Section 8, 9, 13 and 16 and the Construction Regulations 2014.
- The *Contractor* must nominate and appoint a responsible person on site to whom the *Project Manager* may refer in connection with the *Works*. Persons are nominated for all shifts worked or whilst any activity relating to the Contract is being performed on site and must have the authority to bind the *Contractor* with respect to the Contract. (OH&S Act - 16 Section (2)).
- The *Contractor* must ensure that the performance of all specified *Works* is supervised throughout by a sufficient number of qualified and competent appointed representatives of the *Contractor*, who have experience in the type of work specified. (OH&S Act – Construction Reg. 8 (1) and 8 (2.))
- Note: No work may commence and or continue without *Supervisory* Appointees present on site. The *Contractor's* Site *Supervisor* must be equipped with a mobile telephone with



message bank and/or pager or an equivalent communication device so that communication throughout the Contract can be maintained at all times.

- The *Contractor's Site Supervisor* must provide a list of names and contact telephone numbers of all *Contractors* and Sub-*Contractor's* contact persons on Site. This list is updated as a new *Contractor* or sub-contractor employee commences on Site.
- The *Contractor's Site Supervisor* must keep a record of all employees, including date of induction, relevant skills and licences, and be able to produce this list at the request of the *Supervisor*.
- The *Contractor's Site Supervisor* must complete manning sheets describing the day's activities, labour numbers and classifications and issue these to the *Supervisor* prior to 9.00 am on a daily basis.
- The *Project Manager's Site Safety Representative* is notified of any new starter with evidence of induction and site-specific induction prior to commencement of work.

#### **6.5.4 CONTRACTOR'S SAFETY OFFICER**

The *Contractor* must appoint a full-time Health and Safety Officer for the duration of the Contract who is registered with the SACPCMP (The South African Council for Project Construction Management Professions). If more than 100 employees are deployed on the project site(s) (directly or through sub-*Contractors*), at least two full-time Health and Safety Officers must be appointed, with an additional Health and Safety Officer appointed for every 100 additional employees thereafter.

The Health and Safety Officer must be on site when work commences at the start of the day and must remain on site until all activities for that day (including the activities of sub-*Contractors*) have been completed. A Health and Safety Officer 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 Health and Safety Officer.

Each *Contractor* Health and Safety Officer 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 Manager*) to help always ensure compliance ;
- 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-*Contractors*), 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 they have made adequate provision of safety officers as per the *Works* Information. The *Contractor* must ensure that the Health and Safety Officer is adequately equipped to enable him to perform his duties effectively. Each Health and Safety Officer 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 Health and Safety Officer must be computer literate, fluent in English, and must have the following minimum qualifications, training and experience:
  - At least 5 years' experience as a Health and Safety Officer on construction projects;
  - SAMTRAC or NEBOSH or Modern SHEQ Risk Management training course 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).
- Registered as a Health and Safety Officer or Health and Safety Manager with SACPCMP depending on the size of the project and on the risk.
- Before placing a Health and Safety Officer on the project site(s), the *Contractor* must forward a copy of the person's CV to the nominated project management representative or to the Programme Health and Safety manager for review and acceptance. A proposed

candidate may be rejected should he not meet the experience and/or qualification requirements, or due to poor work performance on previous projects.

### 6.5.5 **CONTRACTOR'S SAFETY MANUAL**

The *Contractor* must provide a hard copy of its safety manual, policies and procedures to the *Project Manager* for acceptance prior to the commencement of any site work. The *Contractor* must ensure that his personnel, at all times, strictly observe and comply with the procedures set out therein.

The *Project Manager* or the *Project Manager's* nominated Representative may from time to time request safety procedures applicable to the area of operations. The *Contractor* must forward to the *Project Manager* any updates or revisions to its safety manuals, policies or procedures as soon as practicable following revision or update.

The *Project Manager* may require the *Contractor* from time to time to supplement its safety manual, policies and procedures with guidelines and/or operating standards provided to the *Contractor* by the *Project Manager*. The *Contractor* must comply with such requests where the request is consistent with the requirements of the Contract. The *Contractor* must give prompt written notice to the *Project Manager* of any objection to the requested supplement, including the reasons for objection. The *Project Manager's* rights under this Clause are not intended, and must not be construed, to relieve the *Contractor* from any obligations to ensure compliance with all provisions of this Contract.

### 6.5.6 **PERFORMANCE MEASUREMENT AND REPORTING**

#### 6.5.6.1 **Health and safety statistics**

The *Contractor* and each of its Sub-*Contractors* must complete and submit Health and Safety statistics to the *Project Manager* or the *Project Manager's* nominated representative, or as amended by the *Project Manager*, before mid-day on the Friday of each week. The *Contractor* must submit monthly Health & Safety Statistics before mid-day on the last day of each month to the *Project Manager's* nominated representative.

#### 6.5.6.2 **Safety management records**

The *Contractor* must submit to the *Project Manager* for acceptance a schedule of the specific Health and Safety records it intends to maintain for the Contract. As a minimum, such records are as specified by applicable legislation. Copies are provided to the *Project Manager* or the *Project Manager's* nominated Representative if requested.

#### 6.5.6.3 **Field technical/safety audit by the *Project Manager***

The *Project Manager* or the *Project Manager's* nominated Representative has the right to conduct audits/inspections of the Consultant, Professional Service Provider (PSP) and *Contractor* Safety Management Plan implementation, operations, equipment, emergency procedures, etc., at any time, and the *Contractor* must fully cooperate with the *Project Manager* or the *Project Manager's* nominated Representative during such audits/inspections. The *Project Manager's* rights under this clause does not, must not and will not relieve the Consultant, Professional Service Provider (PSP) and *Contractor* of its own obligations to conduct audits and reviews of its own Health and Safety performance.

Where such audits/inspections reveal deficiencies in the *Contractor* procedures, drills, training or equipment, or non-conformities with the *Contractor* accepted project Safety Management Plan, of a minor nature (Risk Rating of 6 or less), the *Contractor* must investigate the cause of the nonconformity and initiate corrective and preventive action to rectify such deficiencies and non-conformities and prevent recurrence as soon as practicable.

Where such audits/inspections reveal deficiencies of a major nature (Risk rating of 7 or greater), the *Contractor* must stop work on the operation/activity concerned, immediately investigate the



cause of the nonconformity, and initiate corrective actions to rectify such deficiencies and non-conformities and to prevent recurrence. These corrective action plans is submitted to the *Project Manager* for review and comment within 24 hours of the audit finding.

Where such deficiencies include an unsafe practice or a breach of the statutory or the Contract's requirements, the *Project Manager* or the *Project Manager's* nominated Representative may in accordance with the General Conditions of Contract suspend the work associated with the unsafe practice or breach until the deficiency is rectified.

The *Project Manager* or the *Project Manager's* nominated Representative will establish a schedule of regular field safety audits which will be based on an audit tool aligned to the *Contractor* Safety Management Plan and site operations and activities. The *Contractor* audit conformance will be assessed as a percentage and where conformance is better than 90% it will be considered satisfactory and the *Contractor* must develop and implement an action plan within 4 weeks, to be reviewed at the next regular audit. Where the *Contractor* level of conformance is between 75 – 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 *Contractor* conformance is less than 75% the *Contractor* must stop work until an investigation of the cause/s has been completed and corrective actions have been developed and implemented by the *Contractor*.

The *Contractor* must provide to the *Project Manager* or the *Project Manager's* nominated Representative, at a time to be agreed, but not to exceed monthly intervals, a regular status report on all outstanding corrective actions until they are successfully closed out.

#### **6.5.6.4 Unsafe act/condition auditing**

The *Contractor* must implement a system to recognize, correct, and report unsafe acts/conditions (Unsafe Act/Condition Auditing) associated with all Site activities.

All such observations must be recorded and delivered to the TPT Health and Safety Practitioner.

#### **6.5.6.5 Involvement, communication and motivation**

The *Contractor* and sub-contractor's workforce must, through their supervision, safety notice boards, toolbox meetings and daily pre-start meetings be kept aware of safety related matters.

#### **6.5.6.6 Safety meetings**

The *Contractor* must implement and comply with OH&S Act, Section 19

The *Contractor* must conduct weekly safety meetings with his employees to foster safety awareness. Copies of minutes and action items arising from such Toolbox meetings is submitted or otherwise made available for review by the *Project Manager* or the *Project Manager's* nominated Representative.

Such meetings should at least address:

- Accident / safety incidents
- Hazardous conditions
- Hazardous materials / substances
- Work procedures
- Protective clothing / equipment
- Housekeeping
- General safety topics
- Job or work look-ahead issues
- Safety statistics
- Significant Safety Occurrences (SSO)





The *Contractor* must conduct at least one formal safety meeting per month and must maintain appropriate records of attendance and meeting content. Such records are made available to the *Project Manager's* Representative. In addition to Daily Safe Task Instructions, the *Contractor* must conduct at least weekly "tool box" meetings to discuss safety issues and procedures.

#### **6.5.6.7 Pre start safety briefings**

The *Contractor* must hold documented Daily Safe Task Instructions with each work team before the start of each shift. Attendance records and brief topic notes is kept for auditing and record purposes. Safety Review Meetings

- The *Contractor* Site Manager and a Site Safety Representative must take part in weekly safety review meetings between the *Contractor* and the *Project Manager* or the *Project Manager's* nominated Representative.
- The *Contractor* must attend all project safety meetings as outlined in the Project Safety Management Plan.

#### **6.5.6.8 Site safety review committee**

The *Contractor* complies with the requirements of the SSRC with respect to his own activities and others on the Site and Working Areas.

#### **6.5.6.9 Hazop review**

The *Contractor* participates in HAZOP reviews upon the instruction and direction of the *Project Manager*.

The reviews may include, but not be limited to, studies to ensure that the Plant is built and operated as designed and that personal safety, employee health and environmental protection systems conform to the *Employer's* and legislative requirements.

#### **6.5.6.10 Job safety analysis**

The *Contractor* completes a JSA prior to carrying out any operation on the Site and/or Working Area to the approval of the *Project Manager*.

#### **6.5.6.11 Lines of communication**

The following personnel act on behalf of the *Project Manager* and may communicate directly with the *Contractor* and his key persons with respect to the SMP:

- Construction Manager (CM)
- Project Site Safety Manager (PSSM)

#### **6.5.6.12 Roles and responsibilities**

- The roles and responsibilities of the various personnel acting on behalf of the *Project Manager* with respect to the SMP and health and safety issues are as stated in the paragraphs following:
- Construction Manager
- The CM is responsible (in the context of the SMP only) for health and safety on the Site and Working Areas and reports to the *Project Manager*.
- The CM specific tasks (in the context of the SMP) are:
- Implement the safety management system
- Monitor compliance to the established safety management system
- Ensure risk is at an acceptable level
- Ensure Consultant Construction Management Team are competent

- Provide for:
- Planning, organisation, leadership and control
- Particular technical competencies for critical work
- Supervision and control on each shift
- Regular monitoring and assessment
- Workplace inspections
- Project Site Safety Manager
- The PSSM is responsible for ensuring that the *Contractor* complies with the SMP. The PSSM acts on behalf of the *Project Manager*.
- The PSSM specific tasks (in the context of the SMP) are:
- Define, in accordance with the HSSP, the:
  - Safety program (instructions, training, meetings, inspections, incentive)
  - Health and medical program
- Checks that *Contractors* have issued their Health and Safety plans, PPSPS and procedures before the beginning of work
- Organizes safety awareness campaigns
- Promotes communication on all health and safety matters (awards, incentives, meeting/inspections/audits reports)
- Checks conformance of equipment to technical requirements and regulations.
- Issues and address the site EHS activities reports
- Promotes everybody's best efforts to keep accident frequency and severity ratios at their lowest level
- Promotes a proper and continuous housekeeping of Plant and temporary facilities in order to create the most suitable conditions for workers to work and to be encouraged to follow HSE requirements
- Conducts *Worksite* EHS walks with all *Contractors*, and directs appropriate corrective actions
- Monitors that all factors likely to improve health and safety are taken into consideration, particularly those which lead to:
- Promoting personnel protection as an absolute requisite
- Investigating, identifying and neutralizing potential hazards
- Close coordination with all parties involved in construction in order to avoid overcrowded areas and dangerous operations
- Thorough preparation of work critical phases
- Close contacts to local EHS authorities
- Continuous follow-up in order to correct immediately unsafe acts and situations
- In case of accident, he takes actions necessary to:
  - Initiate quick interventions of the emergency means.
  - Check that first aid and evacuation of injured persons are properly carried out.
  - Obtain a clear accident report from the sub-contractor concerned.
  - Report immediately to the Construction Manager.
  - Investigate to identify the root causes of all incident and near misses.

#### 6.5.6.13 Commissioning safety study

The *Project Manager*, through his Construction Management Team, will facilitate and coordinate a formal Commissioning Safety Study and ensure that required procedures are prepared prior to the commencement of the commissioning phase.

The Commissioning Safety Study will provide a final checkpoint for the completed work and is part of the process for ensuring that all necessary actions have been completed. The elements to be considered include:

- Electrical integrity systems are in place (e.g. equipment tests and inspections of critical equipment, quality control procedures, etc.) which will confirm that construction, equipment and materials are in accordance with design specifications
- Formal hazard analyses for pre-commissioning and commissioning activities have been completed, appropriately documented and communicated, and are available to all personnel.
- Punch-list work has been sufficiently completed so that installations are safe to apply hazardous energy.
- Documentation relevant to any modifications has been created/updated.
- Safe operating, maintenance and emergency procedures are in place.
- Operating and maintenance manuals are available and training of commissioning employees has been completed.
- As Built drawings are available.
- A Commissioning Permit (to apply hazardous energy) is developed and implemented.

The *Project Manager* will ensure that after commissioning there is a formal documented hand over to operations and maintenance personnel and others who will be impacted by hazards that have been identified during project activities. This will involve communication of any changes to the process hazards, procedures and operating philosophy. Safe systems of work will be established and updated throughout the Project. Safe systems of work will be subject to on-going review to ensure their effectiveness. Site-wide Permits to Work will be used as the basis of safe systems of work for specified hazardous activities.

#### 6.5.6.14 Working at nights

A site specific health and safety management plan should be well documented and structured so that both *Employers* and employees can benefit from its use. The following are recommended components of a safety management plan for night time *Works*.

#### 6.5.6.15 Site Personnel responsibility

It should be determined and stated clearly in the site specific health and safety management plan the responsibility of each individual at construction site for night time *Works*. *Project Manager*, Engineers, Designers, Safety Officer and Site *Supervisors* as well as workers each have their specific responsibility to make sure the highest level of priority are given towards safety and health issues.

The *Contractor* must ensure adequate provision of safety officer personnel are present whenever working at night activities are taking place.

#### 6.5.6.16 Permission to work at night

The *Contractor* shall apply in writing for permission to work at night and should be obtained from the relevant authority in this case *Project Manager*, before construction *Works* at night is carried out. The *Contractors* should submit their application for work at night permit to Client representative and it is advisable to follow all requirements enforced by the authority to



executing night time construction *Works*. It is recommended that the *Employer's* representative should also notified TPT responsible personnel about intended night shift work.

#### **6.5.6.17 Housekeeping**

Accidents can occur as a result of poor housekeeping. Hazards at construction site are the same for both day and night shift while the risks of injury are much higher during night *Works* because of the inherent poor illumination. It is essential that the workplace is kept clean and tidy to ensure safety and prevent accidents.

#### **6.5.6.18 Emergency preparedness and response (EPR)**

*Contractor* should developed and implement the EPR that is specifically night time environment and submit for approval before work at night is carried out. A well-established EPR can help both *Contractors* and employees to prepare; response and recover should a disaster occur.

#### **6.5.6.19 Public safety**

When construction *Works* involves public area, it is important to make sure the safety of the public. The *Contractor* must consider the following when planning for night time work; identify the hazards for example construction vehicle movement or too much glare from lighting equipment and plan for vehicular movement to not interrupt peak hours and make sure adequate supervision is provided for such movement.

*Contractor* must provide sufficient signage to warn the public and put barriers at a safe distance to keep the public away.

Set up a safe walk ways where it is unavoidable to work near or in public vicinity.

Arrange noisy equipment or machinery at furthest point from the public or adopt an engineering control to reduce the noise.

When overhead crane is operating near the public, clear off the area and make sure adequate supervision is in place.

Schedule for daily cleaning of the adjacent public road and filling up holes as well as uneven surfaces.

#### **6.5.6.20 Types of risks and factors affecting night time work**

In order to decide when to conduct night time work, factors (parameters) affecting night time work must be identified. The *Contractor* must ensure the following factors are identified:

- Risk
- Illumination
- Nuisances
- Productivity
- Cost
- Safety

The *Contractor* must ensure that they implement the following step in an effective risk management program as to identify possible risks. Specific concerns related to night time work zones include poor visibility and work quality, staffing issues, unwanted noise and glare, decreased worker and driver alertness, impaired drivers, higher vehicle speeds, increased labour costs, materials and traffic control, and problems in logistics and supervision. These risks are categorized broadly as safety, cost/production and schedule, quality, organizational relationships, technical, construction, economic and environmental.

#### **6.5.6.21 Risk**

Night time construction introduces numerous risks to a construction project. One clear set of examples is driver and worker fatigue and reduced visibility, which are factors that could increase safety risks. Other major factors contributing to the risks of night time work are human factors such as sleep, stress, work, social or domestic issues, and psychological characteristics, such as appetite and safety. Additional factors associated with the risks of night time construction work zones are reduced work space for machinery and equipment movement, inadequate lighting, high speed of traffic during the night, and long working hours. Working at night does not supersede the requirements of the Project Health and Safety Specification requirements that enforces compliance during day shift.

#### **6.5.6.22 Medicals**

Pre-employment medicals, including chest X-ray examinations, specific for the Contract will be required for all employees working on the Site regardless of duration spent on Site. Exit medicals, including chest X-ray examinations will be required at the end of the Contract. These medical examinations must be carried out by a registered Occupational Health Practitioner.

#### **6.5.6.23 The *Contractor* must ensure that budget provision for all requirements is in place.**

### **6.6 ENVIRONMENTAL CONSTRAINTS AND MANAGEMENT**

6.6.1 All work is to be conducted in accordance with the principles of the National Environmental Management Act, 1998 (Act no 107 of 1998) but not limited to other applicable regulations as well as the accepted environmental good practice. In addition, the Contractor is expected to comply with all applicable Metropolitan Municipality bylaws.

6.6.2 All aspects of the *Works* must comply with the *Employers* environmental standards.

6.6.3 The Contractor shall be responsible for rehabilitation/reinstatement and cleaning all areas to the satisfaction of the *Employer's* Project Environmental Manager or Environmental Officer.

### **6.7 QUALITY ASSURANCE REQUIREMENTS**

Refer to EEAM-Q-009 for the *Purchaser's* Quality Management. Special attention must be paid to the following:

- Quality management objectives.
- Documentation and change control procedures.
- Quality control procedures that will apply to purchased materials.
- Quality control plan for all components manufactured or supplied to ensure conformance.
- The identification of suitable hold points to ensure proper quality assurance throughout manufacturing.

The *Contractor* shall ensure that the quality assurance requirements placed on him under this Contract are transferred into any sub-contracts.

Quality system requirements shall be applied on all sub-contracts to the point where the acceptability of supplies can be demonstrated solely by the conduct of inspection and/or examination of goods upon receipt at the designated point of delivery.

The *Contractors* quality plan shall include or reference the quality plans of sub-contractors.

### **6.8 PROGRAMMING CONSTRAINTS**

6.8.1 The *Contractor's* construction WBS as a minimum shall include but not be limited to the following WBS Elements:

- Procurement and delivery of all long lead items necessary to provide the *Works* in line with the stipulations of the *Employer's Works* Information. Long lead items include but are not limited to; Plant, equipment, materials and any other resources, as required to provide both temporary and permanent *Works*.
  - Manufacturing and or Fabrication both on and off-site which may include but is not limited to; Plant, equipment, materials and any other resources, as required to provide both temporary and permanent *Works*.
  - Preparation and Approvals of Health & Safety, Environmental and Quality Documentation.
  - Approval of any applicable permits, permissions and licenses, including inductions
  - Site Establishment
  - Civil Works:
    - a. Designs/drawings/specifications
    - b. Tarmacadam Paving – final course
    - c. Layerworks – sub-grade course
    - d. Palisade fencing
    - e. Stack markings
    - f. Concrete and kerbs to island
    - g. Testing and commissioning
- 6.8.2 The *contractor's* construction programme shall correspond with the *contractor's* approach paper.
- 6.8.3 The *contractor* shows on each programme he submits to the *project manager*, the requirements of the [cemp, ses, pes and smp] as described under the relevant sections of the *works* information, together with the associated environmental method statements.
- 6.8.4 The *employer* (including the agents of the *employer*) operates on *site* during dates or timings when the *contractor* has completed certain elements of the *works* and/or during the contract period as stipulated in this *works* information.
- 6.8.5 *Others* operate on *site* during dates or timings when the *contractor* has completed certain elements of the *works* as stipulated in this *works* information.
- 6.8.6 The *contractor's* first programme submitted for acceptance shall be agreed during the pre-contract negotiation period, and no later than the period stipulated under contract data part one (2 weeks after the contract date).
- 6.8.7 The *contractor* complies with the *employer's* high-level programme when he submits his first programme for acceptance.
- 6.8.8 The *contractor* presents his first programme for acceptance and all subsequently revised programmes (see ECC clauses 31.2 and 32.1) in hard copy and soft copy format.
- 6.8.9 The *contractor* shows on his programme submitted for acceptance and all subsequently revised programmes, the critical path or paths and all necessary logic diagrams demonstrating sequence of operations.
- 6.8.10 The *contractor's* programme shows duration of operations in working days as per the stipulated definition of the work days and hours in the *employer's works* information.
- 6.8.11 Each programme submitted by the *contractor* to the *project manager*, is fully cost and resource loaded (people, equipment, plant, materials & other resources) with the exception of the *contractor's* tender programme submission.
- 6.8.12 The *contractor* shows on each programme he submits to the *project manager*, the requirements as listed in the NEC 3, ECC, and clause 31.2.
- 6.8.13 The *contractor* attends, participates in and makes a meaningful contribution to, planning initiation & set-up meetings held during the pre-contract negotiation period and no later than the period stipulated under *contract data part one* (2 weeks after the contract date); to agree and set-up - including but not limited to - the first schedule for acceptance; monitoring, control

and reporting requirements; proposed templates and planning/scheduling procedures to be complied with for the duration of the project.

6.8.14 The *contractor* shows on each revised programme he submits to the *project manager* a resource histogram showing planned progress versus actual, deviations from the accepted programme and any remedial actions proposed by the *contractor*, including a spread sheet identifying instances of resource over-allocation and/or conflicts, accompanied by proposed resolutions.

6.8.15 The *contractor's* programme shows the following levels:

- Level 1 Master Schedule – defines the major operations and interfaces between engineering design, procurement, fabrication and assembly of Plant and Materials, transportation, construction, testing and pre-commissioning, commissioning and Completion.
- Level 2 Project Schedule – summary schedules 'rolled up' from Level 3 Project Schedule described below.
- Level 3 Project Schedule – detailed schedules generated to demonstrate all operations identified on the programme from the starting date to Completion. Individual operations will be assigned a code. The *Employer* notifies any subsequent layouts and corresponding filters on revised programmes.
- Level 4 Project Schedule –detailed discipline/speciality level schedule decomposed to the appropriate levels of detail in order to accurately substantiate activity scope and activity duration estimates; developed and maintained by the *Contractor* relating to all operations identified on the programme representing the daily activities by each discipline, with activities and operations adequately decomposed in order to accurately represent the effort required to execute said activity/operation and support accurate duration estimates.
- A narrative status report, which includes but is not limited to status and performance of operations on the *Site* and Working Areas; status and performance of operations outside the Working Areas; manpower histograms; S-curve of overall progress; critical action items (top 10) and deviations from the Accepted Programme and action plan to rectify.
- Basis of Programme/Schedule document detailing but not limited to the following minimum requirements:
  - Basis of latest accepted programme, including an overview of assumptions, constraints, specific and quantified resource allocations, productivity assumptions and basis of calculation, identification and justification of general scheduling provisions such as calendars and working times, lags, date constraints, activity durations longer than one reporting period, etc.
  - Description of network logic and sequencing.
  - Description of general construction approach.
  - Description of approach to allocation, use and management of all resources dedicated to the project.
  - Description of and trend analysis of critical risks as identified through schedule risk analysis and included in schedule contingency and or Time Risk Allowance provisions.
  - Discussion regarding the basis, method of calculation and validity of the critical path and near critical paths, (interrogate longest path and total float as contained in the programme).

- Reporting on change management, i.e. identify and record any deviations/changes that have taken place within the previous reporting cycle, and their resultant impact on the remaining *Works* and as identified and highlighted in the current revision of the programme for acceptance.
- Identification critical activities, as well as top 10 near critical activities and undertake trends analysis on such activities with the aim of identify any deviations from planned performance.
- Identification of any recovery and or mitigation action required in order to neutralise any deviations.

## 6.9 REPORTING AND MONITORING

The Contractor attends weekly planning meetings and Contractual matters in line with NEC ECC core clauses 31, 32.

The *Contractor* submits programme narrative report to the *Project Manager* at weekly intervals in addition to the intervals for submission of revised programmes stated under *Contract Data Part One*. The *Contractor* also submits fortnightly expediting report and monthly programme narrative report to *Project Manager*.

The *Contractor* completes an assessment of all activities in progress and to completion to determine physical percentage complete, forecasted completion dates, deviations from the Accepted Programme and proposes remedial action to rectify deviations.

The *Contractor* shows on each revised programme he submits to the *Project Manager* a resource histogram showing planned progress versus actual, deviations from the accepted programme and any remedial actions proposed by the *Contractor*.

The *Contractor* submits the programme narrative report detailing the status and performance of operations on the Site and Working Areas, status and performance of operations outside the Working Areas, man-power histograms, Plant and equipment histograms, S-curve of overall progress, and critical action items (top 10). Report shall indicate "progress this period" and "progress to date".

The *Contractor's* **weekly** project progress report (narrative report) includes but is not limited to:

- Level 4 Project Schedule – showing two separate bars for each task i.e. the primary bar must reflect the current forecast dates and the secondary bar the latest Accepted Programme.
- Progress Spreadsheet detailing actual progress achieved (target/planned quantity versus actual quantity) on current (critical) activities for the previous week, planned progress for the current week, deviations and proposed recovery for each activity in question. A 1-week Look Ahead Spreadsheet in line with the aforementioned stipulations to be included. Priority to be given to identification of critical activities, progress and any deviations from planned performance in this regard.
- 3-week Look Ahead Schedule showing two separate bars for each task i.e. the primary bar must reflect the current forecast dates and the secondary bar the latest Accepted Programme.

- Dependencies/Deliverables matrix detailing interim approvals and/or any other inputs/requirements from *Employer/Supervisor/Project Manager/Others* or any other project *Stakeholder* in line with the activities identified in the 3-week Look Ahead Schedule.
- Interfacing Matrix, detailing timeous identification of any requirements for providing the *Works* and/or *Works* to be executed by *Others* and any other *Stakeholders* party to this Contract in line with the stipulations of the *Works Information*.
- Manpower Histogram – reflecting actual, forecasted and planned activities.
- Plant and Equipment Histogram – reflecting actual, forecast and planned activities.
- S-curves – reflecting the actual percentage complete versus the planned percentage for the overall Contract.
- Identification critical activities, progress and any deviations from planned performance.
- Adherence and actual performance achieved with regards to Environmental, Health & Safety and Quality Management.

The *Contractor's* **fortnightly** expediting report includes but is not limited to:

- The *Contractor* shall submit to the *Project Manager*, a bi-weekly report on progress of any off-site manufacturing activities undertaken during the previous half-month.
- Based on the Accepted Programme, the *Contractor* submits a cash flow forecast report that details the anticipated monthly cash flow, represented by the expected assessment of the amounts due, to the *Project Manager*. The cash flow forecast is to be extrapolated from the latest Accepted Programme through the mechanism of the cost loaded schedule or other similar methodologies with the prior approval of the *Project Manager*.

The *Contractor's* **monthly** project progress report includes but is not limited to:

- Monthly, the *Contractor* completes an assessment of all activities in progress and to completion, and accordingly revises and submits the updated programme for acceptance and cash flow forecast report detailing any variances and proposes remedial actions to rectify deviations.
- The *Contractor's* monthly programme narrative report is submitted a week before the last Friday of each month, or as required by the *Project Manager*. The report shall indicate "progress this period" and "progress to date" and shall include, but is not limited to, the following;
  - Summary of progress achieved during the reporting period.
  - Latest Accepted Programme.
  - Deviations from the current Accepted Programme and action plans to rectify.
  - Project milestones table – planned versus actual and forecast.
  - Status and performance of operations on the site and Working Areas.
  - Status and performance of operations outside Working Areas.





- Cash flow forecast report.
- Digital photographic record of the progress of the *Works*.
- Manpower histograms, including a control spread sheet detailing specific over-allocation and/or conflicts in allocation of resources.
- *Contractor's* Plant and equipment histograms, including a control spread sheet detailing specific over-allocation and/or conflicts in allocation of resources.
- S-curves of overall progress.
- Critical action items list (top 10).

#### 6.10 Other conditions

6.10.1 The *contractor* shall comply with the specific provisions of NEC 3 ECC clauses 24.1 when supplanting any planning resources previously appointed in line with the provisions of this contract. Appointment shall follow upon written approval of the *project manager*.

6.10.2 The *employer* (including the agents of the *employer*), reserves the right to exercise the provisions of nec 3 ECC clause 24.2, where deemed necessary in order to meet the *employer's* objectives as stipulated in paragraph 1.2 of the *works* information.

#### 6.11 *Contractor's* management, supervision and key people

The *Contractor* shall make an adequate, experienced and stable project team available for the duration of the Contract. Every effort must be exercised by the *Contractor* to minimise the replacement of project team members in order to ensure optimum Contract management continuity and efficiency.

The *Contractor* employs full time, fully qualified and experienced key persons who have been delegated sufficient authority to manage the Contract efficiently on Site during completion of the *Works* including and not limited to:

- Contracts Manager
  - The Contracts Manager should at least have a minimum qualification of a BSc. Eng./B.Tech./National Diploma in Civil Engineering and a ECSA/SACPCMP registration as Pr. Eng/Pr. Tech. Eng./Pr. Cert Eng./Pr. CPM with at least 10 years of experience in civil infrastructure projects. The Contracts Manager must have experience working with the NEC3 Engineering and Construction Contract in at least 3 separate projects, with at least 1 project in excess of R 20M in civil Works component value.
- Construction Manager X 1
  - The Construction Manager should at least have a minimum qualification of a B.Tech./National Diploma in Civil Engineering and a ECSA/SACPCMP registration as Pr. Eng/Pr. Tech. Eng./Pr. Cert Eng./Pr. CM with at least 10 years of experience in civil infrastructure projects. The Construction Manager must have experience working with the NEC3 Engineering and Contract in at least 1 project in excess of R15m in civil Works component value.
- Site Agent X 1
  - The Site Agent must have at least 10 years of experience in civil infrastructure projects.

Foremen:

- Foreman (building and civil infrastructure) X 1
  - Building and civil infrastructure Foreman must have a minimum of NTC 4 Trade Certificate in Civil Engineering with at least 10 years of experience in building services and civil /building construction.
- Planner X 1,
  - The planner should at least 5 years of experience working in civil projects as planner.
- Quality Assurance Officer X 1,
- Quality Assurance officer should have a Diploma or Certified qualification in quality systems with relevant quality experience in construction. At least 5 years of experience in a quality systems environment and relevant experience in civil construction projects is required.
- Safety, Health and Environmental Officer
- Health and Safety Officer should have SAMTRAC, NEBOSH and Modern SHEQ Risk Management (MSRM) training course with accredited health and safety service provider as a minimum qualification and registered as a Health and Safety Officer with SACPCMP. At least 5 years' experience as a Safety, Health and Environmental Officer on construction projects. The SHEO must also have undergone Environmental awareness and short courses.
- Document Controller X 1,

Document controller should have at least 5 years of experience working in construction and experience working with the NEC3 Engineering and Construction Contract Option chosen for this Contract.

The *Contractor* employs personnel listed above but not limited to those mentioned in order to perform the functions of key persons under NEC3 ECC Clause 24.1. These appointments shall have the necessary experience and be suitably qualified.

The *Contractor* provides an Organogram of all his key people (both as required by the *Employer* and as independently stated by the *Contractor* under Contract Data Part Two) and how such key people communicate with the *Project Manager* and the *Supervisor* and their delegates all as stated at paragraph 2.5 of C3.1 *Employer's Works* Information.

## 6.12 TRAINING WORKSHOPS

The *Contractor* facilitates the following requirements for training Workshops:

- A safety pre-mobilisation Workshop.
- Contractor employee safety training programme.
- The Contractor shall utilise local people for staffing up some of his requirements and shall ensure that there is adequate skills transfer taking place.
- Any other training as required by law or specifications referred to in this document

The Contractor shall consider and make the necessary allowances for the following training requirements:

- Training approach and delivery to be tailor made according to the above audience.
- The Contractor shall provide all courseware for the training.
- Training shall be delivered in a classroom environment.
- The Contractor shall provide any or all training material required for the training.



**6.13 CONTRACT CHANGE MANAGEMENT**

For ease of communication standard templates shall be used for Contract change management. The *Contractor* forwards all correspondence with respect to Contract change management, i.e. Early Warnings and notifications of Compensation Events, on the standard templates provided.

**6.14 RECORDS OF DEFINED COST, PAYMENTS & ASSESSMENTS OF COMPENSATION EVENTS KEPT BY *CONTRACTOR***

The *Contractor* keeps the following records available for the *Project Manager* to inspect:

- Records of design employees location of work or professional engineers engaged by the *Contractor*
- Records of people and Equipment within the Working Areas
- Records of Equipment used and people employed outside the Working Areas
- Records of quotations, invoices and pay slips.

## 7 PROCUREMENT

### 7.1 CODE OF CONDUCT

The *Employer* aims to achieve the best value for money when buying or selling goods and obtaining services. This however must be done in an open and fair manner that supports and drives a competitive economy. Underpinning our process are several acts and policies that any supplier dealing with the *Employer* must understand and support. These are:

- The Transnet Detailed Procurement Procedure (DPP);
- Section 217 of the Constitution - the five pillars of Public PSCM (Procurement and Supply Chain Management): fair, equitable, transparent, competitive and cost effective;
- The Public Finance Management Act (PFMA);
- The Broad Based Black Economic Empowerment Act (BBBEE); and
- The Anti-Corruption Act.

This code of conduct has been included in this Contract to formally apprise the *Employer* Suppliers of the *Employer's* expectations regarding behaviour and conduct of its Suppliers.

#### ***Prohibition of Bribes, Kickbacks, Unlawful Payments, and Other Corrupt Practices***

*The Employer* is in the process of transforming itself into a self-sustaining State Owned Enterprise, actively competing in the logistics industry. Our aim is to become a world class, profitable, logistics organisation. As such, our transformation is focused on adopting a performance culture and to adopt behaviours that will enable this transformation.

#### *1 The Employer will not participate in corrupt practices and therefore expects its suppliers to act in a similar manner.*

- *The Employer* and its employees will follow the laws of this country and keep accurate business records that reflect actual transactions with and payments to our suppliers.
- Employees must not accept or request money or anything of value, directly or indirectly, to:
  - Illegally influence their judgement or conduct or to ensure the desired outcome of a sourcing activity;
  - Win or retain business or to influence any act or decision of any decision stakeholders involved in sourcing decisions; or
  - Gain an improper advantage.
- There may be times when a supplier is confronted with fraudulent or corrupt behaviour of *the Employer* employees. We expect our Suppliers to use our "Tip-offs Anonymous" Hot line to report these acts (0800 003 056).

#### *2. The Employer is firmly committed to the ideas of free and competitive enterprise.*

- Suppliers are expected to comply with all applicable laws and regulations regarding fair competition and antitrust.

- *The Employer* does not engage with non-value adding agents or representatives solely for the purpose of increasing BBBEE spend (fronting)

*3. The Employer's relationship with suppliers requires us to clearly define requirements, exchange information and share mutual benefits.*

- Generally, Suppliers have their own business standards and regulations. Although *The Employer* cannot control the actions of our suppliers, we will not tolerate any illegal activities. These include, but are not limited to:
  - Misrepresentation of their product (origin of manufacture, specifications, intellectual property rights, etc.);
  - Collusion;
  - Failure to disclose accurate information required during the sourcing activity (ownership, financial situation, BBBEE status, etc.);
  - Corrupt activities listed above; and
  - Harassment, intimidation or other aggressive actions towards *the Employer* employees.
- Suppliers must be evaluated and approved before any materials, components, products or services are purchased from them. Rigorous due diligence is conducted and the supplier is expected to participate in an honest and straight forward manner.
- Suppliers must record and report facts accurately, honestly and objectively. Financial records must be accurate in all material respects.

### ***Conflicts of Interest***

*1. A conflict of interest arises when personal interests or activities influence (or appear to influence) the ability to act in the best interests of the Employer.*

- Doing business with family members
- Having a financial interest in another company in our industry

## **7.2 THE CONTRACTOR'S INVOICES**

When the *Project Manager* certifies payment (see NEC3 ECC Clause 51.1) following an assessment date, the *Contractor* complies with the *Employer's* procedure for invoice submission.

The invoice must correspond to the *Project Manager's* assessment of the amount due to the *Contractor* as stated in the payment certificate.

Invoices must be submitted by the defined date of the month forecasted to the date of the month to be advised by the *Project Manager*.

The invoice states the following:

- Invoice addressed to Transnet Limited;
- Transnet Limited's VAT No;
- Invoice number;
- Registered name of the *Contractor*;
- Address (Physical and Postal) of the *Contractor*;

- The *Contractor's* VAT Number; and
- The Contract number

The invoice contains the supporting detail:

- The amount paid to date;
- Amount for payment (excluding VAT);
- VAT amount;
- Amount for payment (including VAT);
- Any retention monies to be deducted from the invoice;
- Any interest payable;
- Escalation formula used where applicable;
  - Settlement discount;
  - Proof of ownership of Materials supplied;
  - A statement is to accompany each invoice

The invoice is presented either by post or by hand delivery on the last working day of the assessment month. Statements must accompany invoices.

The invoice is presented as an original.

The *Contractor* ensures that the *Employer* has his correct banking information to make the electronic payment transfer.

All payments are provisional and subject to audit. The *Contractor* preserves his records for such a period of time as legislation requires, but in any event not less than five (5) years.

The *Employer* deducts any amount owed by the *Contractor* to the *Employer* from any amount payable by the *Employer* to the *Contractor*.

### **7.3 SUB-CONTRACTING**

The *Contractor* shall not appoint or bring Sub-contractors onto Site without the prior acceptance of the *Project Manager*, and all Sub-contractors will be required to conform to the requirements as set out herein as if they were employees of the *Contractor*.

The *Contractor* shall not deviate from an approved Sub-contractors list without prior acceptance of the *Project Manager*

Sub-Contract documentation, and assessment of sub-contract tenders:

The *Contractor* is required to appoint his Sub-contractors under the NEC3 Engineering Contract Sub-contract unless accepted otherwise by the *Project Manager*, and all Sub-contractors will be required to conform to the requirements as set out herein as if they were employees of the *Contractor*.

The *Contractor* shall ensure that the quality assurance, health and safety, industrial relations, environmental, documentation control and all other requirements placed on him under this Contract are transferred into any sub-contracts.

The *Contractor* **shall not** sub-contract more than 25% of the value of the Contract to any other enterprise that does not have an equal or higher B-BBEE status level of contributor than the person concerned, unless the Contract is sub-contracted to an EME that has the capability and ability to execute the sub-contract.

## **8 EQUIPMENT PLANT AND MATERIALS STANDARDS AND WORKMANSHIP**

### **8.1 REFERENCED STANDARD SPECIFICATIONS**

The tests prescribed in the relevant standard specifications shall be carried out at the manufacturer's Works before delivery of the Equipment, Plant and Materials ordered by the *Contractor*. The test results shall be submitted to the *Project Manager*.

Plant and Materials made and tested to alternative standard specifications will be considered at the discretion of the *Project Manager*, provided that such specifications are not less stringent than those laid down.

## **9 GENERAL**

All Equipment, Components Plant and Materials shall be new.

All Equipment Plant shall be installed according to the manufacturer's recommendations.

All TPT standards and/or specifications shall be complied with where applicable.

## 10 LIST OF ANNEXURES

**ALL THE ANNEXURES LISTED HEREUNDER SHALL BE DEEMED TO FORM PART OF THE WORKS INFORMATION.**

The Annexures listed in the Table below are available **only** in the soft copy format (CD).


Annexure	Description / Discipline	Document No(s)
A	Project Health and Safety Specifications	HAS-PHASS-0001
B	Site Emergency Management	HAS-P-0001 - Rev 0
C	Occurrence Reporting and Investigation	HAS-P-0002 - Rev 0
D	Guidelines for Managing Common Hazardous Activities and Tasks	HAS-GN-0001 rev 0
E	Transnet Integrated Management Systems Policy Commitment Statement	IMS-GRP-GDL-0002.1
F	Contractor Safety Questionnaire	
G	CAD Standards	ENG-STD-0001
H	Construction Environmental Management	009-TCC-CLO-SUS-11386
I	Minimum Environmental Standards for Construction	009-TCC-CLO-SUS-11385
J	Health & Safety Pricing Schedule	TRN-IMS-GRP-GDL 014.4
K	Schedule Trades and Occupational Bylaws	
L	Integrated Waste Management Approach	
M	Contractor Documentation Submittal Requirements	DOC-STD-0001 rev 3
N	General Quality Requirements for Suppliers and Contractors	QAL-STD-001 rev 0


O	Project Specific Insurance Details	
R	Covid-19 Post Lockdown Construction Site Health and Safety Guidelines rev 002	<b>TGC-IMS-HS-GL-009-01</b>
8.1	Protocol for COVID positive cases	
8.2	Cleaning and Disinfection Procedure	
8.3	Hand washing Procedure	
8.4	Site Meeting Procedure	


# Transnet Port Terminals Health and Safety Management

## Project Health and Safety Specifications for the Upgrade of Empty Stack Area (100) at Pier 1, Durban Container Terminal

### HAS-PHSS-0001

Prepared by:  07/12/2022  
Duma Mahlakazela – Health & Safety Practitioner Date

Reviewed by:  07/12/2022  
Bhekani Msebeni – Health & Safety Manager Date

Approved by:  07/12/2022  
Nolan Reddy – Project Manager Date

00	2022-12-05	Issued for Review
01	2022-12-07	Issued for Approval
Rev No	Date	Revision Details



## Table of Contents

<b>1. Purpose.....</b>	<b>1</b>
<b>2. Scope .....</b>	<b>1</b>
2.1 Employer's objectives .....	1
<b>3. Definitions .....</b>	<b>2</b>
<b>4. Abbreviations .....</b>	<b>6</b>
<b>5. Health and Safety Management Plan .....</b>	<b>6</b>
<b>6. Policy .....</b>	<b>8</b>
<b>7. Hazard Identification and Risk Assessment (OHS Act, Constr. Regulations 9) .....</b>	<b>8</b>
7.1 Baseline Risk Assessments.....	9
7.2 Task-Based Risk Assessments .....	12
7.3 Pre-Task Hazard Assessments.....	14
<b>8. Legal and Other Requirements.....</b>	<b>14</b>
<b>9. Health and Safety Objectives .....</b>	<b>14</b>
<b>10. Resources, Accountabilities and Responsibilities .....</b>	<b>15</b>
10.1 Contractor Construction Manager .....	16
10.2 Contractor Health and Safety Officers.....	18
10.3 Contractor Supervisors .....	20
10.4 Health and Safety Representatives .....	21
10.5 First Aiders .....	22
<b>11. Competence, Training and Awareness .....</b>	<b>22</b>
11.1 Health and Safety Induction Training .....	24
11.2 Specific Training and Competency Requirements .....	24
<b>12. Communication, Participation and Consultation.....</b>	<b>25</b>
12.1 Toolbox Talks .....	25
12.2 Daily Safe Task Instructions (DSTI's).....	25
12.3 Health and Safety Suggestions.....	26
12.4 Health and Safety Meetings .....	26
12.4.1 Contractor Health and Safety Meetings (OHS Act Section 19) .....	26
12.4.2 Site Health and Safety Meetings .....	26
12.5 Health and Safety Performance Boards.....	27
12.6 Health and Safety Management Information Notice Boards.....	27
12.7 Involvement (Other) .....	27
<b>13. Documentation and Document Control.....</b>	<b>28</b>
13.1 Contractor Health and Safety File Requirements.....	28
<b>14. Notification of Construction Work.....</b>	<b>29</b>
<b>15. Operational Control .....</b>	<b>29</b>
15.1 Project-Specific Health and Safety Standards .....	30
15.2 Safe Work Procedures .....	30
15.3 Planned Task Observations .....	30
15.4 General Rules of Conduct .....	31
15.5 Site Access .....	31

15.6.1 Access Control .....	31
15.5.2 Trespassing .....	32
15.5.3 Visitors .....	32
15.5.4 Alcohol, Drugs and Other Intoxicating Substances .....	32
15.5.5 Firearms, Ammunition and Offensive Weapons .....	33
15.5.6 Vehicles .....	33
15.6 Mobile Equipment and Light Vehicles .....	34
15.6.1 Light Vehicles .....	38
15.6.2 Mobile Equipment .....	40
15.6.3 Training and Licensing .....	42
15.6.4 Roads .....	42
15.7 Signs and Notices .....	43
15.8 Machinery .....	43
15.9 Barricading .....	44
15.10 Excavations .....	46
15.11 Cranes and Lifting Equipment .....	50
15.11.1 Planning and Risk Assessment .....	50
15.11.2 Operation .....	51
15.11.3 Inspection, Testing and Maintenance .....	54
15.11.4 Training and competency .....	56
15.12 Working at heights .....	56
15.12.1 Fall prevention .....	57
15.13.1.1 Work platforms .....	57
15.13.1.2 Floor openings, holes and edges .....	57
15.13.1.3 Wall openings .....	57
15.13.1.4 Stairways .....	58
15.12.2 Ladders .....	58
15.13 Permit to Work .....	60
15.14 Isolation and Lockout .....	61
15.14.1 Personal Locks .....	63
15.15 Electrical Safety .....	64
15.15.1 Electrical Installations .....	65
15.15.2 Arc Flash Safety .....	67
15.15.3 High Voltage Power Lines .....	67
15.15.4 Portable Electrical Equipment .....	68
15.16 Gas Welding and Burning .....	71
15.17 Compressed Gas Cylinders .....	71
15.18 Electrically Powered Tools and Equipment .....	73
15.18.1 Angle Grinders .....	73
15.19 Pneumatically Powered Tools and Equipment .....	74
15.20 Fuel Powered Tools and Equipment .....	75
15.21 Hydraulically Powered Tools and Equipment .....	76
15.22 Hand Tools .....	76
15.22.1 Stanley Knives / Utility Knives .....	76
15.23 Inspection of Equipment and Tools .....	77
15.24 Manual Handling and Vibration .....	77
15.25 Personal Protective Equipment .....	78
15.25.1 Eye Protection .....	80
15.25.2 Hearing Protection .....	81
15.25.3 Respiratory Protection .....	82
15.25.4 Hand and Arm Protection .....	83
15.25.5 Foot Protection .....	83
15.25.6 Clothing .....	84
15.25.7 Body Protection .....	84
15.25.8 Electrical Protective Equipment .....	84

15.25.9 Jewellery .....	85
15.25.10 Hair.....	86
15.25.11 Task-Specific PPE.....	86
15.26 Sun Protection .....	86
15.27 Fuel / Flammable Liquid Storage and Refuelling .....	86
15.28 Fire Protection and Prevention .....	88
15.29 Smoking .....	90
15.30 Housekeeping .....	91
15.31 Waste Management .....	91
15.32 Stacking and Storage .....	92
15.33 Demarcation .....	92
15.34 Facilities .....	92
15.35 Occupational Hygiene.....	93
15.36 Lighting.....	94
15.37 Particulate and Gas / Vapour Exposures .....	97
15.37.1 Respiratory Protection Devices.....	98
15.37.2 Asbestos and Non-asbestos Fibrous Silicates.....	99
15.38 Hazardous Chemical Substances .....	100
15.39 Radiation.....	103
15.40 Thermal Stress.....	104
15.41 Fitness for Work .....	105
15.42 HIV / AIDS .....	107
<b>16. Occupational Hygiene.....</b>	<b>108</b>
16.1 Lighting.....	108
16.2 Particulate and Gas/ Vapour Exposures .....	108
16.3 Thermal Stress.....	108
16.4 Measuring and Monitoring .....	109
<b>17. Temporary works .....</b>	<b>110</b>
<b>18. Structure.....</b>	<b>111</b>
<b>19. Emergency Preparedness and Response.....</b>	<b>112</b>
19.1 Fire Fighting .....	113
19.2 First Aid.....	113
19.2.1 First Aid Kits .....	113
<b>20. Management Review .....</b>	<b>114</b>
<b>21. Management of Change .....</b>	<b>115</b>
<b>22. Sub-contractor Alignment .....</b>	<b>116</b>
<b>23. Measuring and Monitoring .....</b>	<b>116</b>
<b>24. Incident Reporting and Investigation.....</b>	<b>117</b>
<b>25. Non-conformance and Action Management.....</b>	<b>119</b>
<b>26. Performance Assessment and Auditing.....</b>	<b>119</b>
26.1 Reporting on Performance .....	119
26.2 Audits and Inspections .....	120
<b>27. Reference Documents .....</b>	<b>121</b>

### ***List of Tables***

Table 7-1: Hazard (Energy) Types.....	10
Table 7-2: Consequence Descriptors .....	10
Table 7-3: Likelihood Descriptors .....	11
Table 7-4: Risk Matrix .....	12
Table 11-1: Specific Training and Competency Requirements .....	24
Table 15-1 colour coding system for lifting equipment.....	56
Table 16-2 Colour Coding System for Electrical Equipment .....	70
Table 19-1 Minimum Requirements to be included when equipping first aid boxes .....	114
Table 28-1: Reference Documents .....	121



## 1. Purpose

This health and safety specification development guideline identifies and encompass the working behaviours and safe work practices that are expected of all Transnet Port Terminals (TPT) employees, EPCM Contractors, Consultant, Visitors and Suppliers, engaged on the TPT managed projects as required by Construction Regulation of 2014, regulation 5(1)(b).

All contractors and service providers must take careful note of these requirements and must ensure that adequate provision has been made to ensure compliance.

This Health and Safety Specification development guideline has been compiled to cover a wide range of construction activities and should serve as a guideline for Safety Agents to develop site specific specifications for construction projects. In order to determine which requirements are applicable, the contractor must conduct a health and safety risk assessment specific to the project and specific to the contractor's scope of work. All applicable requirements must be addressed in the Contractor's Health and Safety Management Plan.

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

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

The health and safety specification development guideline provides the minimum requirements for site specific specification and should be used as a guide to develop the site specific specification as it is required by the Construction Regulation of 2014.

## 2. Scope

This Health and Safety Specification applies to the Upgrade of the Empty Stack Area (100) and to all project sites, and to all persons working on or visiting the Transnet Port Terminals managed projects. The requirements specified in this document are applicable to the contractor as well as any sub-contractors, EPCM Contractors, Consultant, Vendors and Visitors that may be appointed by Transnet Port Terminals as an Employer. It is the contractor's responsibility to ensure that all sub-contractors comply fully with all legal requirements as well as the requirements of this health and safety specification.

### 2.1 Employer's objectives

The *Employer's* objectives are to appoint a suitably qualified and experienced Contractor to design, construct, commission and hand-over Area 100 to Pier 1 operations to enable 100% utilisation of the stacking area in accordance with the various regulatory statutory requirements.

In addition to the above, the *Employer's* objectives are to achieve Completion of the *Works* by meeting the Completion Date whilst still maintaining the highest environmental, quality and safety standards and whilst minimising disruptions to on-going port and terminal operations and the operations and activities of other stakeholders.

### 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 nominated project management 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.

#### **Barricade**

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

#### **Battering**

Sloping the sides of an excavation to a predetermined angle (usually less than the natural angle of repose) to ensure stability.

#### **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.

#### **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.

**Discipline Lock (many locks with a restricted number of identical keys)**

Attached at a Lockout Station or at a Local Isolation Point in order to lock out a system, plant or equipment. A Discipline Lock (e.g. A Low Voltage Electricity Discipline Lock) is owned by an Isolation Officer who has been authorised in writing to isolate and lockout a particular hazard (e.g. Low voltage electricity).

**Equipment Lock (many locks with one unique key)**

Attached directly to pieces of equipment in order to lock them out. Equipment Locks may only be used by Isolation Officers who have been authorised in writing to perform isolation and lockout procedures. The key must have a solid key ring that fits over an Isolation Bar.

**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).

### **Isolation and Lockout Procedure**

A plant or equipment-specific procedure that describes the method, and sequence to be followed, for rendering equipment, plant and systems safe to work on.

### **Isolation Bar**

A device used at a Lockout Station to which anyone is able to attach a Personal Lock making it impossible for an Isolation Officer to remove the key to the Equipment Locks, thus preventing the de-isolation of a system, plant or equipment while it is still being worked on. A Discipline Lock must always be the first lock attached to an Isolation Bar and last to be removed.

### **Isolation Officer**

A person (typically a Project employee or an employee of the client) who has been authorised (in writing) by the nominated project management representative to perform isolation and lockout procedures. A person may only be appointed as an Isolation Officer if he has undergone training and has been assessed and found competent in the isolation and lockout of systems, plant and equipment within the scope of his designation.

### **Incident**

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, 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.

### **Personal Lock**

A single lock with one unique key controlled by the owner. Used for personal protection.

### **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.

### **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.

## **4. Abbreviations**

DSTI - Daily Safety Task Instruction

CR – Construction Regulations

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

SOC - Safety Observation and Conversation

TPT - Transnet Port Terminals

VFL - Visible Felt Leadership

OHS - Occupational Health and Safety

SACPCMP - The South African Council for Project and Construction Management Professions, here in refer to as they register of Health and Safety Professionals

## **5. Health and Safety Management Plan**

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 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;
- **Sub-contractor Alignment** procedures – a process must be in place for the assessment of sub-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 Health and Safety Management Plan must be forwarded electronically, and as a hard copy, to the nominated project management representative for review. The plan will be audited for completeness and, if found to be adequate, will be accepted (typically "with comments"). Work may not commence until the plan has been accepted.

Once the plan has been accepted, the contractor must action and resolve any issues within 30 days from the start of work.

If the issues requiring corrective action are not resolved within this 30 day period, the contractor will be required to stop any work related to the outstanding actions until they have been resolved.

Any proposed amendments or revisions to the contractor's Health and Safety Management Plan must be submitted to the nominated project management representative for acceptance.

Should it be identified that the contractor has overlooked a high risk activity, and as a result has omitted the activity and associated control measures from the Health and Safety Management Plan, the plan will not be approved.

## 6. Policy

The 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 as required by OHS Act of 1993, 7(3). These values and objectives must be endorsed by the contractor's management representatives 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 in the TPT regulatory universe;
- 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 contractor as well as the employees of any sub-contractors 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 (refer to Sections 10 and 11).

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

## 7. Hazard Identification and Risk Assessment (OHS Act, Constr. Regulations 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 as required by the Construction regulation of 2014, regulation 9(1) – (7).

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.

The risk assessment processes must be applied to:

- The full life cycle of the project;
- Routine and non-routine activities;
- Planned or unplanned changes (refer to Section 15);
- All employees, sub-contractors, suppliers and visitors; and
- All infrastructure, equipment and materials.

The risk assessment processes and methodologies must be appropriate for the nature and scale of the risks, and must be implemented by competent persons.

The process of analysing and managing risk must include the following:

- Establishing the context of the risk assessment;
- Identifying hazards and determining possible risk scenarios (unwanted events);
- Evaluating risks and assigning ratings (classification);
- Recording the risk analysis in a risk register;
- Managing risks according to their classification (prioritising for action);
- Identifying and implementing control measures (through the application of the Hierarchy of Controls) to ensure that risks are managed to levels that are as low as is reasonably practicable (ALARP);
- Developing action plans for reducing risk levels (where possible);
- Verifying the completion of actions;
- Re-evaluating the risks and classifications as appropriate; and
- Reviewing and updating the risk register.

## **7.1 Baseline Risk Assessments**

Prior to site establishment, the client must conduct a detailed Baseline Risk Assessment identifying foreseeable hazards and risk scenarios associated with the contractor's scope of work on the project site(s) as required by Construction Regulations of 2014, regulation 5(1)(a). Details concerning proposed control measures must be included. The risk assessment process must be facilitated by a competent person who has been appointed in writing and must involve the participation of the contractor's site management representatives, supervisory personnel and technical experts (as required). An attendance register must be completed and retained for reference purpose. The Baseline Risk Assessment must be reviewed and approved by the Project Health and Safety Manager and Project Construction Manager.

When carrying out a Baseline Risk Assessment or a Task-Based Risk Assessment (refer to Section 6.2), Hazard (Energy) Types must be specified in accordance with the categorisation detailed in Table 6-1. Risk scenarios must be described indicating the manner in which a person may come into contact with, or be exposed to, a specific hazard.

An initial risk rating must be assigned to each risk scenario without taking any control measures into consideration. Control measures for managing the risks to levels that are as low as is reasonably practicable must then be identified for implementation on the project, and a residual risk rating must be assigned to each risk scenario taking the identified control measures into consideration.

Ratings must be assigned qualitatively using TPT consequence and likelihood scales and descriptors (i.e. TPT 5x5 qualitative risk matrix). Refer to Tables 6-2, 6-3 and 6-4.

**Table 7-1: Hazard (Energy) Types**

Gravitational												
Falling or Rolling Object		Person Falling from Height		Slip, Trip or Fall (Same Level)		Collapsing Structure		Collapsing, Flowing Substance		Slumping Material or		
Mechanical												
Moving Component of Fixed Machinery		Moving Component of Powered Tool		Projectile		Moving Hand Tool		Sharp Object		Moving Mobile Equipment or Light Vehicle	Moving Person	Moving Object (Mechanically or Manually)
Elastic												
Object under Tension or Compression						Compressed Fluid (Gas or Liquid)						
Acoustic												
Noise												
Vibrational												
Hand / Arm Vibration						Whole Body Vibration						
Electrical												
Electricity						Electro-Magnetic Field						
Radiation												
Ionising Radiation						Non-Ionising Radiation						
Illumination												
Lighting												
Thermal												
Heat						Cold						
Fire												
Fire												
Explosion												
Explosion												
Particulates and Aerosols												
Dust		Fibres		Fume		Spray		Mist		Smoke		
Chemical												
Corrosive Substance		Irritant	Asphyxiate	Narcotic Anaesthetic /	Poison	Allergen Sensitizer /	Carcinogen		Teratogen Mutagen /	Venom		
Microbiological												
Virus			Bacterium			Parasite			Fungus			
Weather												
Lightning			High Wind			Flooding			Hail			
Physiological												
Stress						Fatigue						
Ergonomic												
Exertion			Repetitive Movement			Awkward Posture			Awkward Movement			

**Table 7-2: Consequence Descriptors**

Consequence	Insignificant	Minor	Moderate	Major	Catastrophic
Health	Reversible health effects of little concern, requiring first	Reversible health effects of concern that would	Reversible health effects of concern that would typically	Single fatality, or irreversible health effects	Multiple fatalities or permanent disabling illness to

Consequence	Insignificant	Minor	Moderate	Major	Catastrophic
	aid treatment at most.	typically result in medical treatment.	result in a lost time illness.	or disabling illness.	multiple people.
Safety	Low-level, short-term subjective inconvenience or symptoms.  Typically a first aid case requiring no medical treatment.	Reversible injury requiring treatment, but not leading to restricted duties.  Typically a medical treatment case.	Reversible injury or moderate irreversible damage or impairment.  Typically a lost time injury.	Single fatality, or considerable irreversible damage or impairment.	Multiple fatalities or permanent disabling injury to multiple people.

**Table 7-3: Likelihood Descriptors**

Likelihood	Likelihood Description	Frequency	Substance Exposure
Almost Certain	Recurring event during the life-time the project.	Typically occurs more than twice per year.	Frequent (daily) exposure at > 10 x OEL.
Likely	Event that may occur frequently during the life-time of the project.	Typically occurs once or twice per year.	Frequent (daily) exposure at > OEL.
Possible	Event that may occur during the life-time of the project.	Typically occurs once in 5 years.	Frequent (daily) exposure at > 50% of OEL.  Infrequent exposure at > OEL.
Unlikely	Event that is unlikely to occur during the life-time of the project.	Typically occurs once in 10 years.	Frequent (daily) exposure at > 10% of OEL.  Infrequent exposure at > 50% of OEL.
Conceivable but improbable	Event that is very unlikely to occur during the life-time of the project.	Typically occurs once in 100 years.	Frequent (daily) exposure at < 10% of OEL.  Infrequent exposure at > 10% of OEL.



**Table 7-4: Risk Matrix**

<b>Risk Calculator</b>		<b>Consequence</b>				
		<b>Insignificant</b>	<b>Minor</b>	<b>Moderate</b>	<b>Major</b>	<b>Catastrophic</b>
<b>Likelihood</b>		<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>Almost Certain</b>	<b>5</b>	<b>Moderate (5)</b>	<b>High (10)</b>	<b>High (15)</b>	<b>Extreme (20)</b>	<b>Extreme (25)</b>
<b>Likely</b>	<b>4</b>	<b>Low (4)</b>	<b>Moderate (8)</b>	<b>High (12)</b>	<b>Extreme (16)</b>	<b>Extreme (20)</b>
<b>Possible</b>	<b>3</b>	<b>Low (3)</b>	<b>Moderate (6)</b>	<b>Moderate (9)</b>	<b>High (12)</b>	<b>High (15)</b>
<b>Unlikely</b>	<b>2</b>	<b>Low (2)</b>	<b>Low (4)</b>	<b>Moderate (6)</b>	<b>Moderate (8)</b>	<b>High (10)</b>
<b>Conceivable but improbable</b>	<b>1</b>	<b>Low (1)</b>	<b>Low (2)</b>	<b>Low (3)</b>	<b>Low (4)</b>	<b>Moderate (5)</b>

A Risk Register comprised of all significant risks (i.e. Risks rated as major or catastrophic) identified for the project will be compiled using the information contained in the project Baseline Risk Assessment as well as the contractor's Baseline Risk Assessment. Key control measures for managing each of these risks will be specified in the register.

For the significant risks in particular, action plans will be developed for reducing the risk levels (where possible).

The project Risk Register will be reviewed and, if necessary, updated:

- On a quarterly basis during construction;
- When changes are made to a design and / or the construction scope, schedule, methods, etc. That result in a change to the risk profile; and
- Following an incident.

The contractor must ensure that the hazards, risk scenarios and control measures identified in the contractor's Baseline and Task-Based Risk Assessments are taken into consideration when developing, implementing and maintaining the various elements of the contractor's health and safety management system for the project (e.g. Competence, training and awareness requirements).

All persons potentially affected must be made aware of the hazards, risk scenarios and control measures identified in the contractor's risk assessments. This must be done through training, Toolbox Talks, and Daily Safe Task Instructions.

## **7.2 Task-Based Risk Assessments**

The contractor must carry out detailed project-specific Task-Based Risk Assessments which must be reviewed and approved by the Client's Project Health and Safety Manager and Project Construction Manager prior to the commencement of any work.

The risk assessment process must be facilitated by a competent person who has been appointed in writing in terms CR 9 sub regulation (1). 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 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);
- 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.

### **7.3 Pre-Task Hazard Assessments**

A pre-task hazard assessment must be completed whenever a change is identified while carrying out an activity. Any deviation from what was discussed during the Daily Safe Task Instruction (prior to the activity commencing), or anything that was not discussed, constitutes a change.

Before carrying out the particular task that involves the identified change, a few minutes must be spent identifying the hazards and risks associated with that task as well as suitable control measures.

## **8. Legal and Other Requirements**

The Contractor must comply with the requirements of all applicable health and safety legislation as well as Transnet Port Terminals and 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 sub-contractors that may be appointed by the contractor) through training, Toolbox Talks, and Daily Safe Task Instructions (refer to Sections 10 and 11).

## **9. Health and Safety Objectives**

In order to drive continual improvement, the contractor must set project-specific health and safety objectives, and must develop improvement action plans to achieve these objectives. The contractor's objectives must be aligned with the objectives set for the project as a whole as required by the Construction regulations of 2014, regulation 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.).

Each contractor employee must have a personal health and safety plan or must be part of a team plan with documented objectives that support the contractor's Health and Safety Management Plan and the project-level objectives.

Performance reviews must be carried out at quarterly intervals to assess and document performance against these personal or team objectives.

If a reward or incentive scheme is introduced, it must be designed in such a manner that health and safety performance is not compromised in order to maximise financial reward.

## **10. Resources, Accountabilities and Responsibilities**

The Contractor must adequately allocate resources, responsibility and accountability to ensure the effective implementation, maintenance and continual improvement of the contractor's health and safety management system on the projects required by Construction regulation Of 2014, regulation 7(2)(c)

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.

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

The 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 appointments must be clearly identified.

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

The 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(s).

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

Visible commitment is essential to providing and maintaining a safe workplace. The contractor's 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 (refer to Section 4);

- 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 (refer to Section 6);
- Providing the resources necessary to meet the requirements of this specification (refer to Section 9);
- Ensuring that all contractor employees have clearly defined responsibilities with regard to health and safety, and that these responsibilities are clearly communicated and understood (refer to Section 9);
- Establishing, implementing and maintaining a system for ongoing training and assessment of skills and competence (refer to Section 10);
- Establishing, implementing and maintaining procedures to ensure that only qualified and competent personnel are permitted to work on the project site(s) (refer to Section 10);
- Establishing, implementing and maintaining effective communication and consultative processes concerning health and safety for the duration of the contract (refer to Section 11);
- Maintaining operational control for the protection of all persons on the project site(s) as well as the public (refer to Section 13);
- Establishing, implementing and maintaining effective emergency preparedness and response procedures (refer to Section 14);
- Establishing, implementing and maintaining effective management of change processes and procedures (refer to Section 15);
- Establishing, implementing and maintaining effective incident reporting and investigation processes and procedures (refer to Section 18);
- Establishing, implementing and maintaining effective auditing and inspection processes and procedures (refer to Section 20); and
- Formally reviewing the contractor's Health and Safety Management System annually to ensure that the system continues to be effective in managing health and safety performance and meeting project requirements (refer to Section 21).

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.

### **10.1 Contractor Construction Manager**

The Contractor must appoint a competent Construction Manager who shall be responsible for the successful and safe completion of all work to be carried out by the contractor as required by the Construction regulations of 2014, regulation 8(1).

The contractor's Project Manager shall be responsible for:

- Ensuring that a Health and Safety Policy that clearly states the contractor's values and objectives for the effective management of health and safety on the project is in place and is communicated to all contractor and sub-contractor employees;

- Ensuring that all applicable legal and project health and safety requirements are identified and complied with at all times;
- Ensuring that effective hazard identification and risk management processes are established and implemented 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);
- Participating in (and approving) all Task-Based Risk Assessments conducted for the work to be carried out by the contractor;
- Driving the achievement of agreed health and safety objectives;
- Ensuring that the necessary resources are made available for the effective implementation of the 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;
- Managing all appointed sub-contractors with regard to health and safety performance;
- 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;
- Chairing monthly Contractor Health and Safety Meetings and attending monthly Site Health and Safety Meetings;
- Implementing programmes that encourage continual improvement and providing recognition for suggestions made by contractor and sub-contractor employees;
- Implementing the contractor's Health and Safety Management Plan and associated Safe Work Procedures;
- Acting consistently and strictly against any contractor or sub-contractor employee who transgresses a health and safety rule or requirement;
- Ensuring that an effective management of change process is in place;
- Implementing, testing and maintaining an effective Emergency Response Plan for all contractor and sub-contractor activities, and ensuring that the plan is adequately resourced;
- Ensuring that workplace exposure of contractor and sub-contractor employees to hazardous substances or agents is measured and monitored to determine the effectiveness of controls and compliance with legal (and project) requirements;
- Ensuring that all incidents are reported without delay and are investigated thoroughly;
- Participating in investigations into significant incidents;

- Ensuring that accurate health and safety statistics are maintained, and that health and safety performance reports are compiled as required;
- Providing the necessary resources for regular health and safety audits and inspections to be conducted, and supporting the auditing process;
- Participating in health and safety audits, and carrying out workplace inspections;
- Ensuring that corrective actions (arising from incident investigations, audits, inspections, etc.) Are implemented, and that adequate resources are provided for this purpose; and
- Participating in an annual review of the contractor's Health and Safety Management System.
- Completing one VFL per week.

## **10.2 Contractor Health and Safety Officers**

The contractor must appoint a full-time Health and Safety Officer for the duration of the contract who is registered with the SACPCMP (The South African Council for Project Construction Management Professions). The project site(s) (directly or through sub-contractors), must at least appoint two full-time Health and Safety Officers depending on the scope, complexity, budget and high risk activities involved, as required by the Construction regulations of 2014, regulation 7(2)(c).

The Health and Safety Officer must be on site when work commences at the start of the day and must remain on site until all activities for that day (including the activities of sub-contractors) have been completed. A Health and Safety Officer 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 Health and Safety Officer.

Each Contractor Health and Safety Officer 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 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.);
- 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 Two Planned Task Observations a week;
- Completing Two VFLs per week.
- 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-contractors), 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 each Health and Safety Officer is adequately equipped to enable him to perform his duties effectively. Each Health and Safety Officer 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 Health and Safety Officer must over and above the SACPCMP registration as an Officer; be computer literate, fluent in English, and must have the following minimum qualifications, training and experience:

- At least 5 years' experience as a Health and Safety Officer on construction projects;
- SAMTRAC, NEBOSH, Modern SHEQ Risk Management 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).
- Registered as a Health and Safety Officer or Health and Safety Manager with SACPCMP depending on the size of the project and on the risk.



Before placing a Health and Safety Officer on the project site(s), the contractor must forward a copy of the person's CV to the nominated project management representative or to the Programme Health and Safety manager for review and acceptance. During an interview, a proposed candidate may be rejected should he not meet the experience and / or qualification requirements, or due to poor work performance on previous projects.

### **10.3 Contractor Supervisors**

The contractor must ensure that all project and / or 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 as required by Construction regulations of 2014, regulation 8(7).

No work may be carried out without an appointed supervisor being physically present in the work area and conducting a daily safety task instruction.

Each Contractor 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 Baseline and 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;
- 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 (e.g. 5 bricklayers, 2 carpenters, 3 welders, 22 general workers, and 1 supervisor);
- Ensuring that all Safe Work Procedures applicable to the work carried out under his supervision are adhered to and are fully implemented;

- Maintaining discipline and taking the necessary action whenever an employee under his supervision does not adhere to a rule or requirement;
- Carrying out Planned Task Observations (one per day);
- Carrying out Visible Field Leadership (VFL) one per day;
- 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 supervisor must accept these responsibilities in writing as part of his appointment.

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

#### **10.4 Health and Safety Representatives**

The team of employees on site must have a health and safety representative deployed on the project site(s), a Health and Safety Representative must be elected and appointed. Taking into consideration the number of employees deployed, the geographical area in which the work is taking place, the different work disciplines, and the shift pattern (if applicable), the contractor must ensure that an adequate number of Health and Safety Representatives (at a minimum ratio of one Health and Safety Representative per 50 employees) are elected and appointed to effectively represent all site personnel as required by the OHS Act 85 of 1993, section 17 - 18.

Each Health and Safety Representative must attend an accredited training course for health and safety representatives. The cost of this training shall be for the contractor's account.

The contractor must make the necessary allowances for the Health and Safety Representatives to carry out their duties as specified in the applicable legislation.

The contractor must ensure that an appropriate sticker is affixed to the safety helmet of each Health and Safety Representative for identification purposes.

## 10.5 First Aiders

If 10 or more employees are deployed on the project site(s), at least one trained and competent First Aider must be in place and must be appointed. Taking into consideration the number of employees deployed, the geographical area in which the work is taking place, the different work disciplines, and the shift pattern (if applicable), the contractor must ensure that an adequate number of First Aiders (at a minimum ratio of one First Aider per 50 employees) are in place and have been appointed to administer first aid treatment should this be required.

First Aid training must be done through an accredited training institution. The cost of this training shall be for the contractor's account.

The contractor must ensure that an appropriate sticker is affixed to the safety helmet of each First Aider for identification purposes.

## 11. Competence, Training and Awareness

Each employee (including sub-contractor employees) must be suitably trained and 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,(14)

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 nominated project management representative, current documentation verifying that the contractor's employees, as well as the employees of any appointed sub-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 sub-contractor must ensure that the following training takes place:

- health and safety induction training pertaining to the hazards prevalent on the site at the time of entry
- training for all persons required to erect, move or dismantle temporary works structures and instruction to perform those operations safely
- training of employees working from a fall risk position
- training to work or to be suspended on a platform which includes at least:
  - 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-
    - o an emergency;
    - o the malfunctioning of equipment; and
    - o the discovery of a suspected defect in the equipment;
    - o 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 principal contractor;

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

An Employee Profile (dossier) must be completed for each employee who will be performing work on site. All documentation pertaining to an employee's competence (i.e. certified copies of qualifications, certificates and licences as well as proof of job skills, training and experience) must be maintained in this dossier.

If it is determined through observation that an employee is not yet competent to carry out a particular task in a safe and capable manner, the employee will be required to cease work immediately and must either be reassigned or be retrained at the contractor's expense.

The contractor must provide proof that the training institutions and trainers that are used are appropriately registered with a governing authority (a trainer's registration certificate or registration number alone will not be adequate). The following must be made available for verification purposes:

- Proof of registration of the training institution including the training programmes that the institution is accredited to provide; and
- For each trainer, proof of competency and registration for the specific training programmes presented.

Foreign qualifications held by employees in health and safety critical roles must be verified against the requirements of local legislation.

### 11.1 Health and Safety Induction Training

Each employee must attend all mandatory Health and Safety Induction Training applicable to the project. Before inductions takes place, induction packs for employees must be sent to TPT Safety Practitioner for review and approval. Induction Packs for employees must be submitted the morning before the day of the induction. No employee will be permitted to enter any project work site until he has attended this induction 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 of 2014, regulation 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.

### 11.2 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 They will be given authorisation to perform certain tasks or fill certain roles.

**Table 11-1: Specific Training and Competency Requirements**

Training	Applicable To
Health and Safety Induction*	All employees
Risk Assessment*	All managers and supervisors
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 1, 2 and 3*	All nominated First Aiders
Fire Fighting (Fire Extinguisher Use)*	All employees
Working at Height*	All employees using a safety harness
Confined Spaces*	All Confined Space Entry Officers and Standby Persons
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)
Gravel Road Driving*	All drivers of light motor vehicles driven on gravel roads (for work purposes)
Off Road Driving*	All drivers of four-wheel drive vehicles driven off road (for work purposes)
Mobile Equipment Site Licence*	All mobile equipment operators

Training requirements marked with an \* must be arranged through accredited external training institutions by the contractor.

## **12. Communication, Participation and Consultation**

The contractor must establish 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 or concerns 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:

### **12.1 Toolbox Talks**

The 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 sub-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 contractor's health and safety file.

### **12.2 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 contractor's health and safety file.

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

## **12.3 Health and Safety Suggestions**

All employees must be encouraged to submit suggestions to enhance health and safety management on the project site(s). A process must be in place for documenting, evaluating, implementing (as appropriate), archiving and recognising the improvement ideas.

## **12.4 Health and Safety Meetings**

### **12.4.1 Contractor Health and Safety Meetings (OHS Act Section 19)**

The contractor must schedule and consistently hold monthly health and safety meetings. These meetings must be chaired by the contractor's Project Manager and the following persons must be in attendance:

- Contractor and sub-contractor management representatives;
- Contractor and sub-contractor supervisors;
- Contractor and sub-contractor appointed Health and Safety (Employee) Representatives;
- Contractor and sub-contractor Health and Safety Officers; and
- The relevant Project Health and Safety Advisor.

The meeting must address the following as a minimum:

- New incidents for the period and corrective actions taken or to be taken;
- Implementation status of outstanding actions associated with previous incidents;
- VFL's, PTO's and DSTI's carried out for the period and action required to correct trends identified;
- Results of any audits, inspections (including H&S Rep inspections) or site visits carried out;
- A look ahead to ensure that appropriate health and safety planning and preparation is done for upcoming work;
- Risk Assessments, Safe Work Procedures, etc. That are outstanding or due for review (as well as the quality of these documents); and
- Any other health and safety related matter.

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.

### **12.4.2 Site Health and Safety Meetings**

In addition to the Contractor Health and Safety Meetings, the Project will schedule monthly Site Health and Safety Meetings that the contractor must attend. These meetings will be chaired by the Project Construction Manager and the following persons must be in attendance:

- Contractor management representatives;
- Contractor Health and Safety Officers;
- The Project Health and Safety Manager;
- Project Health and Safety Advisors; and
- Client representatives (ad hoc).

The meeting will address the following as a minimum:

- Feedback from the contractor concerning health and safety performance for the period;
- New incidents for the period and corrective actions taken or to be taken;
- Implementation status of outstanding actions associated with previous incidents;
- PTO's and DSTI's carried out for the period and action required to correct trends identified;
- Results of any audits, inspections or site visits carried out;
- A look ahead to ensure that appropriate health and safety planning and preparation

- Is done for upcoming work;
- Risk Assessments, Safe Work Procedures, etc. That are outstanding or due for review (as well as the quality of these documents); and
- Any other health and safety related matter.

## **12.5 Health and Safety Performance Boards**

The contractor must provide and maintain a Health and Safety Performance Board to be approved by the nominated project management representative and to be positioned at the entrance to the contractor's site office area. This board must display the following information as a minimum:

- The contractor's logo;
- Current manpower (heads) on site;
- Man-hours worked for the current month and project to date;
- Lost Time Injury Frequency Rate (LTIFR);
- Dates of last injuries (FAI, MTI and LTI);
- Number of hours worked since the last recorded LTI; and
- Names and contact telephone numbers for the appointed Project Manager and the Health and Safety Officers.

## **12.6 Health and Safety Management Information Notice Boards**

The contractor must provide, for each appointed supervisor, a portable Health and Safety Management Information Notice Board to be placed in the work area. The following information and documentation, as a minimum, must be posted on these boards:

- The relevant Method Statements, Risk Assessments and Safe Work Procedures for the work that is being performed that day;
- The DSTI for the day;
- The most recent Toolbox Talk;
- Where applicable, all required permits and permissions for the work that is being performed;
- Material Safety Data Sheets (MSDS's) for any chemical substances being used;
- The health and safety objectives for the work team;
- Details of the last incident involving the work team;
- The most recent weekly health and safety report (refer to Section 20);
- Emergency procedures;
- A site plan indicating evacuation routes and emergency assembly point locations;
- First Aider names and contact telephone numbers; and
- The appointed supervisor's contact details.

## **12.7 Involvement (Other)**

The participation of all contractor (and sub-contractor) employees in activities that promote improvements in health and safety performance must be encouraged. In particular, this must include their appropriate involvement in:

- Hazard identification, risk analysis and determining control measures;
- Incident investigation; and
- Reviewing policy and objectives.

All regulations, instructions, signage, etc. Must be communicated in a language understood by all employees.

Health and safety personnel must be actively involved in planning activities so that they have the opportunity to highlight hazards and risks associated with upcoming work well in advance to ensure sufficient time to arrange and / or implement the necessary control measures.



## 13. Documentation and Document Control

The 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 contractor's health and safety management system must be effectively controlled.

The document control process must:

- Provide for the review, revision and version control of documents;
- Uniquely identify documents (as appropriate) to control their use and function;
- Require approval of the documents for adequacy prior to issue;
- Clearly identify changes and record the status of any revisions to documents; and
- Provide for the effective distribution of documents to, and where necessary the timely removal of obsolete documents from, all points of issue and use.

The 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.

Each record must be legible, identifiable and traceable, and must contain adequate information and data for its purpose.

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.

Personal information originating

From medical surveillance and occupational hygiene monitoring must be reported in a form that respects the privacy of the individual, but enables management to fulfil their duty of care obligations to employees. The names of individuals must not be disclosed without their written authorisation.

Retention periods for all records (based on legal requirements and / or knowledge preservation considerations) must be established and documented in accordance with applicable legislation.

### 13.1 Contractor Health and Safety File Requirements

The contractor must compile and maintain a file containing all necessary health and safety related documentation. The client should provide construction work permit and to be kept on site at all times. The contents of the file will be audited by a Project Health and Safety Advisor 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;
- Health and Safety Management Plan;
- Legal Register;
- 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;

- 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;
- Fall Protection Plan (for work at height);
- 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 copy of the employee's Identity Document or Passport;
- Certificate of Fitness (Pre-Employment Medical Examination);
- Proof of Induction Training;
- Other Training Records;
- Copies of Qualification Certificates and / or Certificates of Competency; and
- Copies of Licences;
- Health and Safety Meeting Minutes;
- Health and Safety Performance Reports;
- Copies of Inspection and Audit Reports; and
- Daily Safe Task Instructions (DSTI's) and Toolbox Talks.

**Note: The contractor must ensure that an equivalent file is compiled and maintained by each appointed sub-contractor.**

## 14. Notification of Construction Work

A contractor who intends to carry out any construction work other than work contemplated in CR regulation 3(1), must at least 7 days before that work is to be carried out notify the provincial director in writing in a form similar to Annexure 2 if the intended construction work will—

- include excavation work;
- include working at a height where there is risk of falling;
- include the demolition of a structure; or
- include the use of explosives to perform construction work.

A contractor who intends to carry out construction work that involves construction of a single storey dwelling for a client who is going to reside in such dwelling upon completion, must at least 7 days before that work is to be carried out notify the provincial director in writing in a form similar to Annexure 2 of the CR regulations.

## 15. Operational Control

Refer to Transnet Port Terminals Health and Safety Management Guidelines for Managing Common Hazardous Activities and Tasks: HAS-GN-0001.

For project operations and activities, the 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 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.

## 15.1 Project-Specific Health and Safety Standards

For all site health and participation specific this will serve as a guideline

Project-specific health and safety standards, incorporating leading practices, legal requirements, and client requirements will be developed and implemented to manage critical risks on the project.

The contractor must comply fully with the requirements of these standards.

The Safe Work Procedures required of the contractor must be aligned with the requirements of these standards.

## 15.2 Safe Work Procedures

Procedures to be developed and maintained on site

The 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.

Furthermore, the contractor must develop, document, communicate and implement formal procedures, work instructions and / or programmes for the operation, maintenance, inspection and testing of all plant and equipment (including protective systems and devices) brought onto the project site(s).

## 15.3 Planned Task Observations

All 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 day involving one or more employees in his work team.**

When an unsafe act or condition is identified, the supervisor must coach the work team to correct the act or condition in line with the Safe Work Procedure.

Where valid changes to the work method are identified, the supervisor must ensure that the Safe Work Procedure and Risk Assessment are updated to reflect the current practice.

Project representatives will carry out PTO's on contractor employees on an ad hoc basis. Should deviations from the contractor's Safe Work Procedures be observed, the work may be stopped until these deviations are rectified.

## 15.4 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 nominated project management representative shall be final and binding in respect of any dispute that may arise from the interpretation of these requirements.

Transnet Port Terminals will not get involved in contractor disciplinary rules and procedures. The contractor will simply be informed (with reasons) that the offending employee(s) will be denied access to the project site. Once the contractor has been informed, the employee(s) must be removed from the site immediately.

## 15.5 Site Access

The contractor may not hire any security services for the project site unless authorisation has been obtained in writing from a nominated project management representative.

### 15.6.1 Access Control

The contractor must comply with all access control, procedures and systems applicable to the project site.

Failure to comply with these requirements will be viewed as a serious safety breach and may result in the permanent removal of the individual(s) / contracting company from site or suspension without payment.

Access will be controlled as follows:

- The access will be strictly controlled and managed
- Contract period access – an access card valid for the full contract period will be issued to an individual once the following requirements have been met:
  - ♦ Completion of a pre-employment medical examination;
  - ♦ Completion of all required project induction training;
  - ♦ Completion of special training / licensing if applicable (e.g. Driving/operating Licence); and
  - ♦ Provision of proof of job / trade-specific qualifications, licences, training, Experience and competency (as required).

**Note:** No access card will be issued unless proof of identification is provided (i.e. an identity document or a valid passport). For foreign labour, an access card will only be issued if a valid work visa is produced.

**Note:** A driving licence will not be accepted as proof of identification.

### 15.5.2 Trespassing

The contractor must ensure that no employee (including sub-contractor employees) trespasses on any land lying beyond the boundaries of the project site.

If instructed by a nominated project management representative to do so, the contractor must remove any employee who fails to comply with this requirement from the project.

The contractor's activities must be confined to the specified construction areas, and access to these areas may only be by means of specified routes.

All required barricading (fencing) must be erected and maintained by the contractor.

### 15.5.3 Visitors

Visitors (including reps and suppliers) must be advised in advance of the mandatory Personal Protective Equipment (PPE) requirements for the site, and must arrive with all of this PPE.

Upon arrival, all visitors must report to the Security Office where they must sign in.

All visitors must undergo a visitor induction briefing before entering the site.

A visitor access card will be issued to each visitor on conclusion of the induction briefing.

Whilst on site, visitors must be accompanied at all times by an appropriately senior employee who has been inducted fully. The visitor(s) must be met at the Security Office, and when the visit is over, must be escorted back to the Security Office.

When leaving the site, each visitor must return his or her visitor access card to the security personnel posted at the entrance / exit. A visitor will not be permitted to leave the site until he or she produces the access card that was issued.

**Note:** Visitors are not permitted to perform any work on site.

**Note:** Any request (typically made by a government official) to carry out a site inspection must be referred to the nominated project management representative. The contractor must not arrange any such inspection without prior approval from the nominated project management representative.

### 15.5.4 Alcohol, Drugs and Other Intoxicating Substances

The 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.

Selling or possessing drugs, alcoholic beverages or any other intoxicating substance on the site is strictly prohibited.

A drugs and alcohol testing program will be implemented. Persons entering the site will be randomly 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 nominated project management representative to take disciplinary action and remove such a person's form the project site.

Should the actions and / or demeanour of an employee suggest possible narcosis or drunkenness, the employee must be removed from the site. This may be done without testing.

**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.

#### **15.5.5 Firearms, Ammunition and Offensive Weapons**

Firearms, ammunition, and offensive weapons of any kind are strictly prohibited. No person may enter /shall not be permitted to enter the site carrying any such item.

#### **15.5.6 Vehicles**

All vehicles brought onto site must meet the safety requirements stipulated in Section 14.6.

Each vehicle to be used on site must be inspected and approved by the nominated project management representative before a site access permit will be issued for the vehicle / equipment. No vehicle shall be permitted to enter the site unless it is duly authorised. Access permits are vehicle-specific and may not be transferred between vehicles.

The contractor must allow any vehicle that is brought onto site (including privately owned vehicles) to be searched at any time while on the premises, or when entering or leaving the premises.

The contractor is solely responsible for the safety and security of all vehicles (including private vehicles) that he brings onto the site.

All road-going vehicles used by the contractor on the site must be roadworthy and registered with the relevant traffic authority.

A vehicle will not be permitted to enter the site in an un-roadworthy condition. Access will be denied if, for example:

- The vehicle has a defective exhaust system;
- A serious oil or fuel leak is evident;
- The vehicle has unsafe bodywork or is carrying an unsafe load;
- The vehicle is fitted with extraneous or non-standard equipment;
- Passengers are not seated properly;
- The vehicle is not fitted with a seat belt for each occupant; or
- The vehicle has any obvious mechanical defect;
- Pre-inspection requirements are not met.

Overloaded vehicles will not be permitted to enter the site.

The driver / operator of any vehicle / mobile equipment must carry a copy of his appointment with him at all times. Each driver / operator must:

- Comply with all site / project rules and regulations pertaining to traffic and the safe operation of vehicles / mobile equipment;
- Obey all road signs;
- Obey all instructions given by security or emergency services personnel;
- Remain within the boundaries of the site; and
- Ensure that the vehicle that he is operating is never overloaded, and that loads are always properly secured.

In the interest of safety, only the minimum number of vehicles required by the contractor to complete the work under the contract will be permitted to enter the site.

When not in operation, the contractor's vehicles / mobile equipment must be parked within the boundaries of his lay-down area or yard.

Parking is only permitted in designated parking areas.

All cars are parked on site at the owner's risk.

In the event of a vehicle accident on site, the driver(s) must report the incident immediately and must remain at the scene until a nominated project management representative arrives, or until a nominated project management representative authorises him to leave (unless, of course, the driver requires medical attention).

## **15.6 Mobile Equipment and Light Vehicles**

All Contractors must ensure all applicable legislation concerning mobile equipment and light vehicles are complied with at all times.

Each contractor must provide evidence to the nominated project management representative that all light vehicles and mobile equipment to be used on the project (including, but not limited to, lift and carry cranes (or mobi-lifts), mobile cranes, forklifts, mobile elevating work platforms (e.g. Cherry pickers), tractors, dozers, dump trucks, haul trucks, graders, excavators, loaders, back-actors, drill rigs, and road-going cars, light delivery vehicles, and trucks) comply with the requirements of all applicable legislation. This evidence must be provided prior to the equipment being brought onto the project site. The contractor remains responsible for meeting this requirement even if the equipment to be used is leased or provided by a sub-contractor (i.e. not owned directly by the contractor).

An Equipment Profile (dossier) must be compiled for each light vehicle and each item of mobile equipment to be used on the project site.

All mobile equipment and light vehicles (used for work purposes) must be subject to a risk assessment compiled. The assessment must:

- Involve operators and maintenance personnel who will use and work on the equipment; and
- Address all aspects of safe operation including handling, driver vision, brake failure, tyre blow out, and access and egress for operators and maintenance personnel.

Each light vehicle and each item of mobile equipment must be serviced and maintained as prescribed by the manufacturer of the vehicle or equipment.

No major repairs or services may be carried out on site.

No repairs may be carried out by a driver or operator. Only suitably qualified and competent persons may carry out repair work.

An appropriate pre-operation safety check based on a risk assessment must be carried out for each light vehicle or item of mobile equipment driven or operated for work purposes. For each vehicle or equipment type, an approved checklist must be in place (and must be used). The pre-operation

check must include, but not be limited to, inspection and / or testing of the following safety critical features:

- Brakes (testing method must be provided);
- Wheels and tyres (including the spare);
- Lights and indicators;
- Steering;
- Seats and seat belts; and
- Windscreen and windows, including windscreen wipers and washers.

Should any critical feature be defective or damaged, the vehicle or equipment may not be operated until it has been fully repaired.

Supervisors must review the completed checklists on a daily basis to satisfy themselves that there are no major deficiencies that could place a driver or operator at risk.

No person may drive or operate any light vehicle or item of mobile equipment without authorisation. All drivers and operators must be appointed in writing by the contractor's Project Manager.

No driver or operator may be appointed without proof that the individual has been trained, tested and found competent, or is currently licensed.

The appointment letter must specify the type of vehicle or equipment for which authorisation is being given and must clearly confirm that the driver or operator:

- Is 18 (eighteen) years of age or older;
- Has undergone a medical examination and has been declared fit for work by an occupational medical practitioner; and
- Has received suitable training and has been found competent, or is in possession of a valid driving licence issued by a state, provincial or civil authority that is applicable to the class of vehicle or equipment that is to be driven or operated.

The principal accountability for preventing accidents and incidents lies with the driver or operator of a light vehicle or item of mobile equipment, as he is in full control of any given situation at any given time. It must be stressed to each driver and each operator that safety is his prime responsibility – this must be clearly instructed and understood.

Drivers and operators must be empowered to stop driving or operating immediately should an unsafe condition arise, and refuse to drive or operate any light vehicle or item of mobile equipment that is defective and / or has any inoperative safety features. Similarly, a supervisor must never force a driver or operator to drive or operate a defective vehicle or item of equipment.

If a driver or operator does not adhere to the site rules and regulations, his appointment must be withdrawn and he must not be permitted to continue with his duties. If necessary, site access will be denied (either temporarily or permanently) to any driver or operator who is deemed to not be adhering to site requirements.

No person may drive or operate a light vehicle or item of mobile equipment if he suffers from a medical condition that places both him and those around him at risk of injury.

A fit-for-work policy must be in place, incorporating clearly defined maximum levels of drugs (including prescribed medication) and alcohol permitted in the system of a driver or operator.

Daily alcohol testing and random drug testing must be carried out.



Supervisors must regularly check on the physical condition of drivers and operators during the course of a shift.

A system must be in place to manage driver fatigue.

No eating or drinking is permitted while driving or operating a light vehicle or item of mobile equipment.

A mobile phone, whether hands-free or not, may only be used by the driver or operator of a light vehicle or item of mobile equipment when the vehicle or equipment is stationary and in a safe location.

Behaviour-based observations and coaching must include the operation of light vehicles and mobile equipment.

A site-specific traffic management plan must be compiled and submitted to the nominated project management representative for approval. The plan must include, but not be limited to, the following:

- Segregation of pedestrians, light vehicles, and mobile equipment where possible (using barriers where feasible);
- Systems to control the movement of mobile equipment in areas accessible to pedestrians, the movement of mobile equipment into and out of workshops, and pedestrian and light vehicle movement around mobile equipment;
- Setting of appropriate speed limits for vehicle types, road surfaces and environmental conditions;
- Installation and maintenance of road traffic control signs;
- Right-of-way rules (including overtaking restrictions);
- Overtaking protocols;
- Clear communication protocols for interactions between all vehicles and equipment;
- Procedures for light vehicles and / or mobile equipment entering hazardous or restricted areas;
- Standards for safe following distances based on operational circumstances, environmental conditions and near sight (blind spot) limitations of mobile equipment;
- The minimum safe distance to be maintained between light vehicles and mobile equipment (i.e. 50 metres unless positive contact is made);
- Designated parking areas for mobile equipment and light vehicles, including parking associated with maintenance areas;
- Parking procedures (e.g. Safe parking distances, safe parking locations, requirements for reverse parking, etc.);
- Systems to control approaching, refuelling, parking, boarding and disembarking mobile equipment (a driver or operator must exit the cabin and must disembark the vehicle or equipment entirely when his direct involvement with maintenance or servicing is not required);
- Guidelines for abnormal road conditions (e.g. Heavy rain, fog, or high winds) providing "go / no go" criteria and contact details for the person(s) responsible for making the "go / no go" decisions;
- Truck loading and unloading procedures to avoid material or objects falling from the vehicle;
- Guidelines for wide or abnormal loads including offsite transport; and
- Systems to control mobile equipment use in the vicinity of overhead power lines.

The design and layout of the road system (including entrance and exit points, intersections and other potential points of interaction between pedestrians, light vehicles and mobile equipment) must be reviewed periodically.

A risk assessment must be carried out prior to any changes being made to traffic movements or road systems.

Designated walkways (both indoors and outdoors) must be provided for pedestrians, and pedestrians must make use of these walkways. Good lighting must be provided along all walkways, particularly at road junctions. Wherever possible, rigid barricading must be used to separate pedestrians from moving light vehicles and / or mobile equipment.

No pedestrians are permitted on haul roads (or as far as this can reasonably be achieved in situations where a haul road runs through an area occupied by a local community). All personnel must be transported to site and must be dropped off at a designated area.

Controls must be in place to ensure the safety of people working on roads, including those working on broken-down vehicles.

High visibility clothing must be worn by all persons at all times whilst on the project site.

Speed limits and traffic rules must be reviewed regularly and must be rigorously enforced. Local traffic rules must be complied with at all times.

Pedestrians and cyclists must give way to light vehicles and / or mobile equipment except at pedestrian crossings.

All light vehicles and mobile equipment must give way to emergency vehicles.

Pedestrians and light vehicle drivers must be made aware of the blind spots associated with mobile equipment.

The driver or operator of a light vehicle or item of mobile equipment must stop the vehicle or equipment and sound the horn before proceeding at blind corners, where his view of the path or intended path is obstructed, and when entering or leaving a building.

Whenever a light vehicle or item of mobile equipment is stopped or parked, the handbrake (if applicable) must be applied.

Measures (such as chocking or the use of ditches or trenches) must be in place for the immobilisation of parked mobile equipment.

A parked light vehicle must be chocked in situations where the vehicle would roll forwards or backwards if placed in neutral with the handbrake disengaged.

No light vehicle or item of mobile equipment may be left unattended with the engine running or with a key in the ignition.

No light vehicle or item of mobile equipment may be parked so as to cause an obstruction to any roadway, passage or access way.

No light vehicle or item of mobile equipment may be parked within 50 metres of a loading or off-loading point.

Light vehicles and mobile equipment must be loaded safely. All loads must be secure and must be within the load limit of the vehicle or equipment. A load must be properly secured before the vehicle or equipment is set in motion. Adequate precautions must be taken for any overhanging load.

No unauthorised light vehicle or item of mobile equipment may enter a restricted area or building.

### 15.6.1 Light Vehicles

All Contractors must ensure that Light vehicles have the following minimum safety features:

- Fixed seats and suitable seat (safety) belts for all occupants (i.e. Driver and all passengers);
- Roll-over protection for all vehicles intended to be driven on dirt or steep roads;
- Cargo barriers and load restraints for all vehicles designed for carrying loads (other than passengers), or that are unable to have cargo separated from the occupant-carrying space of the vehicle; and
- An air bag on the driver's side, and where available as a manufacturer fitted item, a passenger's air bag;
- A Reverse Alarm.

All Contractors must ensure that Light vehicles that interact with mobile equipment are equipped or fitted with:

- Systems that enable positive communication with the equipment operators (e.g. A two-way radio);
- A high visibility flag (e.g. A whip flag or buggy whip);
- An amber flashing light (revolving or strobe);
- Reflective taping; and
- High visibility signage (i.e. Vehicle call numbers) facilitating easy and positive identification from a reasonable distance.

**Note:** Call number signs and reflective tape (magnetic or adhesive) must be applied to the front, back and sides of each vehicle.

All Contractors must ensure that Light vehicles carry:

- Emergency roadside triangles or beacons (three of either);
- Chock blocks for preventing uncontrolled movement of the vehicle when parked;
- A flashlight;
- A fire extinguisher (2.5kg DCP);
- A first aid kit; and
- Survival or emergency equipment (e.g. a vehicle recovery kit) suitable for the operating environment.

A change management process must accompany all vehicle modifications, including the attachment of any equipment. Examples of changes or modifications include, but are not limited to, any change or modification:

- Made to the overall structure or design of the vehicle body;
- Made to the original manufacturer-fitted type of tyres or wheels;
- Made to the suspension system of the vehicle;
- Made to the mechanical system of the vehicle;
- That may adversely alter the centre of gravity of the vehicle;
- That alters the load carrying capacity of the vehicle; and
- That may affect the ability of the vehicle to withstand a crash (e.g. the fitment of a "bull bar").

Vehicle selection must be based on a risk assessment where consideration is given to the tasks, the application, the environment, roll-over protection and the rating of sturdiness in the event of a crash.

All Contractors must have a formal inspection and preventative maintenance system in place to ensure that vehicles are maintained in a safe and roadworthy condition at all times and, as a minimum, are serviced in line with the vehicle manufacturer's service schedule.

Should any safety critical feature be defective or damaged, the vehicle must be withdrawn from service until it has been fully repaired. Inspection and maintenance must be undertaken on critical features such as:

- Wheels and tyres (including the spare);
- Steering, suspension and braking systems;
- Seats and seat belts;
- Lights, indicators and reflectors;
- Windscreen and windows, including windscreen wipers and washers;
- The vehicle structure itself; and
- Other safety-related items on the vehicle body, chassis or engine, including instrumentation.

Persons may only be transported in vehicles equipped with manufacturer fitted or approved seats and seat belts.

Seat belts must be worn by all occupants of a light vehicle (i.e. the driver and all passengers) at all times.

Only the driver and one passenger are permitted in the cab (front) of a light delivery vehicle. No personnel may be transported in the load-bin of a light delivery vehicle, even if the vehicle is fitted with a canopy. Only tools and equipment may be transported in the load-bin. Furthermore, no persons may be transported in a trailer behind a vehicle.

A pre-operation vehicle safety check and familiarisation system must be in place and must be used by the driver. An approved checklist must be used. All vehicle faults that are recorded must be attended to immediately.

All Contractors must have systems in place to ensure that risks associated with vehicle journeys are managed and controlled. The systems must include, but not be limited to:

- Formulation of journey management plans prior to the commencement of new or changed travel activities;
- Identification and monitoring of the risks associated with the various routes, intersections, etc. In order to minimise the overall exposure;
- Assessment and communication of changed environmental and road conditions at the time of travel;
- Outlining of actions required in the event of an emergency (e.g. Collision or breakdown); and
- Provision to manage driver fatigue.

Light vehicle running lights (low-beam headlights) must be switched on at all times when the vehicle is in operation.

All Contractors must have a system in place to ensure that drivers receive adequate training to ensure that the vehicle intended to be operated or driven can be operated or driven safely. As a minimum, training must include:

- Behaviour-based defensive driving principles;
- Vehicle familiarisation, taking into account the handling dynamics of the vehicle, maximum number of passengers, load limits and various features;
- Loading and restraining principles where the vehicle to be operated is designed for carrying cargo loads;

- Education and awareness concerning driving and travel risks that may be encountered within the environment where the vehicle may be operated or driven, and the requirements pertaining to traffic rules and speed limits;
- Securing (locking) equipment to prevent unauthorised use;
- Emergency crash and breakdown procedures; and
- Basic mechanical principles, including how to change a tyre and perform an adequate pre-operation check.

A system must be in place to ensure that persons operating any equipment associated with a light vehicle (e.g. Vehicle-mounted cranes and winches) are suitably trained and competent.

### **15.6.2 Mobile Equipment**

All Contractors must ensure that Mobile equipment have the following minimum safety specifications:

- Fixed seats and seat belts for all occupants;
- Adequate lighting, including headlights, tail, turn and brake lights, and an amber flashing light (revolving or strobe);
- An identified isolation and lockout point;
- Adequate walkways, railings, steps and grab handle combinations, and boarding facilities including an alternative path of disembarking in the event of an emergency;
- Collision-avoidance technology and / or procedures;
- A reversing alarm or warning device;
- Chock blocks for preventing uncontrolled movement of rubber-tyred equipment when parked;
- A horn;
- Effective windscreen wipers;
- Effective guarding on accessible moving parts;
- A speedometer (if the mobile equipment is capable of exceeding the lowest applicable speed limit);
- High visibility signage (i.e. Mobile equipment call numbers) facilitating easy and positive identification from a reasonable distance; and
- A security system to prevent unauthorised operation.

Mobile equipment must have the following minimum safety specifications, unless a risk assessment stipulates otherwise:

- Approved or certified roll-over protection;
- Fail-to-safe brakes;
- A fire detection and suppression system capable of being activated from both ground level and cabin level (for certain types of mobile equipment, a suitably sized fire extinguisher may be adequate);
- A non-handheld two-way radio or another form of communication;
- Falling object protection (a protective structure over the operator cabin);
- An enclosed and tight-sealing air-conditioned cabin with suitable protective glass; and
- A means of moving supplies and personal items into and out of the operator cabin that enables an operator to continuously maintain three points of contact while boarding and disembarking the equipment (e.g. A backpack or shoulder strap bag).

When purchasing or hiring equipment, the ergonomics of the cabin must be considered, specifically with regard to the seating, operator controls and retrofitted devices.

Fleet and control consistency must be considered in order to minimise the possibility of operator error when changing machines.

For all new (to site) and modified mobile equipment, a formal risk-based selection and acceptance process must be followed prior to the equipment being used on site.

Selection of equipment, and any modification, must be subject to a rigorous change management process.

An inspection and maintenance programme must be in place for all mobile equipment.

A procedure and checklist system, including a brake functionality test, must be in place for pre-operation inspection by the operator. Registers must be maintained and audited, and must be kept on the machine.

Procedures must be in place to ensure that mobile equipment is only operated on sufficiently stable surfaces and on gradients that are within the limits of safe operation.

Seat belts must be used in all cases, by all occupants. Apart from the driver or operator, only an appointed flagman may be transported in mobile equipment (with the exception of buses) and **only if** the equipment is fitted with a passenger seat. No passengers are permitted on a lift and carry crane (or mobi-lift), mobile crane, forklift, mobile elevating work platform (e.g. A cherry picker), tractor, dozer, dump truck, grader, excavator, loader, back-actor, drill rig, or similar.

Risk assessments must be carried out as part of the planning process for mobile equipment operations and associated activities, and must consider the following:

- Maintenance activities;
- Risks associated with loading, unloading, towing and recovering mobile equipment; and
- The risk of fire.

Procedures must be in place for the safe isolation and lockout of mobile equipment.

Where two or more items of mobile equipment must be operated in proximity to each other, or where an item of mobile equipment must be operated in proximity to persons on foot, a risk assessment involving all persons who will be working in the area must be conducted prior to the work commencing. The risk assessment must be approved by the nominated project management representative. In such a work area:

- No item of mobile equipment may be driven to within 5 metres of another item of mobile equipment without the operator first making eye contact with, and signalling his intentions to, the other operator who must acknowledge that he understands and that it is safe to proceed.
- No person on foot may work or be positioned within 5 metres of an item of mobile equipment that is in operation. Before approaching mobile equipment on foot, a person must make eye contact with, and clearly signal his intentions to, the operator of the equipment. The operator must cease to operate the equipment, and must indicate that he understands and that it is safe to approach.

In certain circumstances (determined through risk assessment), mobile equipment may only move and operate with dedicated flagmen in place:

- Where flagmen are used, it must be ensured that the flagmen, mobile equipment operators, and all other personnel working in the vicinity of the mobile equipment, receive suitable

training with regard to signals and signalling to ensure effective communication. The training must be formal and recorded, and competency must be tested.

- A flagman and the mobile equipment operator that he is directing must maintain eye contact. The flagman must never position himself where the equipment operator cannot see him.
- Should a mobile equipment operator lose sight of his flagman, he must stop his activities immediately until contact has been re-established.

A tyre management system must be in place to address issues including fire, heating, explosion, electrical contact, separations, maintenance, tyre changes, etc.

Site-specific induction must be carried out prior to a mobile equipment operator starting work on site. Area-specific induction must be carried out prior to an operator starting work in a new area on site.

Operators must report conditions and practices that do not conform to procedure.

### **15.6.3 Training and Licensing**

No person may drive a light vehicle or operate an item of mobile equipment unless he has been trained, tested and found competent, or is currently licensed to drive or operate that specific vehicle or item of equipment.

The training must address hazards and risks assessed for:

- That vehicle; and
- The tasks for which it is to be used.
- 

No person may be appointed to drive a light vehicle or operate an item of mobile equipment unless he is in possession of a valid medical certificate of fitness (issued by an occupational medical practitioner).

Each person required to drive a light vehicle or operate an item of mobile equipment on the project site must have a project-specific site licence or appointment to drive or operate that vehicle or item of equipment.

A system must be in place to ensure that the renewal of licences is based on an assessment of competency to drive and / or operate the vehicle or equipment. The frequency of assessment must either be annual, or derived from a risk assessment for each vehicle or equipment type.

No training of drivers or operators may be carried out on site unless authorised by a nominated project management representative.

Each person working on or visiting the project site must receive appropriate project-specific induction training concerning road safety and site vehicle hazards.

Driver must be in position of valid certificate, licence and trained by an accredited service provider.

### **15.6.4 Roads**

Design, inspection and maintenance requirements must be in place for all roadways.

Every haul road must have two dedicated and clearly demarcated lanes so that vehicles travelling in opposite directions are safely separated (lane demarcation is not applicable to dirt roads).

Systems (such as safety berms) must be in place along roadways and around excavations, dump areas, etc. To prevent vehicles from leaving a roadway or entering a dangerous area.

A storm water management plan must be in place for the site and, in particular, for all roads. Extreme wet weather must be considered. Contractors must ensure that all roads are equipped with drainage system.

Roads with high risks activities and traffic interface shall be controlled by trained flagman  
A dust control plan must be in place for the site and, in particular, for all roads. Where required, contractors must ensure that roads are wetted (using a water cart) at regular intervals and whenever instructed by a nominated project management representative. The over-watering of roads must be prevented.

No road may be closed without permission from a nominated project management representative. Any large rocks in a roadway must be removed immediately. Any spillage in a roadway must be cleaned up immediately.

Ground pollution (e.g. Oil, diesel or hydraulic fluid spillages) must not, and will not, be tolerated. If substances are spilled on a road or any other portion of the site, the contaminated ground must be dug out and the resulting hole back-filled with clean material which must be suitably compacted. The contaminated soil must be disposed of as required by the applicable legislation.

## **15.7 Signs and Notices**

The 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.

## **15.8 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 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 nominated project management 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 nominated project management representative.

Items of plant or equipment brought onto site by the contractor or his sub-contractors may be inspected by a nominated project management representative. Should the nominated project management representative determine that any item is inadequate, faulty, unsafe or in any other



way unsuitable for the safe and satisfactory execution of the work for which it is intended, the contractor must, on instruction from the nominated project management representative, immediately remove the item from the site and replace it with a safe and adequate substitute. In such a case, the contractor or his sub-contractor shall not be entitled to additional payments or deadline extensions in respect of any delay caused.

## **15.9 Barricading**

All applicable legislation concerning barricading must be complied with at all times.

Each contractor required to erect barricading on the project site(s) must develop, document and implement Safe Work Procedures that are aligned with the requirements of this standard.

Barricading must be erected to:

- Prevent persons from making contact with an identified hazard;
- Provide warning of the existence of a hazard;
- Prevent unauthorised access (by people, vehicles and mobile equipment) into an area where a hazard exists or where a hazardous activity is being carried out;
- Define the boundaries of a hazardous location and / or restricted area; and
- Allow a work team to perform hazardous tasks without persons unfamiliar with the hazard(s) accessing the area.

Although not limited to these situations, barricading must be erected or installed:

- Around excavations (trenches, pits, etc.) (refer to the Excavation Standard);
- To protect openings and edges (to prevent persons from falling, all openings and edges associated with floors, stairs, and the open sides of buildings and structures during the course of construction must be protected by sturdy, rigid barriers capable of withstanding a force of at least 110 kilograms applied in any direction at any point) (refer to the Working at Heights Standard);
- To prevent access into areas where overhead work is in progress;
- To route vehicles safely through (or around) construction areas; and
- To protect members of the public who may be in the vicinity of a work or construction site (by preventing access).

In all cases, the erection of barricading must be a temporary measure. It must only remain in place until the hazard is eliminated or the potentially dangerous situation is rectified.

A barricade must present a sturdy physical barrier to entering an area. Therefore, plastic cones, post and chain systems, "danger tape" and "snow netting" will not be accepted as barricading and may only be used for the purposes of low risk demarcation.

For example, snow netting may be used for the demarcation of lay down areas.

Acceptable forms of barricading include:

- Hoarding panels (no less than one metre in height) that can be securely fastened together to form a fence line may be used. Hoarding panels may be constructed from a variety of materials (e.g. wooden board, steel sheeting, wire mesh on a steel frame, etc.)
- Wire mesh fencing (no less than one metre in height with sturdy posts spaced at intervals of no more than 3 metres) may be used in certain circumstances, e.g. Around excavations.
- Sturdy, rigid, and securely fixed (i.e. bolted, welded, clamped, etc.) Metal guard rails may be used, particularly for protecting openings, holes and edges associated with floors, platforms, walkways, etc. The top rail must be positioned at a height of one metre above the working surface, and a mid-rail must be provided.

- Concrete Jersey barriers must be used for the routing of traffic and when work is being conducted in or alongside a roadway.

Regardless of the type of barricade used, the following requirements must be met:

- The installation, alteration and removal of barricades must be supervised by a competent person;
- The barricading must be uniformly and intelligently configured;
- The barricading must be stable, conspicuous and effective;
- The barricading must completely surround the work or hazardous area;
- General access requirements around the work or hazardous area (such as pedestrian walkways, operational access, or general thoroughfares) must be taken into consideration when erecting a barricade;
- The extent of the area that is barricaded must be kept to a minimum so as not to unnecessarily restrict access to other areas. If access routes to other areas are blocked by the barricade, alternative routes must be identified and signposted
- All barricaded areas must have properly designated points of entry and exit for persons and / or vehicles. Each pedestrian access point must be fitted with a self-closing gate. A sign indicating, "DESIGNATED ACCESS POINT – AUTHORISED PERSONNEL ONLY", must be fitted to each gate;
- Additional signage providing warning of specific hazards (e.g. falling objects, electricity, etc.) Including, "NO UNAUTHORISED ENTRY", must be attached to all gates and, where required, to the barricading itself. The signage must be visible from all angles and must be large enough to be read from a distance of 10 metres;
- Barricading must be clearly visible at all times (day and night). If necessary, flashing warning lights must be used;
- Tags must be attached to the barricading displaying the name and cell phone number of the person responsible for the barricade, and specifying the reason for the barricading and the date on which it is scheduled to be removed;
- Should a person require access to a barricaded area, authorisation must be obtained from the person responsible for the erection of the barricade. The hazards that are present and the Personal Protective Equipment that must be worn within the barricaded area must be communicated to the person seeking access;
- Each barricade must be listed in a register, and each must be inspected daily to ensure that it is still intact and that its positioning is still effective;
- All barricades must be properly maintained and repaired as required;
- When the work has been completed and the hazard has been eliminated, all barricading must be removed without delay. A barricade may not be left in place if no hazard exists;
- Before a barricade is removed (allowing general access), the area must be inspected by the person responsible for the work that was carried out, to ensure that the area is once again safe. If applicable, the person accepting the area back for general use shall do so on completion of his own safety inspection;
- Authorisation to remove (or modify) a barricade may only be granted by the person responsible for the erection of the barricade.

## 15.10 Excavations

All applicable legislation concerning excavation work must be complied with at all times.

Each contractor carrying out excavation work on the project site(s) must develop, document and implement Safe Work Procedures that are aligned with the requirements of this standard.

All excavation work must be properly planned. Site-specific conditions and hazards must be considered, including traffic, overhead and buried utilities, proximity to nearby structures, soil properties, presence of surface and / or ground water, position of the water table, and weather conditions.

Excavation work may only be carried out under the personal supervision of a competent Excavation Supervisor who has been appointed in writing.

Before any excavation work is carried out, a Permit to Work authorising the activities must be obtained.

Similarly, no person may enter an excavation unless a Permit to Work has been issued providing authorisation for specific tasks to be carried out within the excavation.

Before issuing a Permit to Work for excavation works, the Authorised Person (i.e. Permit issuer) must verify that:

- A detailed Risk Assessment has been conducted for the work to be performed;
- A Safe Work Procedure is in place; and
- No buried services are present in the area where the excavation works are to be carried out.

As a minimum, the Risk Assessment must consider hazards and risks associated with:

- A person being trapped or buried as a result of an excavation collapsing;
- A person being struck by an object falling into an excavation;
- A person falling into an excavation;
- A person being exposed to a hazardous atmosphere within an excavation (i.e. An oxygen deficiency, explosive or flammable gases, and / or harmful concentrations of a contaminant);
- Contact with belowground services; and
- Mobile equipment and / or light vehicle movement in proximity to an excavation.

On a plan (drawing) of the work area, the contractor must accurately indicate the position and dimensions of each intended excavation in order for it to be determined whether or not buried services would (or may) be encountered, such as electrical cabling, communications cabling, gas, fuel, potable water, fire water, effluent, sewage, or storm water pipelines.

In addition to a desk top review of existing drawings, a field survey must be carried out to verify the presence or absence of buried services. The positioning of all known belowground services must be accurately demarcated in the field before any excavation work commences.

Should there be any uncertainty, a pipe or cable locator must be used to determine if buried services are present, and if so, the positioning of the services.

If buried services are identified (or are suspected to be present) then the excavation plan must be altered if necessary to avoid these services. If the excavation plan cannot be altered then safe work methods (e.g. careful excavation by hand) must be specified and measures (e.g. Isolation and lockout of the service) must be put in place to minimise risk to personnel and prevent damage to the service(s).

Machinery may not be used to excavate material lying within one metre of any belowground service (i.e. Cable or pipe).

Excavation work that is carried out must be limited to what is described in the Permit to Work. All controls, precautions and restrictions identified in the Permit to Work (and Risk Assessment) must be strictly observed and fully implemented. The Excavation Supervisor must discuss these controls, precautions and restrictions with all persons who will be carrying out the work.

All excavation work must be carried out by persons who have been trained and are competent to perform the work.

All personnel working in or near any excavation must wear high visibility protective clothing.

Unexpected structures (e.g. Tanks, brick work, concrete work, etc.) Or services (e.g. Cables, pipe lines, etc.) As well as unusual conditions (e.g. inconsistent materials, voids, etc.) That are encountered during excavation work must be reported immediately. All work must cease until the nominated project management representative provides authorisation to continue.

If an excavation is more than 1.2 metres deep and people have to enter it, then the sides of the excavation must be suitably battered, benched, or shored, unless a registered professional geo-technical engineer confirms in writing that there is no risk of the excavation collapsing (i.e. That the sides of the excavation are stable without battering, benching or shoring).

If the sides of an excavation are battered (sloped), then this must be done at an angle that is suitable for the given soil conditions (to be determined by a registered professional geo-technical engineer).

When it is not possible to batter (or bench) the sides of an excavation to a safe angle, then the sides of the excavation must be suitably shored. Shoring may only be installed, altered or removed under the personal supervision of a competent person using a predetermined safe method. Only approved shoring systems and equipment may be used. Shoring requirements must always be determined and designed by a competent person for the specific conditions encountered at the excavation site.

All material removed from an excavation (spoil) must be placed no closer than three times the depth of the excavation away from the edges of the excavation.

The profile of this spoil must be flattened out to prevent the material from being washed back into the excavation by rain water.

Scaling must be carried out on the sides of all excavations to remove loose material.

Protective shields or barriers must be erected (when required) between the sides of an excavation and the work area in order to protect employees from falling, rolling or slumping rock, soil, or materials.

Persons may not work on the faces (sides) of battered (sloped) or benched excavations at levels above other persons.

Tools, equipment and materials may not be placed within two metres of the edges of an excavation. Alternatively, a suitable retaining device may be used to prevent tools, equipment and materials from falling, rolling or sliding into an excavation.

No vehicle or item of mobile equipment is permitted near an edge of an excavation.

Mobile equipment may not operate in or near an excavation whilst persons are working within the excavation.

To ensure that adjacent structures (such as buildings, walls, or sidewalks) remain stable during excavation work, support systems such as shoring, bracing, or underpinning must be provided if required. Excavation below or near the base or footing of any foundation or retaining wall is prohibited unless:

- A support system (designed by a registered professional geo-technical or Structural engineer) is provided, such as underpinning; or
- A registered professional geo-technical engineer determines that the structure is far enough away from the excavation that no hazard exists.

To prevent persons and / or mobile equipment from accidentally falling into an excavation and to prevent unauthorised entry into an excavation, rigid barricading must be erected around every excavation that is deeper than 500mm. Warning signage must be prominently displayed and, if necessary, flashing warning lights must be used at night.

The barricading must remain in place for as long as the hazard (i.e. the excavation) exists. Sections of barricading around an excavation may only be removed (and then only temporarily) to enable excavation work to continue (refer to the Barricading Standard).

For each excavation more than 1.2 metres deep, safe means of access and egress (e.g. Ladders, steps or ramps) must be provided for persons working in the excavation. Safe entry and exit points must be located every 15 metres along the side(s) of an excavation (i.e. an exit point must not be more than 7.5 metres away from any person working in the excavation).

If a hazardous atmosphere exists within any excavation (i.e. an oxygen deficiency, the presence of explosive or flammable gases, and / or harmful concentrations of a contaminant) or if there is a possibility that a hazardous atmosphere may develop, then the excavation must be declared a confined space. Furthermore, an excavation must be considered a confined space if any risk of entrapment or engulfment exists. If an excavation is declared a confined space then all precautions and requirements pertaining to confined spaces must be implemented and complied with (refer to the Confined Spaces Standard).

Internal combustion engines may not be used in or near the edge of an excavation unless the exhaust emissions are ducted away or suitable mechanical (forced air) ventilation is used to maintain a safe atmosphere within the excavation.

Any water and / or sludge present within an excavation must be removed completely before any work commences in the excavation.

Using ditches, dykes, sumps and pumps, or other suitable means, surface water must be prevented from entering an excavation and areas lying adjacent to an excavation must be adequately drained. If equipment is used to prevent water from entering an excavation or to prevent water accumulation within an excavation, then the equipment must be monitored by a competent person to ensure that it remains operational and effective.

Suitable lighting must be provided in and around any excavation in which work must be carried out at night.

A high standard of housekeeping must be maintained in and around all excavations.

Tools that are not in use, and materials that are no longer required, must be removed from an excavation to prevent these items from causing injury or being lost (buried).

A register of all excavations must be compiled and maintained.

A competent person (i.e. an appointed Excavation Supervisor) must inspect each excavation as well as the areas around it:

- At the start of each day (or shift) before work commences within the excavation;
- After any alteration is made to the excavation or shoring;
- After rainfall;
- After any blasting activity carried out in the vicinity of the excavation; and
- After any event that may have affected the strength or stability of the excavation or the shoring.

An excavation must be inspected for collapses, signs of instability, failures or signs of overloading of protective systems and equipment, hazardous atmospheres, water accumulation, and any other hazardous condition that may arise.

The sides of an excavation as well as the surface of the ground around the excavation must be carefully inspected for signs of instability including fissures (cracks), slumping, and bulging. Shoring must be carefully inspected for signs of overloading (e.g. Distortion).

If a hazardous condition is identified, no person may enter the excavation until suitable corrective actions have been taken and / or suitable controls have been put in place to either eliminate the hazard or reduce the risks to acceptable levels.

A record of each inspection (including date, time, findings, and signature of the Excavation Supervisor who carried out the inspection) must be captured in the excavations register. Each inspection record must include a declaration as to whether the excavation is safe to work in or not. All excavations must be monitored closely throughout each work day (or shift) by the Excavation Supervisor.

If an excavation has been declared a confined space, a safety observer (who will be able to initiate emergency response procedures if required and identify the location of any trapped or buried persons in the event of a collapse) must be stationed at ground level outside of the excavation whenever work is being carried out in the excavation.

If a hazardous condition is identified while work is being carried out in an excavation, then all persons in the excavation must be evacuated to safety without delay.

Under no circumstances may a person work alone in an excavation that is more than 1.2 metres deep without at least one other person being present in the immediate vicinity of where the work is being carried out.

Excavations must be backfilled as soon as possible, and the material used (usually the original material) must be properly compacted.

Where belowground services are present, the material used to backfill an excavation must be such that the services will not be damaged.

A layer of a material that is dissimilar to the general backfill material must be placed immediately above any buried service.

An excavated area must be restored to its original condition if at all possible.

## Use of Explosives

All excavation work must be carried out without the use of explosives.

Explosives may not be brought onto the site or be used without written authorisation from the nominated project management representative.

If blasting operations are unavoidable, the contractor must:

- Provide a justification and obtain approval from the nominated project management representative;
- Strictly observe the provisions of all applicable legislation; and
- Carry out a detailed risk assessment covering the transportation, handling, storage and use of the explosives.

No explosives or detonators may be stored on site.

Detonators and other explosives must never be carried in the same box.

## 15.11 Cranes and Lifting Equipment

All applicable legislation concerning cranes and lifting equipment must be complied with at all times. Each contractor carrying out lifting operations on the project site(s) must develop, document and implement Safe Work Procedures that are aligned with the requirements of this standard.

### 15.11.1 Planning and Risk Assessment

For each critical lift that must be carried out on site, a documented and detailed lift plan and risk assessment must be prepared to address all associated hazards.

Only suitably qualified, competent and experienced persons (lift planners) may evaluate critical lifts and prepare lift plans.

The lifting supervisor, crane operators, riggers and spotters responsible for carrying out a critical lift must have input into the lift plan and risk assessment and must be consulted before these documents are finalised.

All lift planners, lifting supervisors, crane operators, riggers and spotters (safety observers) must be appointed in writing.

No critical lift may commence until the lift plan and risk assessment have been authorised by the nominated project management representative and a Permit to Work has been issued.

Critical lifts include:

- All multiple (including dual) crane lifts;
- Lifts where the operational arcs of two or more cranes can overlap;
- Lifts over operating facilities where this may endanger personnel;
- Lifts over or adjacent to power lines;
- Any lift carried out in close proximity to equipment or a vessel containing a flammable or toxic substance;
- Lifts where the centre of gravity of the load could change;
- Any lift where the total weight on the hook exceeds 20 tonnes;
- Lifts near the rated capacity of the crane (i.e. Exceeding 85% of the rated capacity at the working radius);
- Any lift when the wind speed (including gusting) exceeds 30 kilometres per hour;
- Lifts involving a man basket (safety cage);
- Lifts to and from water;

- Lifts requiring specialised equipment or involving complicated lifting or rigging configurations;
- Lifts requiring non-standard rigging or slinging techniques;
- Lifts involving the simultaneous use of more than one hoist on the same crane; and
- Any other lift deemed to be critical by the nominated project management representative, or assessed as critical during a risk assessment.

The lift plan for a critical lift must include:

- General Information – crane manufacturer, crane model, items to be lifted, and reason for lift;
- Lift Data – load weight, lifting block and hook weight, hoist rope weight, rigging weight, total weight, height of lift, radius of lift, surface area of load, and centre of gravity of load;
- Rigging Data – sling material (chain, wire rope, or synthetic), sling diameter, sling length, sling configuration, sling capacity, hook type, shackle size and capacity;
- Lift Computation – boom length, jib length, radius of lift, crane capacity as configured, size of outrigger footplates, and wind speed;
- Proximity to Power Lines and Process Areas – mobile cranes working in proximity to energised power lines must operate under a Permit to Work, which must define exclusion zones and spotter duties;
- Local Hazards and Controls – including the route for the crane, ground stability, proximity of people or equipment, and agreed communication method; and
- Diagrams (sketches) – a rigging diagram, and a crane set-up diagram illustrating the positioning of the crane(s) in relation to surrounding structures and the initial and final positions of the load (including crane boom movement).

Lifts that are not subject to detailed lift plans (i.e. Lifts that are not considered critical) must nevertheless be subject to a risk assessment, and be properly planned and executed.

The use of a crane-suspended man basket (safety cage) may only be considered when all other avenues to safely perform the work (e.g. Scaffolding, mobile elevating work platform, etc.) Have been exhausted (refer to the Working at Heights Standard).

Cranes used to lift or suspend personnel must be approved as suitable for this purpose.

If a crane must be operated in proximity to energised overhead power lines (or any other exposed electrical conductors) then minimum clearance distances (specified by the electrical power utility or the nominated project management representative) must be observed. Whenever possible, power lines must be de-energised and isolated while lifting operations are carried out (refer to the Electrical Safety Standard).

#### **15.11.2 Operation**

At the start of every day or shift, the operator of a crane or hoist must carry out a pre-operation safety check using a prescribed checklist.

The specific requirements of the pre-operation safety check (and associated checklist) must be based on:

- A risk assessment that addresses all aspects of safe operation of the crane or hoist; and
- The inspection recommendations of the manufacturer.

As a minimum, the pre-operation safety check must include:

- A thorough visual inspection of all wire ropes, chains, hooks and safety latches, hook blocks, sheaves, hydraulic hoses, electrical cables, and the general condition of the crane or hoist;
- Checks to confirm the serviceability of the operating controls;
- Tests to confirm the correct operation of all limit switches, emergency shutdowns, load indicators, alarms and other safety devices; and



- A thorough visual inspection of all lifting equipment (tackle) to be used.

The operator must:

- Check for any loose or missing parts;
- Make sure that the wire rope (or chain) of the hoist is properly seated in its drum and sheave grooves without any slack or overlapping;
- Operate each control to make sure it functions properly, releases immediately, and does not stick. Each control must be labelled to indicate its function;
- Listen for any unusual mechanical noises and look for any jerky movements while operating the crane and / or hoist several feet in each direction that it travels;
- Check the functionality of the upper and lower hoist limit switches (if applicable) by slowly raising and then lowering the block to trip the respective switches;
- Check all hooks. Hooks must not be cracked, stretched, bent or twisted. Each hook must have a safety latch that automatically closes the throat of the hook. If the latch is bent, has a broken spring, or is otherwise damaged, it must be repaired before use. Hooks must rotate freely in the block assembly without any "grinding" felt or heard;
- Check the wire rope by lowering the block to its lowest level and looking for the following signs of damage:
  - ♦ Reduced rope diameter. This may indicate that the rope has been stretched, has lost its inner core support, or has worn outside wires;
  - ♦ Broken wire strands (any number);
  - ♦ Kinked, crushed, cut, or "bird caged" wiring, or wiring with heat damage.
- Check all chains for damage including wear at contact points, cracks, or distorted links (bent, twisted or stretched). All mechanical coupling links must be inspected to ensure that the linking pins are secure and in good condition. The capacity rating of each chain must be adequate for the load and the attachment method;
- Check the condition and capacity of wire rope and synthetic web slings. Capacity ratings must be legible on the manufacturer's label. The capacity of the sling being used must be adequate for the load and the attachment method. A sling must be replaced immediately if it is excessively worn.

The operator must report any fault, defect or damage to his supervisor immediately.

A crane or hoist must not be operated if any safety device is out of order or defective, or if any rope, chain, hook or other component is worn or damaged.

Completed checklists must be made available (on request) for inspection by the nominated project management representative. Wherever possible, these checklists must be kept with the crane or hoist.

All lifting operations must be supervised by suitably qualified, competent and experienced supervisors.

An effective method of communication between the crane operator and those assisting with the lift must be in place. This must be documented and approved by the nominated project management representative.

Documented Safe Work Procedures must be in place to ensure the following:

- Access into an area where lifting operations are being carried out must be restricted. Such an area (i.e. where there is a risk of a load falling and striking a person) must be barricaded and only authorised persons may enter (i.e. those directly involved with the lifting operations). Warning signage must be conspicuously displayed;

- Where a load is being moved from one location to another (i.e. The lifting operations are not being carried out in a discrete area that can be barricaded), measures must be taken to ensure that all persons in the path of the suspended load are made aware of the approaching hazard and that they move, and remain, well clear of it. All persons potentially affected must be given warning before the load is lifted;
- A lift must be directed and controlled by a single person (a suitably qualified, competent and experienced rigger);
- Dedicated spotters must be in place during lifting operations to observe and provide warning (if necessary) to prevent incidents and ensure that safety protocols are adhered to;
- Before commencing with a lift, it must be verified that the load being lifted is both within the rated capacity of the crane (or hoist) and lifting equipment and within the limits set out in the lift plan and / or risk assessment. The rated load capacities of the crane, hoist, rope, chains, slings or other components may never be exceeded;
- Only certified lifting equipment (tackle) may be used to lift a load;
- No equipment (tackle) that has been used for towing may be used for lifting operations;
- Only an approved material box (skip box) may be used for lifting loose items or materials;
- Before commencing with a lift, it must be verified that no safety devices (including load limiting devices) have been bypassed, overridden or disconnected;
- To prevent the load from swinging as it is lifted, the hoist must be centred over the load (when using slings or chains) or positioned directly above the lifting point of the load;
- Hoisting ropes must be kept vertical. No side loading of a crane boom is permitted (i.e. A crane may not be used to make a side pull);
- Two full wraps of rope must remain on the hoisting drum at all times. If a lower hoist limit switch has been fitted, and it is working correctly, it should not be possible to lower the block below the point where less than two full wraps of rope are on the drum;
- Before commencing with a lift, it must be verified that all rigging connections are correct and secure. Slings, chains, or other lifting devices must be fully and securely seated in the saddle of the hook;
- Slack must be removed from the slings, chains and / or hoisting ropes before lifting the load. It must be ensured that multiple lines are not twisted around each other and that the hoist rope is not wrapped around the load;
- To ensure that the load is properly secured and balanced, it must initially only be lifted a few centimetres. Slings must be repositioned if required;
- Before moving a suspended load, it must be lifted high enough to clear all obstructions. The load must only be lifted to the height necessary to clear obstructions, and no higher;
- Directional movement must be made smoothly and deliberately (there must be no sudden acceleration or deceleration of the moving load). Abrupt, jerky movements of the load in any direction must be avoided;
- Tag lines must be used in situations where a load needs to be steadied or guided while suspended;
- When using tag lines to steady or guide a suspended load that is being moved using a mobile crane, personnel on foot must remain in sight of and in communication with the crane operator at all times, must never walk between the crane and the load, and must remain clear of the load and the crane at all times (at least 5 metres). The load must be moved at a slow walking speed;
- A suspended load must be monitored closely at all times;
- If a crane operator's view of a suspended load is unavoidably obscured (completely or partially), or if a suspended load is unavoidably obscuring (completely or partially) a crane

operator's view, then suitably positioned spotters must be in place to provide guidance to the crane operator;

- A load MAY NOT be moved over, or be suspended above, any person or any occupied building. No person may walk beneath, or position himself below, a suspended load;
- No person may pass or work beneath the boom of a crane;
- No person may be positioned between a suspended load and a solid object where there is a risk of being crushed should the load swing;
- No person may be positioned within the radius of the boom of a crane unless directly involved with the lift;
- Under no circumstances may any person ride on a crane's hook or on a load;
- No load may be left suspended unless the operator is at the controls and is monitoring the load. In such a situation, the load must be kept as close as possible to the ground or floor to minimise the possibility of injury should the load drop;
- The controls of a crane or hoist may never be left unattended while a load is suspended. If it becomes necessary to leave the controls, the operator must lower the load to the ground or floor;
- With the exception of pick-up and carry operations, no lifting may be carried out using a mobile crane unless the outriggers have been deployed and are locked in position;
- Load spreaders or packing under the outriggers must be used irrespective of the underfoot conditions;
- Before a mobile crane is moved into position to carry out a lift, the area must be inspected by a suitably qualified person who must verify that the underfoot conditions are satisfactory;
- When using a mobile crane, slewing to test the effectiveness of the outriggers must be carried out prior to commencing with a lift;
- Slew pins must be securely in place while a mobile crane is travelling;
- Unauthorised use of a crane or hoist must be prevented by removing the keys, locking the cabin, isolating the controls, etc. When lifting operations have been completed;
- When not in use, lifting equipment must be stored off the ground and must be protected from the elements (rain, harsh sunlight, etc.) And contamination (dust, solvents and other chemicals) in order to prevent damage and / or deterioration.

A crane or hoist or an item of lifting equipment may only be used for the purposes for which it was designed.

### **15.11.3 Inspection, Testing and Maintenance**

Any crane or hoist brought onto the project premises must have a current test certificate and record of inspection as well as a suitable checklist (derived from the crane or hoist manufacturer's inspection recommendations) for use by the operator(s) when carrying out pre-operation safety checks.

An Equipment Profile (dossier) must be compiled for each crane.

A register of all cranes, hoists and lifting equipment (tackle) brought onto the project premises must be compiled and maintained.

Each crane, hoist and item of lifting equipment must have a unique identification code or number, which must be referenced in the register.

For each crane, hoist and item of lifting equipment, the following documentation must be kept on site and must be made available (on request) to the nominated project management representative for inspection:

- Test records and certificates;
- Inspection records;

- Maintenance records; and
- Details of any modifications or repairs made.

All cranes, hoists and lifting equipment must be inspected, tested and confirmed fit for purpose (i.e. Safe for use):

- Before being operated or put into service;
- Before being returned to service following any repair or modification; and
- Periodically as follows (unless local regulations require examination more frequently):
  - Each crane or hoist (including all ropes, chains, hooks or other attaching devices, sheaves, brakes and safety devices that form an integral part of the crane or hoist) must be thoroughly examined by a competent, experienced and appointed person every 6 months;
  - Each crane or hoist must be subjected to an annual performance test (i.e. A load test) by a competent, experienced and appointed person; and
  - All lifting equipment (tackle) must be thoroughly inspected by a competent, experienced and appointed person every 3 months.
  - The system of inspection and testing must provide verification that each crane or hoist is able to function to its design specifications, and must verify the integrity of:
- Mechanical and electrical components;
- Controls;
- Cables and all lifting attachments;
- Structural components including boom, hoist, brakes, wheels, hooks, baskets, out-riggers, hook-blocks and rails; and
- Load limiting devices, hoist limit switches, alarms or warning devices, and other safety devices and control systems (including independent fail-safe braking systems, devices to stop the crane or hoist such as a dead man's switch, and emergency shut-off switches).

A preventative maintenance system must be in place to ensure that all cranes and hoists are maintained in a safe and serviceable condition.

For any crane or hoist, all inspections, testing, maintenance and repairs must, as a minimum, be carried out in compliance with the requirements and specifications of the manufacturer as well as all applicable regulatory requirements (in terms of both the frequency of inspection, testing and maintenance, and the physical condition of the crane or hoist).

Repairs to a crane or hoist may only be carried out by competent persons. After repairs have been made, the crane or hoist must be tested and recertified fit for purpose (unless the repairs did not affect the integrity of the lifting mechanism).

Any modification to a crane or hoist must be subject to the approval of the original equipment manufacturer and a rigorous change management process.

Each item of lifting equipment (tackle) must be tagged following each quarterly (3-monthly) inspection. Details of these inspections must be recorded in the lifting equipment register which must be made available to the nominated project management representative on request.

The following colour coding system must be used for the tagging of all lifting equipment:

**Table 15-1 colour coding system for lifting equipment**

Quarter	Tag colour
January – march	Blue
April – June	Red
July – September	Green
October – December	Yellow

The tag placed on an item of lifting equipment must be traceable to an entry in the lifting equipment register where the following information concerning the inspection of that item of equipment must be recorded:

- Item description;
- Unique item identification code or number;
- Item owner;
- Item location;
- Date of inspection;
- Name and signature of competent person who carried out the inspection; and
- Any comments concerning the inspection.

Any item of lifting equipment that is found to be damaged or defective must be removed from service (and tagged, “out of service”) immediately and must then either be repaired and recertified (if possible) or destroyed to prevent further use.

Similarly, any lifting equipment that is known (or is suspected) to have been overloaded must be removed from service immediately and destroyed to prevent further use.

If an item of lifting equipment is removed from service or destroyed (scrapped), this must be indicated in the lifting equipment register.

Any item of lifting equipment without a tag or with an out-of-date inspection may not be used.

#### **15.11.4 Training and competency**

Only suitably trained, competent and experienced persons who have been authorised in writing by the contractor’s project manager are permitted to:

- Evaluate and plan critical lifts;
- Supervise lifting operations;
- Operate cranes and hoists;
- Use lifting equipment, and rig (sling) loads;
- Provide signals for controlling lifts; and
- Inspect, maintain or test cranes, hoists and lifting equipment.

Each operator must meet the competency requirements for the particular class or type of crane or hoist to be operated. Depending on the project location and applicable legislation, operators may need to hold a certificate of competency issued by a recognised training institution.

#### **15.12 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.

### **15.12.1 Fall prevention**

#### **15.13.1.1 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 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.

#### **15.13.1.2 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.

#### **15.13.1.3 Wall openings**

Wall openings, from which there is a drop of more than one metre, must be guarded as follows:

- When the height and position of the opening in relation to the working surface is such that standard guard rails will effectively eliminate the risk of accidentally falling through the opening, then these must be provided. The bottom edge of the opening must be fitted with a toe board. The guard rails and toe board may be removable if required;
- Alternatively, the opening may be closed using a screen. Wall opening screens must be of such construction and mounting that they are capable of withstanding a force of at least 100 kilograms applied horizontally at any point on the near side of the screen. A screen may be of solid construction, of grillwork, or of slat work.

An extension platform outside a wall opening, onto which materials can be hoisted, must have sturdy guard rails (or equivalent edge protection) on all sides. One side of the extension platform may have removable railings in order to facilitate the handling of materials.

#### **15.13.1.4 Stairways**

Each flight of stairs having four or more risers must be fitted with handrails.

Handrails must be installed on both sides of every stairway.

Riser height and tread width must be uniform throughout any flight of stairs, including any foundation structure used as one or more treads.

Stairways must be free of hazardous projections, such as protruding nails. No materials, equipment or waste may be placed on or beneath any stairway.

All stairways must be well lit.

#### **15.12.2 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.

The use of makeshift ladders is forbidden.

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.



## 15.13 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;
- A critical lift;
- Hot work outside of designated workshops;
- Excavation; or
- A service (e.g. water supply, fire suppression systems, etc.).

**Note:** A Permit to Work may only be issued by an Authorised Person, and may only be received (or accepted) by an appointed Applicant (see Definitions).

Each Permit to Work that is issued must make reference to an approved Task-Based Risk Assessment for the work that is to be carried out.

The Permit to Work system that is employed must incorporate the following basic procedures:

- Prior to meeting with the Authorised Person, the Applicant must familiarise himself with all of the hazards associated with the system, plant, equipment, structure or area on or in which the work must be performed. He must also consider the risks that may arise as a result of the tasks that will be carried out. A Task-Based Risk Assessment must be in place;
- The Applicant must then request permission to carry out the work and must meet with the Authorised Person to discuss and document the scope of the work as well as the hazards, risks and associated control measures. Isolation and lockout requirements must be identified (if applicable). The isolation and lockout process must be initiated by the Authorised Person who must contact the necessary Isolation Officers.

**Note:** The Applicant must ensure his own safety and that of his team, and has the right to accompany the Isolation Officers to verify that all of the necessary locks have been fitted to all of the isolation and lockout points in accordance with the applicable plant or equipment-specific Isolation and Lockout Procedure.

- Once all of the necessary isolations have been completed and the necessary Clearance Certificates have been issued by the Isolation Officer(s) (if applicable), and the Authorised Person is satisfied that the system, plant, equipment, structure or area is safe to work on or in provided all identified precautions are observed by the Applicant, then he must issue (sign) the Permit to Work to the Applicant;
- The Applicant must accept (sign) the Permit to Work. If equipment has been isolated, the Applicant must attach his Personal Lock to the relevant Isolation Bar (or Local Isolation Point) and must ensure that every other person working on the isolated equipment also attaches his or her Personal Lock to the Isolation Bar (or Local Isolation Point) before starting any work;
- Before commencing with any work, the Applicant must discuss the hazards, risks, control measures, precautions and limitations as stated in the Permit to Work (and associated Task-Based Risk Assessment) with all personnel who will be carrying out the work. A register must be kept and all persons must sign the register once they have been briefed by the Applicant;
- The work performed must be limited to what is described in the Permit to Work;

- When a particular employee has completed his work, he must sign the personnel register to this effect and (if applicable) must remove his Personal Lock from the Isolation Bar (or Local Isolation Point);
- Once all work is complete, the Applicant must:
  - Ensure that all machine guards have been replaced;
  - Ensure that all tools and materials have been removed from the work area;
  - Ensure that the work area is clean and tidy;
  - Ensure that all Personal Locks (including his) have been removed from the Isolation Bar or Local Isolation Point (if applicable);
  - Inform the Authorised Person that the work has been completed; and
  - Sign off the Permit to Work.
- Once the work is complete and the Applicant has signed off the Permit to Work, the Authorised Person must:
  - Ensure that the relevant Isolation Officers perform all of the necessary de-isolations (if applicable);
  - On completion of the de-isolations, sign off the Permit to Work accepting the system, plant, equipment, structure or area back for service; and
  - Inform all relevant personnel that the system, plant, equipment, structure or area is ready to use.
  - Where the work must continue over more than one shift, the Permit to Work must be reviewed at every shift change by an Authorised Person. If the scope of work has changed, the permit must be cancelled and a new permit must be issued.

If any of the original conditions or precautions pertaining to the work is not being complied with, is no longer adequate or is no longer applicable, the Authorised Person must cancel the Permit to Work and must ensure that all work stops until full compliance with either the original or amended (as required) conditions and precautions is achieved and a new permit has been issued.

The Applicant must ensure that the Permit to Work (including the personnel register) is kept where the work is being carried out (i.e. posted on a portable Health and Safety Management Information Notice Board) and that the work is monitored against the permit conditions.

All Permit to Work records must be retained and must be made available for inspection when required.

The implementation of the Permit to Work system applicable to the project must be audited on a regular basis by a nominated project management representative. Furthermore, planned task observations must be carried out periodically.

**Note:** In addition to obtaining Permits to Work as and when required for specific hazardous activities (identified in this standard), each contractor must obtain a General Work Authorisation from a nominated project management representative on a monthly basis. A General Work Authorisation is valid for one calendar month and authorises the contractor's planned work activities. In order to obtain a General Work Authorisation, the contractor must provide a documented work plan for the month together with the necessary Task-Based Risk Assessments.

## 15.14 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 (see Definitions), 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:** No work may commence on a system, plant or equipment until a Permit to Work has been issued by an Authorised Person.

**Note:** A Permit to Work may only be issued by an Authorised Person once all required Clearance Certificates have been issued by appointed Isolation Officers.

The isolation and lockout system that is employed must incorporate the following basic procedures:

- In accordance with a system, plant or equipment-specific Isolation and Lockout Procedure, an appointed Isolation Officer(s) must isolate all points that need to be isolated in order to render the system, plant or equipment safe to work on. An Equipment Lock (and a suitable, highly visible warning tag) must be attached to each isolation point;
- On completion of an isolation (and lockout), the Isolation Officer must clear the area of all persons and must then carry out tests to ensure that the isolation is effective. This may be done by pressing a start button or by asking a control room operator to try to start the equipment. Special care must be taken to ensure that the attempted starting of the equipment has not been deactivated by another interlock forming part of the system, or by a different up-stream isolation. Alternatively, appropriate equipment may be used to test for energy (e.g. voltage verification or continuity tests).

**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.

**Note:** Local isolations do not require the use of Equipment Locks (a Discipline Lock may be attached to the Local Isolation Point by the Isolation Officer, followed by the necessary Personal Locks).

**Note:** For local isolations, if the Isolation Officer is the only person who will be working on the isolated equipment, then he must attach his Personal Lock to the Local Isolation Point.

- Once all required Discipline Locks are in place (i.e. attached to the Isolation Bar) and all Clearance Certificates have been issued, the Permit to Work may be issued by the Authorised Person;
- Each person who will be working on the isolated system, plant or equipment must then attach his or her Personal Lock to the Isolation Bar before starting any work (including the Isolation Officer, if he intends to work on the isolated unit);
- The attachment of a Personal Lock to the Isolation Bar prevents the removal of the key to the Equipment Locks even if the Discipline Lock is removed;
- When called (by an Authorised Person) to de-isolate the system, plant or equipment (on completion of the work under the Permit to Work), the Isolation Officer must ensure that all Personal Locks have been removed from the Isolation Bar before removing the Discipline Lock and the key to the Equipment Locks;
- Before removing the Equipment Locks and de-isolating the energy source, the Isolation Officer must inspect the system, plant or equipment that was worked on to ensure that it is safe to perform the de-isolation. This includes guard inspections, housekeeping, ensuring that all doors and covers are in place, and most importantly, ensuring that no persons are present;
- Once all Equipment Locks have been removed and the system, plant or equipment is safe for use, the Isolation Officer must cancel the Clearance Certificate and inform the Authorised Person that the unit has been de-isolated.

Where a system, plant or equipment is sequence interlocked and a hazard could be created through the inadvertent start up or shut down of a system, plant or equipment lying before or after the unit to be worked on, then that system, plant or equipment must also be isolated and locked out.

Redundant or out of service equipment must, in addition to being isolated and locked out using the relevant Discipline Lock, be fitted with a tag indicating why it is out of service, who performed the lockout, and the hazards associated with that equipment.

Where it is necessary to work on live equipment for the purposes of commissioning, testing, adjusting and sampling, such work must be carried out in accordance with a written Safe Work Procedure and controls must be in place to prevent unauthorised access into the work area.

The implementation of the isolation and lockout system and procedures applicable to the project must be audited on a regular basis by a nominated project management representative. Furthermore, planned task observations must be carried out periodically.

#### **15.14.1 Personal Locks**

A Personal Lock must be such that it can only be unlocked by the person to whom it belongs. Combination locks may not be used.

A Personal Lock, as well as the key(s) to the lock, must be kept under the exclusive control of the person to whom the lock belongs.

A Personal Lock must be issued to each person who requires one, and the person's details must be clearly and permanently engraved directly onto his Personal Lock. Alternatively, a thick durable

plastic identification tag may be used that clearly displays the company's name, the employee's name, the employee's company number, and a contact telephone number (the tag must be securely fastened to the Personal Lock). Where the above is hand written, it must be done using a permanent marker pen and it must be legible.

Each person issued with a Personal Lock must be trained and certified competent in the correct use of such a lock.

A Personal Lock may NEVER be removed by anyone other than the person to whom it belongs, except if the removal (cutting) of the lock is authorised by the nominated project management representative (in the absence of this person, authorisation can only escalate upwards). Furthermore, the removal of the lock must be done under the personal supervision of the nominated project management representative, and in accordance with a written procedure. The removal (cutting) of a Personal Lock may be required if the person who applied the lock is unable or unavailable to remove it on completion of the work (e.g. lost his key, failed to remove his lock before going home, etc.).

### **15.15 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.

### **15.15.1 Electrical Installations**

Each electrical installation (temporary or permanent) installed or worked on by a contractor must be inspected by a nominated project management representative to ensure that the installation complies with all statutory requirements, codes, design criteria and safety standards applicable to the project.

A nominated project management representative must approve all electrical work before the installation is energised. Any installation deemed unsatisfactory by a nominated project management representative must be removed, repaired or modified by the contractor at his expense.

For every permanent or temporary electrical installation, a certificate of compliance must be issued by a competent and appropriately qualified electrician. These certificates must be available for inspection.

Single line diagrams (with supporting documentation) must be produced and maintained for all electrical installations. This information must include system fault calculations, equipment details, electrical protection discrimination curves, and cable ratings.

Work on electrical installations (new installations, and modifications or repairs to existing installations) may only be carried out by qualified and authorised personnel (i.e. electricians). Electrical safety devices (specifically, earth leakage protection and overcurrent protection) must be installed on all distribution circuits and the settings must be established by suitably qualified personnel.

A suitable numbering and / or labelling system must be used so that each circuit breaker or earth leakage device can be clearly and readily matched with the outlet or equipment that it protects. To ensure the safety of the user, each distribution panel must be completely enclosed, must be of the dead-front type, and must be properly constructed and earthed.

All electrical cabling must be covered (e.g. in cable trenches) or elevated (in cable trays) to protect it from damage and to eliminate tripping hazards.

All permanent and temporary electrical installations (cabling, sockets, distribution panels, transformers, switchgear, etc.) must be inspected and tested by a competent and suitably qualified electrician on a monthly basis. The testing must include a grounding (earthing) continuity test and testing of the electrical safety devices. Details of these inspections and tests must be recorded in a register which must be made available to the nominated project management representative for inspection.

A rigorous Isolation, Lockout and Permit to Work system must be applied to all electrical work (i.e. work on electrical installations, machinery or equipment). All personnel must comply with the system and procedures applicable to the project.

Before any work on an electrical installation or equipment is carried out, the installation or equipment must be de-energised.

No electrical work may be performed live, regardless of the voltage, unless written approval is obtained from the nominated project management representative (a justification as to why it is

necessary for the work to be carried out with the equipment in an energised state must be provided).

For all energised electrical work, a Safe Work Procedure must be in place and, with the exception of voltage testing and where no tools are used, a Permit to Work (specifically authorising energised electrical work) must be issued.

When carrying out any energised electrical work, approved electrically insulated gloves, blankets, mats and other protective equipment must be used.

Control centres, switchgear rooms, substations, generators, transformers, capacitor banks, and other similar electrical plant and equipment must be appropriately guarded and labelled and, with the exception of emergency shut-off mechanisms, must be made inaccessible to unauthorised personnel (i.e. plant or equipment of this nature must be positioned within rooms or fenced enclosures which must be kept locked).

Appropriate warning signage must be prominently displayed within, and at all entrances to, these rooms or enclosures. The signage must indicate that unauthorised persons are prohibited from entering, that unauthorised persons are prohibited from handling or interfering with any electrical plant or equipment, the procedure to be followed in the event of a fire, and the first aid procedure to be followed should a person suffer electric shock. Suitable fire-fighting equipment must be provided in all such rooms or enclosures.

All electrical panels must be kept locked (using keyed-alike padlocks). Keys may only be issued to authorised personnel.

All un-insulated (bare) or partially insulated conductors must be enclosed and protected to prevent accidental contact therewith. Measures must be taken to prevent unauthorised access and appropriate warning signage must be conspicuously displayed.

Only authorised persons may enter rooms or enclosures housing electrical plant or equipment, and only authorised persons may access electrical panels or cabinets, and cable ducts or trenches. If any work must be carried out in such an area or on such equipment, a Permit to Work must first be obtained from the nominated project management representative.

No connection to any electrical system may be made without prior approval and a valid Permit to Work from the nominated project management representative.

No electrical equipment or apparatus may be modified without written authorisation from the nominated project management representative.

Conductive ladders may not be used in proximity to non-insulated electrically energised lines or equipment.

All permanent and temporary electrical cables, whether energised or not, must at all times be handled as if they are energised.

Only appropriately certified intrinsically safe electrical equipment may be used in flammable or potentially explosive atmospheres such as in confined spaces.

Any equipment or structure on which electric charges may accumulate (such as storage tanks) must be grounded (earthed).

Lightning protection must be provided on all tall structures and buildings.

Grounding (earthing) and lightning protection systems and devices must be designed, engineered, selected and installed based on site-specific requirements.

Before carrying out any excavation work, a Permit to Work (specifically authorising the excavation activities) must be obtained from the nominated project management representative. Such a permit must not be issued until it has been verified that no buried hazards or services exist where the excavation work is to be carried out (refer to the Excavation Standard).

#### **15.15.2 Arc Flash Safety**

Depending on the scope and nature of the work, a documented arc flash protection programme must be in place that specifies:

- The methodology for calculating incident energies and determining flash protection boundaries; and
- The PPE required (specific to a task and the equipment on which the task is performed) and associated procedures to mitigate the hazard.

The method of calculation must be based on regional electrical code requirements, or if none exist, the Institute of Electrical and Electronics Engineers (IEEE) Standard 1584, or the United States National Fire Protection Association "Standard for Electrical Safety in the Workplace" (NFPA 70E), or published equivalent.

An Arc Flash Hazard Assessment must be carried out based on accurate and current data.

All electrical cabinets where the potential for an arc flash hazard exists must be labelled in accordance with the hazard assessment and the potential incident energies calculated.

A process must be in place for updating the Arc Flash Hazard Assessment and labelling as changes and electrical upgrades occur that might affect the available short circuit current on the system.

In order to mitigate the hazard, Safe Work Procedures must be in place and all persons potentially exposed to arc flash hazards must be trained in these Safe Work Procedures and must be supplied with appropriate arc flash PPE.

#### **15.15.3 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 nominated project management 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 nominated project management 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.

Scaffolding may not be erected within 5 metres of power lines or overhead track equipment.

#### **15.15.4 Portable Electrical Equipment**

Prior to site establishment, each contractor must provide a complete inventory of all portable electrical equipment that he and his sub-contractors intend to use on the site (including plant, machines, appliances, generators, hand tools, lighting, extension cords, etc.). The nameplate data for each item of equipment must be included.

All portable electrical equipment to be used on the site must be supplied and maintained in a serviceable condition.

Any electrical equipment that is in poor condition or is not in proper operating order may not be used. Any electrical equipment that a nominated project management representative deems to be unsafe or unsuitable must be removed from site.

Electrical repair work or diagnostic work on electrical equipment may only be performed by personnel who are competent and authorised to perform this work (i.e. qualified electricians).

With the exception of double-insulated equipment, all electrical equipment must have an equipment grounding (earthing) conductor that connects the frame of the equipment being utilised to the grounding (earthing) conductor of the electricity supply system.

All electrical equipment and all electricity supply systems used (including generators) must be inspected and tested by a registered and competent electrician to ensure that all equipment is properly grounded (earthed).

All electrical equipment used on site must be supplied electricity through (i.e. must be protected by) an approved and tested residual current device (or earth leakage device or unit). If a socket outlet does not have a residual current device in the circuit, a portable residual current device must be used. Outlets without residual current device protection must be labelled as such.

Any electrical equipment that causes an earth leakage device to trip or deactivate the circuit may not be used again until an electrician has inspected and tested the equipment and has recorded in a register that the equipment is safe to use.

Interlocks may never be removed or modified, and fuse terminals may never be bypassed to keep current flowing in any circuit.

All generators must be fitted with suitable overcurrent protective devices (i.e. circuit breakers or fuses).

All generators must be used in compliance with the manufacturer's requirements. Any proposed modification to a generator must be authorised in writing by the manufacturer prior to the modification being made.

Each welding machine used on site must be fitted with a Voltage Reduction Device (VRD). If this is not practical (i.e. for arc welding processes other than stick welding), a dead man's (isolation) switch in the electrode circuit (operated by a trained observer) may be used as an alternative. All welding machines must be properly grounded (earthed).

All portable electrical hand tools used on the site must be double-insulated.  
Electrical equipment must be disconnected or unplugged when not in use.  
Portable lights must be stable and each light bulb must be protected by a substantial guard.  
Temporary festoon lighting must be double-insulated and must be supported at least 2.5 metres above the floor, if possible.

Handheld lights must be of the all-insulated type and must be extra low voltage (i.e. not exceeding 32V). 120V or 240V handheld lights are not permitted.  
Any lighting used in hazardous locations (i.e. potentially explosive atmospheres, confined spaces, and damp or wet areas) must be operated at a maximum of 32 volts, unless earthed and protected by earth leakage devices.  
No person may wear a watch or any jewellery, or carry any metal objects such as a lighter or keys, while working on any electrical system or equipment.  
No person may work on or use electrical equipment if his clothing is wet or any part of his body is in contact with water.

No person may handle electrical equipment, equipment cords or extension cords with wet hands or if the floor or ground surface is wet.  
Fire extinguishers filled with carbon dioxide must be used to fight electrical equipment fires (water may never be used). If possible, the electrical equipment should be de-energised before fire-fighting activities commence (refer to the Fire Protection and Prevention Standard).  
When cleaning or performing maintenance work on an item of electrical equipment, the equipment must be unplugged.

Equipment may not be unplugged while that equipment is switched on. Nor may equipment be plugged into a receptacle (socket) with the equipment's switch turned on.  
Electrical equipment that has a defective plug or wiring may not be used. Repair work to defective or damaged electrical equipment may only be carried out by a qualified electrician.  
Extension cords may be used for temporary applications only. Permanent cabling must be installed for long-term needs.

Extension cords may not be run through doors, windows, ceilings or holes in walls.  
An extension cord must be uncoiled completely before it is used.  
An extension cord must be of sufficient current-carrying capacity to power the equipment that it is supplying electricity to. Cords must not be overloaded.  
Extension cords must be unbroken and continuous (i.e. no joins or splices in the cord are permitted).

Extension cords may not be daisy-chained (i.e. one extension cord plugged into another extension cord).  
Extension cords and equipment cords may not be modified to fit a receptacle (socket).  
Two-conductor extension cords may not be used. A three-conductor extension cord (i.e. a grounded or earthed cord) must be used even if the equipment that it is supplying electricity to uses a two-prong plug.

Extension cords that are frayed, have insulation tears, cracks or abrasions, have exposed conductors, or have bent, broken or "spread" plug prongs may not be used.  
Extension cords that will be used outdoors must have heavy duty insulation and must be weather and UV resistant.

All electrical equipment cords and extension cords must be covered or elevated to protect them from damage and to eliminate tripping hazards.

Each contractor is responsible for protecting his electrical equipment from the weather and from possible mechanical damage.

All portable electrical equipment (including generators) must be inspected, tested and tagged by a competent and appropriately qualified electrician on a monthly basis. Details of these inspections and tests must be recorded in a register which must be made available to the nominated project management representative for inspection.

The inspection and testing must include a continuity test of the grounding (earthing) conductor (as applicable) and a complete examination of the equipment or system to assure safe use.

The following colour coding system must be used for the tagging of all electrical equipment:

**Table 15-2 Colour Coding System for Electrical Equipment**

Month	Tag Colour	Month	Tag Colour
January	Red	July	Red
February	Blue	August	Blue
March	Orange	September	Orange
April	Green	October	Green
May	White	November	White
June	Yellow	December	Yellow

The tag placed on a piece of equipment must be traceable to an entry in a register where the following information concerning the inspection and testing of that piece of equipment must be recorded:

- Date of inspection and testing;
- Equipment description;
- Equipment owner;
- Equipment location;
- Name, signature and licence number of the electrician who carried out the inspection and testing; and
- Comments concerning the inspection and testing, and details of any repair work carried out or required.

Any item of electrical equipment that does not pass an inspection or test must be removed from service (and tagged, "Out of Service") immediately and must then either be repaired (if possible) or removed from site.

Any item of electrical equipment without a tag or with an out-of-date inspection or test may not be used.

Any item of electrical equipment found without a tag or with an out-of-date inspection or test must be removed from service until it has been inspected and tested. If it is found that more than one item of equipment being used by a contractor has not been inspected and tested as required, all work with electrical equipment must be stopped until it can be demonstrated to the satisfaction of the nominated project management representative that the contractor's systems and controls are adequate and fully implemented.

In addition to the formal monthly inspections and testing carried out by an electrician, electrical equipment (particularly extension cords, portable hand tools, welding machines, compressors and

pumps) must be visually inspected by the user on a daily basis prior to use. Users must be trained to look for cracks in casings, loose casings, outer cord sheathing that is not being held firmly in position at the equipment, cuts or cracks in cord or cable insulation, exposed conductors, damaged plugs or sockets, and missing covers. Damage and / or defects must be reported immediately.

Personnel must immediately stop using and report any electrical equipment or machinery that is shocking, sparking, overheating or smoking. Corroded outlets, switches and junction boxes must also be reported.

### **15.16 Gas Welding and Burning**

Welding or cutting torches and hoses shall not be connected to cylinders when stored.

When work is stopped and equipment is unattended, all valves at the gas and oxygen cylinders shall be closed. The hoses shall be bled and a check shall be made later for possible pressure build-up. Torches shall be removed from the hoses prior to putting them into the toolbox. Smoking SHALL NOT be permitted during this stopping procedure.

Special care shall be taken during overhead cutting and welding operations to safeguard and prevent falling sparks from starting a fire.

Warning signs shall be posted around and at each level below the area of each overhead welding or burning operation. Fire extinguishers shall be available and fire blankets shall be used for protection.

When welding or cutting, adequate ventilation must be ensured / provided.

Hoses shall be kept clear from passageways, ladders and stairs. When hoses are subject to damage, they shall be properly protected. Hoses shall be inspected daily.

Fire extinguishers shall be ready for instant use in locations where cutting is performed.

Flash-back arrestors must be fitted to all cutting torches at the torch and at the bottle (a total of four arrestors).

Lighting of the cutting and welding torches must only be done using a striker and not an open flame.

Soap Leak tests must be performed on all flash-back arrestors.

Hoses may only be secured using approved hose clips, and not by wire, cable ties or any other means.

Special care shall be taken when welding with respect to piping that has been painted, as toxic fumes may be emitted in some cases. The supervisor's advice should be sought prior to the above welding operations being carried out.

### **15.17 Compressed Gas Cylinders**

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

- The storage area must be located at least 10 metres away from any building, and must be well ventilated;
- The storage area must have a concrete floor;
- The storage area must be enclosed using wire mesh fencing (as this will ensure adequate ventilation). This enclosure must be kept locked. Access into the storage area must be limited and controlled;
- A protective covering or roof must be fitted to the enclosure to provide shade;

- The enclosure may not be used for the storage of any other materials / equipment, and must be kept completely free of all combustible materials at all times;
- Appropriate warning signage (i.e. "No Smoking" and "No Naked Flames") must be prominently displayed on the enclosure;
- A 9kg dry chemical powder fire extinguisher must be mounted near the entrance to the enclosure
- If electrical lighting is required, it must be of an approved intrinsically safe type;
- Oxygen, acetylene, argon and LPG cylinders must be stored separately in the enclosure. Furthermore, full and empty cylinders must be separated. Separate storage sections must be clearly designated within the enclosure for the different gas types, and for full and empty cylinders, i.e. oxygen – full, oxygen – empty, acetylene – full, acetylene – empty, etc.;
- When a cylinder is empty, the cylinder cap must be replaced to protect the valve. Empty cylinders must be clearly marked (there must be no need to open valves to check if cylinders are full or empty);
- All cylinders must be stored in an upright position and must be secured in this position by chaining, strapping or clamping them individually to a wall, a cylinder trolley, rack or carrier, or some other rigid structure;
- Cylinders must be stored in rows (when necessary due to the number of cylinders) with aisles between the rows to facilitate easy and rapid removal in the event of a fire;
- Oxygen cylinders may never be stored near highly combustible materials, particularly oil and grease, or near fuel gas cylinders. When in storage, oxygen cylinders must be separated from fuel gas (LPG and acetylene) cylinders by a distance of 6 metres or by a 2 metre high wall made of fire-resistant material;
- The total quantity of gases stored on site must be limited to a 2 week supply.

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.

Gas cylinders may not be placed on scaffolding.

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.

## **15.18 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.

### **15.18.1 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.

A 230mm angle grinder may not be used for free cutting purposes. Exceptions may be approved only if alternative methods evaluated proved more hazardous or no alternative exists. The risk assessment for the task must then specifically include mitigating measures to ensure the safest possible way of performing the task.

The use of 230mm angle grinders for grinding purposes is acceptable, however should this form of grinding be required, the 115mm or 125mm grinders would be preferable.

All angle grinders must have a dead man switch incorporated, with a pressure switch in the handle. A 230mm electrical angle grinder unit must incorporate a soft start to reduce the starting strain and a braking system to reduce run on after the unit has been switched off.

All angle grinders must have a spindle lock to assist with changing the disc or grinding wheel. Anti-vibration handles are recommended to further reduce the stress if used for extended periods. Angle grinders must be equipped and operated with disc guarding at all times. Angle grinder must not be stored with fitted discs, as this will lead to damaging of the discs.

Before use and mounting of discs it is essential to check the safety codes and specifications printed on the upper side of the disc. Such specifications include the following:

- Revolutions per minute (RPM). The allowable speed of the disc must be equal to or greater than the maximum achievable speed of the grinder;
- Physical dimensions of the disc must meet grinder specification; and
- The disc must be suitable for the material type to be cut / ground as indicated on the disk. Cutting discs must never be used for grinding and vice versa.

It is critical that the correct disc mounting procedure is followed:

- Check that the machine is plugged out;
- Check the machine spindle, backup washer and thread;
- Check the condition of spindle nut - ensure spanner drive holes are not elongated;
- Ensure spindle nut spanner is the tool recommended by machine manufacturers;
- Do not use a hammer, pipe or chisel to tighten the nut, or apply additional mechanical advantage to nut torque. A firm "nip" is sufficient to retain the disc;
- Ensure the spindle diameter is suited to disc bore. Excessive clearance will cause the machine to vibrate due to eccentricity;
- Check to see that the nut and backup washer do not "bottom out". This will result in the disc not being correctly clamped on the spindle;
- Ensure the spindle speed is marked on the grinder and that it is less than the allowable disc speed; and
- Fit the disc, with the metal ring or writing to the nut side.

## **15.19 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 nominated project management 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.

## **15.20 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 contractor's Equipment Register and the register must be submitted to the nominated project management 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 nominated project management representative.

## **15.21 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.

## **15.22 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 nominated project management 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.

All hand tools used in elevated areas, that may be dropped or fall to lower levels must be fitted with safety lanyards and attached to solid structures or in the case of podges, scaffold keys etc., attached by wrist lanyard to the user.

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

### **15.22.1 Stanley Knives / Utility Knives**

A utility knife must be used as a last resort, when it is the safest tool to use. Always consider alternatives that pose less of a risk to the operator.

Whenever a utility knife is used, ensure that a complete risk assessment is done and that all possible hazards have been addressed.

Only utility knives with retractable blades are to be used. The blade is to be retracted at all times when the knife is not in use or is being stored.

Before using the utility knife, ensure that the tool is in a good condition and the blade is secure in the holder (seated correctly and that there is no play).

Ensure that the blade is always sharp and in good condition. This will prevent the use of excessive force.

Always wear cut resistant gloves and safety glasses when using a utility knife. There is always a risk of the blade breaking under tension and becoming a projectile.

Always ensure that you cut away from your body, and that no part of your body is in the firing line.

Always ensure cleanliness of all equipment in use during the cutting operations.

### **15.23 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.

### **15.24 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.

The following should be considered with conducting the Risk Assessment with regards Manual Handling and also take into consideration the task factors, physical demands and tools involved in the task:

- Load weight/frequency;
- Hand distance from lower back;
- Asymmetrical trunk/load;
- Postural constraints;
- Grip on the load;
- Floor surface;
- Environmental factors;
- Carry distance; and
- Obstacles en route.

Team Manual Handling:

- Load weight;
- Hand distance from lower back;
- Vertical lift region;
- Trunk twisting/sideways bending;
- Postural constraints;

- Grip on the load;
- Floor surface;
- Environmental factors; and
- Communication, co-ordination and control.

As far as possible, exposure to vibration must be eliminated.

However, if this is not possible, short-term solutions to decrease exposure include:

- Reducing the vibration levels;
- Removing the person from the vibrating equipment / tools;
- Reducing the period of time that the person works with the vibrating equipment / tools (at least 40 minutes break after 20 minutes working with a machine that vibrates excessively).

In order to reduce exposure to vibration:

- Consider buying equipment that operates effectively at lower speeds;
- Buy equipment with built-in damping materials;
- Buy lighter tools if they are available - they require less of a grip;
- Maintain the equipment;
- Make sure equipment is balanced and there are no worn parts;
- Use remote controls when they are available;
- Reduce your grip on the equipment when it is safe. The less time you actually have your hands on the equipment the better. Relax your hands during these brief breaks;
- Take scheduled breaks; and
- Do other tasks that allow you to move away from vibrating tools and equipment.

The workplace must be assessed by a competent person for compliance with good design, layout and practice, to avoid or minimise adverse health consequences due to manual handling and vibration issues.

Quantitative evaluations of vibration produced by specific equipment must include the following measurement parameters: direction of movement, frequency, intensity, and variation with time and duration, as per documented methods.

Employees and contractors must be informed of the results of assessments and instructed in appropriate manual handling techniques, where the risk assessment indicates a need.

Workplace vibration sources that could contribute to the exceedance of an Occupational Exposure Limit (hence potential for impact on worker musculo-skeletal fitness) must be identified and adequately characterised.

Manual handling tasks assessed as having the potential to cause a Lost Time Injury (i.e. with potential for impact on worker musculo-skeletal fitness) must be identified and adequately characterised.

Workplace manual / materials handling tasks risk rated as "significant" must be assessed and recorded to include biomechanical factors (e.g. posture, bending, twisting, repetitive motions, working overhead, and exerting force away from the body).

## **15.25 Personal Protective Equipment**

All applicable legislation concerning Personal Protective Equipment (PPE) must be complied with at all times.

As a minimum, the following PPE must be worn by all persons (including visitors) at all times whilst on a project site:

- Safety footwear with steel toe protection;

- Safety glasses (individuals who wear prescription spectacles must be provided with either over-spec safety glasses or prescription safety glasses);
- Safety helmet (hard hat); and
- High visibility protective clothing with reflective taping (long trousers and long-sleeved shirts with collars and cuffs).
- Additional PPE requirements must be determined through hazard identification and risk assessment. This hazard-specific PPE (such as hand protection, hearing protection and respiratory protection) must be worn as required (e.g. when in a certain area, when performing a certain task, or when working with a certain substance);
- The correct PPE must always be worn:
- In accordance with site requirements (as indicated at the entrances to a project site and at the entrances to buildings and / or designated areas on the premises);
- In zoned areas (e.g. noise zones and respirator zones); or
- As required by a Safe Work Procedure, a risk assessment, or a Material Safety Data Sheet (MSDS).

Each contractor must provide each of his employees with all required PPE (at no cost to the employee). The specific PPE that is provided to a particular employee must be based on the nature of that employee's work and the location in which the work is performed (i.e. must be based on the hazards to which the employee is exposed). PPE requirements for a particular job or for a particular area must be determined through a risk assessment for that job or area.

Any employee who does not have all of the PPE that is required for him to perform his duties safely will not be permitted to work.

Each employee must care for his PPE, maintain it in good condition, and inspect it on a daily basis. If an item of PPE has worn out, has become damaged, or is found to be defective in any way, it must be replaced by the contractor.

PPE must be stored in accordance with the manufacturer's requirements and / or recommendations.

Each employee must receive training in the use, maintenance and limitations of the PPE that is provided to him, and must be made aware of why the PPE is necessary as well as the consequences of not wearing it as instructed (i.e. the potential for injury and / or disciplinary action). Training records must be retained.

Any person who refuses to wear PPE as required must be removed from the site.

Symbolic signs indicating mandatory PPE requirements must be prominently displayed at the entrances to a project site and at the entrances to buildings and / or designated areas on the premises where additional PPE is required. These signs must comply with the applicable national standard (if one exists).

Each contractor must appoint an employee to:

- Control the issuing and replacement of PPE;
- Keep an up-to-date register as proof that items of PPE have been issued to individuals (an employee must sign for the items that he receives);
- Ensure that there is an adequate supply of all required PPE (i.e. maintain PPE stock levels on site); and

- Carry out regular inspections to ensure that PPE is being used correctly, is being maintained in a good, serviceable and hygienic state, and is not being shared between employees. Head Protection

A safety helmet (or hard hat) worn correctly will help protect the head in the event of:

- An employee being struck on the head by a falling or flying object;
- An employee striking his head against a fixed or protruding object; or
- Accidental head contact being made with an electrical hazard.

A safety helmet must be worn at all times on a project site, with the following exceptions:

- Vehicle and equipment operators inside enclosed cabs;
- In offices and in office or administration buildings; and
- At designated lunch and break areas (provided that no work is in progress in the immediate break area).

A safety helmet must be worn in accordance with the manufacturer's requirements.

A safety helmet must be worn directly on the head. The wearing of a cap or other headgear beneath a safety helmet is prohibited unless the items have been specifically designed to be used in combination (i.e. the arrangement is approved by the safety helmet manufacturer).

The suspension system inside a safety helmet (that acts as a shock absorber) may not be removed. The painting of safety helmets is prohibited.

Safety helmets may only be cleaned using a mild detergent and water. No solvents may be used.

### **15.25.1 Eye Protection**

If an employee is carrying out, assisting with, or working adjacent to any activity where sparks or projectile particles are being generated, where chemical mists or fumes are being generated, where liquids may splash or spray, where harmful electromagnetic radiation (heat or light) is being generated, or where there is a risk of wind-blown particles entering the eyes, then suitable protective eyewear must be worn at all times (i.e. safety glasses, safety goggles, a face shield, a welding helmet, or a combination of these).

Such activities include:

- Working with rotating equipment (e.g. grinders, drills, mills, lathes, and saws);
- Welding and cutting;
- Chipping, chiselling or caulking;
- Using explosive powered tools;
- Abrasive blasting;
- Sanding; and
- Working with chemical substances (e.g. drilling fluids, acids, solvents, paints, pesticides, etc.).

For certain activities, special eye protection is required (e.g. a heat-resistant face shield is required when working near molten metal).

Double eye protection is required for activities such as:

- Grinding, cutting, chipping, chasing and reaming (employees must wear both a full face shield and safety glasses or goggles); and
- Arc welding (welders must wear both safety glasses and a welding helmet).

Screens must be erected to protect passers-by, where practical.

Safety glasses must be worn at all times on a project site, with the following exceptions:

- Vehicle and equipment operators inside enclosed cabs with the windows fully closed;

- In offices and in office or administration buildings;
- At designated lunch and break areas (provided that no work is in progress in the immediate break area); and
- When another form of eye protection is required (e.g. safety goggles).

All safety glasses used on site must have suitable permanent side protection.

In strong sunlight, dark safety glasses should be worn to reduce eyestrain and fatigue. However, caution must be exercised when employees are required to frequently move between outdoor and indoor environments. Dark safety glasses may not be worn indoors or in poor daylight conditions. Prescription spectacles with tinted lenses are prohibited inside buildings or other structures with limited illumination unless the lenses are light-sensing and adjust to changing illumination levels.

Employees who wear prescription spectacles (i.e. require corrective lenses) must make use of either:

- Prescription safety glasses (with permanent fixed side shields) that conform to the requirements of a recognised national or international standard (e.g. CSA, ANSI, or equivalent); or
- Over-spec safety glasses or goggles.

The use of contact lenses in certain areas may not be suitable because of increased risk to the eye due to dust or heat.

### **15.25.2 Hearing Protection**

Local regulations concerning occupational exposure to noise and the use of hearing protection must be complied with as a minimum.

“Low noise” tools and machinery must be used wherever possible to reduce noise levels.

Where noise cannot be reduced to an acceptable level through engineering and work practice controls, measures must be put in place to minimise the exposure of employees to the noise (i.e. administrative controls and personal hearing protection).

Areas where it is likely that the 95% upper confidence limit of an eight hour  $L_{eq}$  mean exceeds 85dB(A), or areas where impulse noise exceeds 140dB(C), must be designated as noise zones. These noise zones must be clearly demarcated and mapped, signs must be posted, and all employees must be made aware of the requirements for working in such an area.

Suitable hearing protection must be worn in all designated noise zones and when carrying out (or working in the vicinity of) any activity where the noise level exceeds 85dB(A).

Where hearing protection is required, a hearing conservation programme (applicable to all personnel and visitors) must be implemented. The programme must include training in the correct use and proper storage of hearing protection devices as well as replacement requirements. Training must be provided when hearing protection is first issued to an employee and refresher training must be carried out at least annually thereafter. Training records must be retained.

At least two types of personal hearing protection must be made available to employees. The hearing protection devices provided must have adequate noise reduction ratings (i.e. must be able to attenuate the noise level to below 85dB(A)).

Personal hearing protection must be issued on an individual basis and must not be shared.

In addition to personally issued hearing protection, suitable disposable hearing protection must be made available at the entrances to all noise zones.

All Hearing Protection Devices (except for disposable hearing protection) must be properly inspected and cleaned on a regular basis.

### 15.25.3 Respiratory Protection

Designated areas (respirator zones) must be established where:

- It is likely that the 95% upper confidence limit of a Similar Exposure Group's mean exposure concentration exceeds the relevant Occupational Exposure Limit (OEL) for agents resulting in chronic effects, such as total inhalable dust, respirable dust, respirable crystalline silica, PAH, fluorides, lead, mercury, asbestos or non-asbestos fibrous materials; or
- The concentration of an agent (particulate, vapour or gas) with an acute effect exceeds 50% of the relevant OEL.

**Note:** For a particular hazardous agent, the OEL to be adopted must be either the client's OEL or the OEL specified in local legislation, whichever is the most stringent.

These areas must be clearly demarcated and mapped, signs must be posted, and all employees must be made aware of the requirements for working in such an area.

Suitable Respiratory Protection Devices (RPDs) must be worn in all designated respirator zones and when carrying out (or working in the vicinity of) any activity where the risk assessment has identified the need for respiratory protection.

RPD's must be selected based on:

- The type(s) of airborne contaminants that are present (gases, vapours, and particulates and aerosols including dusts, fumes, sprays, mists, and smoke);
- The potential particulate size distribution;
- Substance toxicity; and
- The likely concentrations.

Compatibility with the work tasks and other PPE, comfort (as it affects wear-time), and the ability to communicate adequately, must also be considered.

The risk assessment and method statement for the work to be performed, the information contained in the relevant Material Safety Data Sheets (MSDSs), and the results of any air monitoring associated with the substances to be worked with or activities to be carried out, must be used to ensure that the most suitable RPD is selected.

Only RPDs certified to a recognised standard and approved by the nominated project management representative may be used.

Where respiratory protection is required, a respiratory protection programme (applicable to all personnel and visitors) must be implemented.

The respiratory protection programme must include:

- Periodic inspection of RPDs, including before each use;
- Periodic evaluation (by competent persons) of cleaning, sanitising, maintenance and storage practices;
- Performance of positive pressure and negative pressure fit checks by RPD wearers before each use to ensure that the respirator is functioning properly; and

- Training at first issue of a RPD and regular refresher training thereafter in accordance with regulatory requirements or at least once every two years (the training must cover fit testing, use, cleaning, maintenance, filter cartridge replacement, and storage). Training records must be retained.

RPDs must be used, maintained, and stored in compliance with the manufacturer's requirements as well as the respiratory protection programme.

Suitable facilities must be provided for the cleaning and sanitary storage of RPD's.

As a minimum, qualitative and documented fit testing must be carried out (although quantitative fit testing is preferred) to ensure that the use of negative pressure RPDs (including disposable RPDs) is effective. Fit testing must be performed by a competent person when an RPD is first issued and must be repeated periodically in accordance with legal requirements or every two years as a minimum. A policy must be in place requiring a clean shaven face when using a negative or neutral pressure RPD for routine tasks (otherwise a positive pressure RPD must be used). A medical evaluation including a pulmonary function test may be required to determine whether or not an individual is medically fit to wear a respirator.

For air-supplied RPDs, breathing air must be effectively filtered and / or isolated from plant and instrument air, and isolated from sources of potential contaminants. The supplied air must be tested to determine if the air quality complies with the requirements of applicable standards for breathing air.

For nuisance dust, dust masks with a protection level of at least FFP2 must be worn.

#### **15.25.4 Hand and Arm Protection**

Gloves must be worn when handling or working with equipment, materials or substances with the potential to cause injury or illness.

Suitable gloves must be selected based on the task to be performed and the specific hazard against which the employee requires protection, such as:

- Sharp edges;
- Sharp points and splinters;
- Abrasive surfaces;
- Hazardous chemical substances (toxic, corrosive, sensitising, etc.);
- Extreme temperatures; and
- Viruses, bacteria and parasites.

#### **15.25.5 Foot Protection**

Safety boots must be worn at all times whilst on a project site, with the exception of offices and office or administration buildings in which closed athletic, business or similar shoes may be worn. Sandals, slops, slippers, open-toed and high-heeled shoes are not permitted on any project premises.

Safety boots must provide the following protection:

- Steel toe cap to protect against crushing (impact and compression forces);
- Leather uppers that provide resistance against water penetration and water absorption;
- Slip resistant soles;

And where a risk assessment identifies the need:



- Puncture resistant soles (i.e. steel midsoles) for protection against sharp objects;
- Chemical resistant soles for protection against spilt chemical substances (such as solvents, hydrocarbons, acids, and alkalis);
- Heat resistant soles for protection against hot surfaces or molten metal; or
- Electrical shock resistant soles for protection (insulation) against live electrical conductors.
- Gumboots with steel toe caps must be worn when working in water or very wet conditions.

#### **15.25.6 Clothing**

All employees working on a project site must wear high visibility protective clothing with reflective taping. Trousers must be long and shirts must be long-sleeved. Shirts must be buttoned at the neck and wrists.

Protective clothing must preferably be made of natural fibres.

Short pants, short-sleeved shirts, sleeveless shirts, and vests are prohibited as outer garments (with the exception of a high visibility vest worn over a long-sleeved shirt).

Loose clothing may not be worn where it may become caught in moving machinery or equipment. For hot work (e.g. welding, cutting, etc.), work in the vicinity of molten metal, and any work carried out in the vicinity of an open flame, the protective clothing worn (shirt and trousers) must be made of a suitable fire retardant fabric. Underwear and socks must be made of natural fibres (preferably wool) or fire retardant fabric.

No employee may tuck his trousers into his boots when working in the vicinity of molten metal.

#### **15.25.7 Body Protection**

Suitable body protection must be provided as required to protect employees against specific hazards. A range of work activities require body protection in one form or another, including but not limited to:

- Working in extremes of temperature, such as firefighting, attending to a heating furnace, working with molten metal, working in refrigerated environments, etc.;
- Hot work (e.g. welding, burning, cutting and grinding);
- Working with hazardous chemical substances (e.g. acids, solvents, pesticides, etc.); and
- Clean up and disposal of hazardous materials and wastes (e.g. asbestos, hydrocarbons, etc.).

A wide variety of protective garments are available, such as firefighting suits, furnace suits, freezer jackets, leather aprons, leather spats, laboratory coats, chemical resistant aprons, chemical resistant (or hazmat) suits, and disposable coveralls. Suitable items must be selected to provide protection against the specific hazard(s) to which an employee is exposed. Hazards must be carefully identified and characterised to ensure that the correct protection is used.

Body protection must be sized properly to prevent tearing, the parting of seams, tripping, or restriction of movement.

#### **15.25.8 Electrical Protective Equipment**

To reduce the risk of electric shock, electrical insulating equipment appropriate for the voltage that may be encountered must be worn when working on energised electrical installations and when working within two metres of exposed energised conductors.

All rubber electrical insulating equipment (including gloves, sleeves, matting, covers, blankets, and line hoses) must be inspected for damage prior to and after each use, and immediately following any incident that can reasonably be suspected of having caused damage.

Rubber insulating equipment with any of the following defects and / or damage may not be used:

- A cut, rip, tear, hole, or puncture;
- Ozone cutting or ozone checking (i.e. the cutting action of ozone on rubber under mechanical stress causing a series of interlacing cracks);
- An embedded foreign object;
- Chemical deterioration (texture changes) such as swelling, softening, hardening, or becoming sticky or inelastic; or
- Any other defect that damages the insulating properties.

Rubber insulating gloves must be electrically tested before first issue and every 12 months thereafter as a minimum. Insulating gloves must also be given an air test along with the daily inspection. Essentially, this involves filling a glove with air and checking for any holes or leakage.

Insulating equipment that fails an inspection or electrical test may be repaired only as follows:

- Rubber insulating line hose may be used in shorter lengths with the defective portion(s) cut off;
- A rubber insulating blanket may be repaired using a compatible patch that results in the patched area having electrical and physical properties equal to those of the blanket;
- A rubber insulating blanket may be salvaged by cutting the defective area off the undamaged portion of the blanket;
- Rubber insulating gloves and sleeves with minor physical defects, such as small cuts, tears, or punctures, may be repaired by applying compatible patches. The patched areas must have electrical and physical properties equal to those of the surrounding material.

**Repairs to gloves are permitted only in the area between the wrist and the reinforced edge of the opening.**

Repaired insulating equipment must be retested before it is put back into use.

Insulating equipment must be cleaned as required to remove foreign substances (using a mild detergent).

Insulating equipment must be stored in such a location and in such a manner so as to protect it from light, temperature extremes, excessive humidity, ozone, and other damaging substances and conditions.

Leather protective gloves must be worn over rubber insulating gloves to provide mechanical protection against cuts, abrasions, and punctures.

Suitable arc flash PPE (e.g. voltage rated gloves, fire retardant clothing, arc rated face shield, arc flash hood, arc flash suit, etc.) must be worn whenever an employee is potentially exposed to an arc flash hazard. The appropriate level of PPE must be worn depending on the task and the potential energy exposure. These PPE requirements must be clearly specified as part of a project-specific arc flash protection programme (refer to the Electrical Safety Standard).

#### **15.25.9 Jewellery**

Necklaces, dangling earrings, and bracelets may not be worn on a project site.

No ring or watch may be worn where there is a risk that it may become caught in machinery or equipment.

No jewellery or other conductive apparel (such as a key chain or watch) may be worn when carrying out energised electrical work.

#### **15.25.10 Hair**

Scalp hair that is longer than the top of the shoulders must be tied up and restrained within the person's safety helmet or within the collar of his or her overalls, shirt or jacket.

For negative or neutral pressure Respiratory Protection Devices, facial hair must not cause the seal between the respirator and facial skin to be broken (or prevent a seal from being formed in the first place).

#### **15.25.11 Task-Specific PPE**

In addition to the standard PPE required for a project site (including a safety helmet, safety glasses, safety boots, and high visibility protective clothing), the following task-specific PPE must be used as a minimum by any person carrying out or assisting with such a task:

- Arc Welding – safety glasses and welding helmet (i.e. double eye protection), respiratory protection against the specific airborne contaminants being generated (fumes, gases, dusts, etc.), leather welding gloves, leather apron, leather spats, leather yoke (for work above shoulder height), and knee pads for welders in kneeling positions;
- Gas Welding, Cutting or Brazing – gas cutting or welding goggles with shade 4 filter lenses and full face shield (i.e. double eye protection), respiratory protection against the specific airborne contaminants being generated (fumes, gases, dusts, etc.), leather gloves (long cuff for welding and cutting, short cuff may be used for brazing), leather apron, leather spats, and leather yoke (for work above shoulder height);
- Grinding – safety glasses or goggles and full face shield (i.e. double eye protection), hearing protection, respiratory protection where dust or fumes may be generated, leather gloves, leather apron, and leather spats;
- Abrasive Blasting – respiratory protection (air-supplied hood), hearing protection, leather gloves, and leather apron;
- Spray Painting – respiratory protection (air-supplied hood for confined spaces), safety goggles (if the respirator design does not provide this protection), hearing protection (where air compressors are used), chemical resistant gloves, and chemical resistant disposable coveralls.

#### **15.26 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).

#### **15.27 Fuel / Flammable Liquid Storage and Refuelling**

No fuel (diesel, petrol, paraffin, etc.) or any other flammable liquid (paints, solvents, etc.) may be stored on site unless approved in writing by the nominated project management representative.

If the on-site storage of a fuel or a flammable liquid is approved, the contractor must ensure the following:

- The quantity of fuel / flammable liquid to be stored on site must be kept to the minimum that is required;
- The storage area must be located in a well ventilated area at least 10 metres away from any building, drain, boundary or any combustible material;
- If more than 200 litres of fuel / flammable liquid is to be stored, the tank must be installed / the containers must be positioned within a bund (see Definitions);

- If the fuel / flammable liquid are to be stored in bulk tanks / vessels, then the minimum capacity of the bund must be 110% of the volume of the largest tank / vessel. If many small containers (e.g. 210 litre drums) are to be stored, the bund must be able to contain 25% of the total volume of the stored products;
- The bund must be impermeable. It must have a solid concrete floor and the walls must be constructed out of brick and must be plastered on the inside;
- The bund must be fitted with a lockable drain valve (for draining away rainwater), which must remain locked in the closed position. The valve may only be opened under supervision and in accordance with a written procedure;
- The fuel / flammable liquid storage area may not be used for the storage of any other materials / equipment, and must be kept completely free of all combustible materials (including rubbish, brush and long grass) at all times;
- Access to the storage area must be controlled (wire mesh fencing and gate);
- Appropriate warning signage (i.e. "Flammable Liquid", "No Smoking" and "No Naked Flames") must be prominently displayed at the storage area. The contents and volume of each tank must be indicated;
- In order to contain spillages, the offloading / refuelling bay at the fuel / flammable liquid storage area must have a solid concrete base surrounded by bund walls, ramps or humps and / or spill trenches (covered with steel grating) that lead into a sump;
- Fuel dispensing pumps must be protected against impact damage;
- All fuel / flammable liquid storage tanks and dispensing equipment must be electrically bonded and properly earthed;
- All electrical installations and fittings must be of an approved intrinsically safe type;
- Two 9kg dry chemical powder fire extinguishers must be mounted in an easily accessible position near the entrance gate to the fuel / flammable liquid storage area. Depending on the size of the storage area, additional fire extinguishers may be required to ensure that an extinguisher is no further than 15 metres away from any point on the perimeter of the storage area;
- A fire extinguisher must be at hand wherever refuelling is carried out;
- Smoking or open flames within 10 metres of a fuel / flammable liquid storage / refuelling area is strictly prohibited;
- No petrol or diesel powered vehicle or equipment may be refuelled while the engine / motor is running;
- Cellular phones must be switched off in fuel / flammable liquid storage / refuelling areas;
- Spill clean-up kits (containing a suitable absorbent fibre product) must be provided;
- Any spillages must be cleaned up immediately and all contaminated cleaning materials must be disposed of in accordance with the applicable legislation;
- If a flammable liquid is spilt or is leaking from a container / vessel, the area must be cordoned off and appropriate warning signage must be displayed to keep unauthorised personnel away from the affected area. Every effort must be made to contain the spillage. All hot work in the vicinity must be stopped immediately. If the spilt product is volatile and the possibility exists that a vapour cloud may form, or if the leak or spillage cannot be contained or stopped, then appropriate emergency response procedures must be activated (refer to Section 14) including the evacuation of all persons in the vicinity. Suitable firefighting equipment must be positioned ready for use should the spilt product ignite;
- The manual decanting of fuel or a flammable liquid from a large container should only be done using a stirrup pump (or similar) or a purpose-made frame which allows the container / drum to tilt for decanting and then return to the upright position;
- Drip trays must be used wherever required;

- All tanks, drums, cans, etc. containing flammable liquids must be tightly closed and properly sealed except for when a container is being filled or when a product is being decanted;
- The transport or storage of corrosive or flammable liquids in open containers is strictly prohibited
- Daily-use quantities of fuel (up to a maximum of 20 litres) must be handled in an approved safety can with a flash arresting screen, spring closing lid and spout cover that will safely relieve internal pressure if the can is exposed to fire;
- Where safety cans may be impracticable, only approved metal containers with screw caps may be used. Each container must be clearly labelled to indicate its contents;
- Only small quantities of flammable liquids (paints, solvents, etc.) may be stored within a building. Each product must be kept either in its original container or in an approved container which must be properly sealed. Each container must be clearly labelled to indicate its contents. When not in use, all such containers must be stored in a well-ventilated steel cabinet which must be kept locked to prevent unauthorised access;
- Not even small quantities of flammable liquids may be stored or dispensed in buildings or places of public assembly, in general warehouses, or in buildings containing sources of ignition such as space heaters, cooking devices, open electric motors, motor vehicles, or where welding, cutting, or grinding activities are being carried out;
- Safe Work Procedures must be compiled for the transportation (including delivery), offloading, storage, handling and use of any fuel / flammable liquid on site;
- All personnel that will be required to work with or may come into contact with a flammable liquid must be made aware of the hazards associated with the product and must be thoroughly trained in the safe transportation, use, handling and storage thereof.

## 15.28 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 assess / survey his area of responsibility and identify locations where the risk of fire is high. Cognisance must be taken of the fact that certain locations may need to be designated as high risk due to the presence of large quantities of flammable or combustible materials / substances. For all high risk areas, the contractor must ensure that additional precautions are taken to prevent fires and strict control is exercised over any hot work (i.e. welding, cutting, grinding, etc.) that is carried out.

The contractor must supply and maintain all required firefighting equipment. The type, capacity, positioning, and number of firefighting appliances must be to the satisfaction of the nominated project management representative and must meet the requirements of the applicable legislation. Fire mains, hydrants and hose reels will rarely be available on site, so use must primarily be made of portable fire extinguishers.

Firefighting equipment, fixed and portable, must be strategically located with a view to being able to rapidly deploy the equipment in order to bring potentially dangerous and destructive fires under control while still in their infancy.

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 six months (the nominated project management representative may require that this frequency be increased depending on the environmental conditions (e.g. high dust levels, water, heat, etc.) to which the fire extinguishers are exposed).

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.

Firefighting equipment may not be used for any purpose other than fighting fires. Disciplinary action must be taken against any person who misuses or wilfully damages any firefighting equipment.

Access to firefighting equipment, fixed or portable, must be kept unobstructed at all times.

Approved signage must be in place to clearly indicate the location of each permanently mounted fire extinguisher, fire hose reel, etc.

The contractor must ensure that all persons working in / entering his area of responsibility are made aware of where all firefighting appliances and alarm points are located.

The contractor must ensure that his employees (and those of any appointed sub-contractors) are trained in firefighting procedures and the use of firefighting equipment.

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 (see Section 14).

All personnel working within the contractor's area of responsibility must be trained, and all visitors must be instructed, on this procedure. Copies of the procedure must be prominently displayed in the workplace in all languages commonly used on the site.

A person discovering a fire must extinguish the fire if he can do so safely, and then immediately report the incident to his supervisor. If the person cannot extinguish the fire, he must raise the nearest alarm and then report the fire as quickly as possible to his supervisor, the person responsible for the area, and / or Security.

On hearing a fire / evacuation alarm, all persons must make any operational plant or equipment safe, and then proceed to the nearest emergency assembly point and await instructions.

All incidents of fire (including the use or misuse of any firefighting equipment) must be reported to the nominated project management representative immediately. Used fire extinguishers must be replaced by the contractor without delay.

No hot work (i.e. welding, cutting, grinding, etc.) or any other activity that could give rise to a fire may be performed outside of a designated workshop without a Permit to Work having been issued. Wherever hot work is being carried out, a fire extinguisher must be at hand. Where the risk assessment determines that it is necessary, a fire watch must be stationed.

Supervisors must carry out workplace inspections regularly to ensure adherence to fire prevention measures and procedures.

At the end of every working period (i.e. before each tea / lunch break and at the end of every shift / day), the workplace must be thoroughly inspected to ensure that no material is left smouldering and no condition / situation exists that could give rise to a fire.

The contractor must ensure that all supervisors and all employees carrying out or assisting with any hot work or any other activity that could give rise to a fire have been trained in firefighting procedures and the use of firefighting equipment. The training must be conducted by an accredited training provider.

When using electrical equipment, all cables must be in good condition and the nearest convenient socket must be used.

No power socket may be loaded beyond its rated capacity through the use of adaptors, etc.

Makeshift electrical connections are not permitted under any circumstances.

Water-based firefighting equipment must not be used on electrical equipment or burning liquids.

Refer to Section 13.16 – Electrical Safety.

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.

Smoking is only permitted in designated smoking areas. Cigarette ends / butts must be properly stubbed out in the ashtrays provided and never thrown into waste bins.

The contractor must ensure that good housekeeping practices are enforced, as this is crucial to the prevention of fires.

All combustible waste materials must be removed from the workplace on a daily basis (at the end of each shift) and placed in waste receptacles located at least 5 metres away from any structure.

The accumulation of waste materials in out-of-the-way places is prohibited.

Offices, desks, cabinets, etc. must always be kept tidy and uncluttered. Waste paper bins must be emptied regularly.

The storage of combustible materials under stairways or in attics is prohibited.

The storage of any materials against the exterior of a building or any other structure is prohibited.

All walkways, passages and stairways must be kept clear (i.e. must be unobstructed) at all times, as they may need to be used as a means of escape.

The areas around and the routes to all exits, fire escape doors, fire hydrants, fire hose reels and fire extinguishers must be kept clear (i.e. must be unobstructed) at all times.

"No Smoking" signs must be conspicuously displayed in and around all storage areas / rooms.

Waste may not be burned under any circumstances.

No flammable liquid (such as petrol, acetone, alcohol, benzene, etc.) may be used for starting fires or as a solvent for cleaning clothes, tools, equipment, etc. Only solvents approved by the nominated project management representative may be used for cleaning purposes.

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.

Refer to Section 13.32 – Fuel / Flammable Liquid Storage and Refuelling.

## **15.29 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.

Any person found smoking or discarding a cigarette butt outside of a designated smoking area may be removed (temporarily or permanently) from site.

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.

### **15.30 Housekeeping**

The contractor must maintain all work areas in a tidy state, free of debris and rubbish. Unless directed otherwise, the contractor must dispose of all debris, rubbish, spoil and hazardous waste off site in a designated and authorised area or facility. The contractor must familiarise himself with the waste management plan for the site including collection and disposal arrangements, and must align his waste management activities accordingly.

In cases where an inadequate standard of housekeeping has developed and compromised safety and cleanliness, a nominated project management representative may instruct the contractor to cease work until the area has been tidied up and made safe.

Neither additional costs nor contract deadline extensions will be allowed as a result of such a stoppage. Failure to comply will result in a clean-up being arranged through another service provider at the cost of the non-complying contractor.

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 nominated project management representative on request.

The contractor must implement a housekeeping plan for the duration of the contract ensuring that the site housekeeping is maintained. Furthermore, at the end of every shift, the contractor must ensure that all work areas are cleaned, all tools and equipment are properly stored, and construction rubble is removed.

Where the contractor fails to maintain housekeeping standards, the nominated project management representative may instruct the contractor to appoint a dedicated housekeeping team for the duration of the project at the contractor's expense.

Littering is prohibited.

### **15.31 Waste Management**

Waste may not be disposed of unless the disposal of that waste is authorised by law. The contractor must therefore ensure that all waste that is generated is handled, stored, transported and disposed of in accordance with the requirements of the applicable legislation / local authority.

No waste may be removed from the project site to a waste storage or disposal facility unless that facility has been approved for use by the nominated project management representative.

An adequate number of waste bins and skips must be provided by the contractor and suitable arrangements must be made to ensure that these bins and skips are emptied regularly.

Hazardous wastes must be kept separate from general wastes.



Waste disposal service providers must be approved by the nominated project management representative before any waste is removed from site. These service providers must be audited on a two-yearly basis (or more frequently if deemed necessary based on risk) in order to ensure compliance with legislation and to help ensure that no liabilities accrue to the project.

### **15.32 Stacking and Storage**

All irregular shaped items will be stacked at floor / ground level in designated stacking areas on a level, firm base capable of withstanding the weight of the commodities being stacked and stacked in such a manner that the items do not topple over or change position due to subsidence or weight transfer when being moved.

Where these commodities are stacked on shelves or racks, the shelves or racks must be designed to carry the weight of the commodity being stacked.

All racks or shelves where heavy material or commodities are stacked will have a weight carrying limitation clearly marked on the structure and have a safety factor of at least +10% of maximum total carrying capacity.

All materials, commodities or articles, which could be damaged due to inclement weather, must be stored under cover.

Waste material that is combustible must not be allowed to accumulate in sufficient quantities to create a hazard.

No commodities or equipment may be stacked or stored within 500mm of rolling stock tracks or where mobile equipment travels.

The storage of material, small equipment, tools, files and general items in cupboards and on shelves must be neat and controlled at all times. Incompatible substances must not be stored in or on the same cupboard or shelf.

No equipment, tools, files or documents may be stored or stacked on top of cupboards which are higher than 1.5 metres in height.

### **15.33 Demarcation**

No demarcation of floors is required inside offices, training centres and the like.

Where it is impractical to paint floors, yellow lines will be deemed adequate e.g. where heavy traffic necessitates the continual painting of floors.

Temporary demarcation in the form of hazard tape (red and white) may be used to demarcate areas where there is, for relatively simple reasons, restricted access.

Where hazards exist and entry must be specifically excluded for safety or health reasons, hazard tape in any form must not be used in isolation. A robust and substantial barrier of timber, rope or other material must be used in conjunction with barrier tape, to prevent entry to unauthorised persons.

Outside storage areas where it is impractical to use floor demarcation, demarcation may take the form of creosote poles and wire rope or similar. Spans between uprights should be painted yellow.

### **15.34 Facilities**

Sanitary conveniences must be provided and maintained at a rate of at least one shower facility for every 10 workers, at least one toilet facility for every 10 workers. separate male and female toilet facility, changing facilities must be provided and sheltered eating areas.

Where chemical toilets are provided, one toilet for every ten employees must be allocated.

All toilets must be cleaned daily, disinfected and provided with toilet paper.

All employees making use of these facilities have the responsibility to help keep the facilities neat, clean and hygienic.

Washing facilities, including soap and towels, must be made available for use by the contractor's employees.

Drainage from all washing / toilet facilities must be properly designed and constructed to prevent employee exposure to waste water (and the associated biological hazards). Waste water may not accumulate or stand in pools at any location on the project site.

Change rooms must be provided and must be kept clean and free from odours at all times.

No chemicals, except those normally used for domestic cleaning of these facilities, may be stored in the facilities.

No equipment or items (other than those normally associated with hygiene facilities) may be stored in the facilities.

All entrances must be constructed in a way to afford privacy to users.

Drinking water must be provided.

A sheltered (covered) area must be set aside on site to be used as a dining facility (eating area).

Adequate seating must be provided for the maximum number of employees. The facility must be kept clean and tidy.

A suitably sized, impervious receptacle (bin) must be provided for the disposal of waste food and other refuse generated at the dining facility. This bin must be emptied and cleaned regularly (i.e. promptly after meal times).

Food may only be consumed in authorised sheltered areas.

Adequate refrigerated storage must be provided to the contractor's employees for the storage of food and drinks. Fridges must not be overstocked and must maintain sufficiently low temperatures.

### **15.35 Occupational Hygiene**

The contractor must ensure that the exposure or potential exposure of his employees to any of the following stressors is assessed and measured (a baseline survey must be carried out by an Approved Inspection Authority):

- Noise;
- Thermal stress (heat and cold);
- Particulates (dust);
- Silica (free crystalline silica);
- Asbestos;
- Gases or vapours;
- Lead;
- Chemicals;
- Ionising radiation;
- Non-ionising radiation;
- Vibration (hand / arm vibration and whole body vibration);
- Ergonomics; and
- Illumination.

If it is determined that exposure levels for a particular stressor are unacceptable, then a monitoring and control plan must be implemented to manage any risk of overexposure.

**Note:** Where chemical substances are to be used as part of the construction process, the contractor must ensure that the chemical composition of each substance is known.

Carcinogenic (cancer-causing) ingredients must be specifically identified with due understanding that no chemical known to cause cancer will be permitted for use on site (an alternative will need to be sourced).

## 15.36 Lighting

For all work areas and access ways, if the natural lighting available is inadequate it must be supplemented by artificial lighting to meet the minimum levels required.

A lighting survey to determine luminance must be conducted for all work areas, at least once every two years and prior to work commencing for the first time in any area.

Emergency lighting must be provided in all indoor workplaces that do have adequate natural lighting or in which persons work at night. The emergency sources of lighting that are provided must be such that, when activated, an illuminance of not less than 0.3 lux is obtained at floor level, to enable employees to evacuate safely.

Where it is necessary to stop machinery or shut down plant or processes before evacuating the workplace, or where dangerous materials are present or dangerous processes are carried out, the illuminance must be not less than 20 lux.

Windows and translucent sheeting must be kept adequately clean and clear of obstructions as far as reasonably practicable. Light fittings, i.e. lenses and reflectors must be kept clean. If a light intensity meter is used, a valid calibration certificate must be available.

Neon lights must not be installed in areas where moving parts of machinery or equipment cannot be fully guarded, i.e. lathes, bench grinders, etc. in order to eliminate the stroboscopic effect.

No person may use a portable electrical light where the operating voltage exceeds 50 volts, unless:

- It is fitted with a non-hydroscopic, non-conducting handle;
- All metal parts which may become live are protected against accidental contact;
- The lamp is protected by means of a guard firmly attached to the handle; and
- The cable can withstand rough use.
- 

No person may use a portable electric light in damp or wet conditions or in closely confined spaces, inside metal vessels or when in contact with large masses of metal, unless:

- The lamp is connected to a source incorporating an earth leakage; and
- The operating voltage of the lamp does not exceed 50 volts. Hearing Conservation

A hearing conservation program must be implemented and protection against the effects of noise exposure must be provided when the noise exposures equal or exceed an 8-hour time-weighted average sound level of 85 decibels measured on the A-weighted scale of a standard sound level meter at slow response.

For the hearing conservation program to be effective it must include as a minimum:

- Monitoring of the workplace to determine the representative exposure of employees to excessive noise levels;
- An audiometric testing program for employees, which must include:

- ♦ A baseline audiogram for all employees exposed to noise levels equal to or in excess of the standard;
- ♦ Annual audiograms for each overexposed employee;
- ♦ Analysis of audiogram results with retesting and/or referral to an otolaryngologist or qualified physician when a significant threshold shift (STS) occurs; and
- ♦ Written employee notification of the STS.
- A training program for all employees exposed to noise;
- Provision of personal protective equipment to all affected employees when administrative or engineering controls fail to reduce sound levels to within the levels of the standards.

Monitoring of employee exposures to noise shall be conducted by an Approved inspection Authority.

The monitoring requirement may be met by either area monitoring or personal monitoring that is representative of employee exposures. Personal monitoring is preferred, and may be required based on the type(s) of noise sources.

For purposes of the hearing conservation program, employee noise exposures shall be computed in accordance with local legislation.

A person-task specification shall be available for every job category and shall be submitted with an employee for audiometric testing.

Audiometric testing and an annual audiogram shall be provided as part of the regular medical examinations.

Audiometric test results obtained from the pre-employment medical examination for a new employee shall be used as the baseline audiogram.

Testing to establish a baseline audiogram shall be preceded by at least 14 hours without exposure to workplace noise.

Hearing protectors shall not be used as a substitute for the requirement that baseline audiograms be preceded by 14 hours without exposure to workplace noise.

Employees shall be notified of the need to avoid high levels of non-occupational noise exposure during this 14-hour period.

Record-keeping for the audiogram shall include:

- Name and job classification of the employee;
- Date of the audiogram;
- The examiner's name;
- Date of the last acoustic or exhaustive calibration of the audiometer;
- Employee's most recent noise exposure assessment.

Audiometric test results shall be maintained in the employee's medical file.

To control noise exposure, its three basic elements shall be examined, i.e. source of the sound, travel path, and effect on receiver or listener. Solution of a given noise problem might require alteration or modification of any or all of these three basic elements.

2) Controlling noise at the noise source can be achieved by the following:

- Select quiet equipment initially. In selecting quiet equipment the following features shall be considered:

- Low-noise certification;
  - Advertisement of "quiet" operation, evidence of noise control design;
  - Evidence of "lower" and "slower" operating characteristics;
  - Side-by-side noise testing of equipment; and
  - "On-site" or "in operation" inspection of mechanical equipment before purchase.
  - Reduce operating noise by considering the following control measures:
    - Reduce impact or impulse noise by reducing weight, size, or height of fall of impacting mass;
    - Reduce speed in machines and flow velocities and pressure in fluid systems;
    - Balance rotating parts – to control machinery noise and vibration of fans, fly wheels, pulleys, cams, etc.
    - Reduce frictional resistance between rotating, sliding or moving parts in mechanical systems: frequent lubrication, proper alignment of moving parts; static and dynamic balancing of rotating parts; correction of eccentricity or "out-of-roundness" of wheels, gears, rollers, pulley, etc.;
    - Reduce resistance in air or fluid systems: use of low flow velocities, smooth boundary surfaces of duct or pipe systems, and long-radius turns and flared sections in pipes, etc., to reduce turbulence noise;
    - Isolate vibration elements in machinery; install motors, pumps, etc. on most massive part of machine; use belt or roller drives in place of gear trains; use flexible hoses and wiring instead of rigid piping and stiff wiring, etc.
    - Apply vibration damping materials such as liquid mastic; pads of rubber, felt, foam or fibrous blankets; or sheet metal visco-elastic laminates or composites to vibrating machine surfaces; and;
    - Reduce noise leakage from the interior of machines such as compressors by sealing or covering all openings or applying acoustical materials to machine interiors.
- 3) Controlling noise in the transmission path can be achieved by the following:
- Separate the noise source and receiver as much as possible;
  - Use sound-absorbing materials on ceiling, floor or wall surfaces as close to the machine as possible;
  - Use sound barriers and deflectors in the noise path;
  - Use acoustical lining on inside surfaces of such passageways as ducts, pipe chases, or electrical channels;
  - Use mufflers, silencers or snubbers on all gasoline or diesel engines, regardless of size; and particularly on equipment when large quantities of high-pressure, high-velocity gases, liquids, steam or air are discharged into the open air; and
  - Use vibration isolators and flexible couplers where the noise transmission path is structure borne in character.
- 4) Protection for the receiver – when engineering controls fail to reduce the levels to within the levels specified in local legislation, the following measures shall be implemented:
- Personal protective equipment shall be provided and replaced as necessary at no cost to employees;
  - Supervisors shall ensure that hearing protective devices are worn by all employees who are exposed to a time-weighted average of 85 decibels or greater and who have experienced a significant threshold shift;
  - Employees shall be given the opportunity to select their hearing protectors from a variety of suitable protectors; and

Noise zones shall be indicated by means of signs at every entrance to such zones.

When noise levels exceed 100 dB(A), a combination of earplug and earmuff may be required to achieve protection of the worker.

It is important to note that using double protection will add only 5 to 10 dB of extra attenuation above that of a single Hearing Protection Device.

Where an earmuff and earplugs are used together, OSHA recommends using this simple calculation: Take the higher rating of the two devices, and add five.

Hearing Protection Devices should be worn for the full noise exposure period.

Where an audiometry programme is required, it must meet the following standards:

- All testing must be by pure tone audiometry in an audiometry booth or quiet room, with measured noise levels less than 40 dB(A);
- The initial audiogram must be taken prior (minimum of 24 hours) to exposure to significant noise. Further audiograms must be taken periodically; annually where exposures are over 85 dB(A) Leq or where continued deterioration to hearing is occurring;
- Testing must be performed by trained and competent personnel;
- Audiometers must be calibrated according to the manufacturer's guidelines. As a minimum these will be a weekly biological calibration using an employee unexposed to noise, or a bio-acoustic simulator, and an annual quantitative check. All results must be documented; and
- Audiograms must be read by trained persons who will identify any increasing hearing loss and then determine if this is noise induced. Any employee with a significant downward shift in one or both ears (measured as an average non age-adjusted loss from baseline of 10 dB at 2, 3 or 4 kHz) must be retested following removal from noise for a minimum of 24 hours, usually after a days-off period. If the downward shift persists the employee must be reviewed by a physician and improved hearing protection considered.

### **15.37 Particulate and Gas / Vapour Exposures**

Designated areas must be created where:

- It is likely that the 95 per cent upper confidence limit of a Specific Exposure Group's (SEG) mean exposure concentration for agents resulting in chronic effects (such as total inhalable dust, respirable dust, respirable crystalline silica, PAH, fluorides, lead, mercury, asbestos or non-asbestos fibrous materials) exceeds the relevant OEL; and
- Agents with an acute effect, such as particulate hazards, or gases (e.g. CO, SO<sub>2</sub>, NH<sub>3</sub>, HF, etc.), or vapours exceed 50 per cent of the relevant OEL.

Designated areas must:

- Be identified and mapped, signposted or otherwise clearly communicated to employees working in the area. Signposting, where necessary, must use appropriate wording or symbols on signs to identify the hazard;
- Have a documented respiratory protection programme based on suitable risk assessment and standards, which is applied to employees, contractors and visitors;
- Have regular monitoring of SEGs working in the area; and
- Have a formal review of the practicality of engineering controls at least every two years, or less where it is a critical control for a significant risk.

Particulate and gas / vapour monitoring must be appropriate to the exposure conditions and toxicants, and based on the use of equipment approved by local regulatory authorities, as per documented methods.

Where risk assessment indicates the possible presence of levels of gas or vapour sufficient to cause health effects in less than one shift (e.g. confined space entry), continuous monitoring is required as long as the potential for harm exists.

Employees and contractors must be covered by a medical surveillance programme when:

- Their Specific Exposure Group TWA mean exposure to respirable crystalline silica, total inhalable dust, respirable dust, lead or asbestos is greater than 50 per cent of the relevant OEL;
- The medical adviser considers that it is advisable; or
- There is a legal requirement for medical monitoring.

Where risk assessment indicates a risk of a respiratory condition, assessment programmes must include chest x-rays and / or lung function tests. The test or tests chosen must enable the earliest detection of adverse effects from the exposure of concern. Where indicated, they must meet the following standards:

- High quality chest x-rays will be taken every five years, unless local legislation requires these to be more frequent;
- All chest x-rays for pneumoconiosis surveillance will be read to International Labour Organisation (ILO) standards by an ILO B reader, wherever possible, and if not, by a competent radiologist using verifiable quality criteria;
- Any progression of more than one step on the ILO extended scheme to a reading above 1/0 will be reviewed by a physician;
- Any reading suggesting active lung disease will be reviewed by a physician; and
- All spirometry will be performed by trained staff following the American Thoracic Society guidelines or equivalent and be offered at a frequency determined by the likely rate of detectable change in lung function.

Controls must be of an adequate standard such that surfaces are adequately cleaned to avoid:

- Dust generation due to material dislodgment (e.g. windblown), where practicable; or
- Fume generation from accumulated dust during welding / heating or cutting operations.

Where risk assessment indicates the need to reduce exposures to toxic substances for employees or their families, good personal hygiene must be enforced. The programme must include:

- No smoking, eating or drinking in designated hazard areas;
- Washing of hands and face prior to drinking, eating or smoking;
- Showering at work post shift or after exposure to 'dirty' conditions; and
- Laundering of contaminated clothing by the contractor.

Abrasive blast cleaning must be conducted so as to protect worker health and minimise dust emissions. Substitutes must be used whenever practicable for abrasives containing crystalline silica. However, if such abrasives are used, workers must be aware of the hazards and exposure monitoring conducted. The hazardous properties of alternative materials must be considered before use.

Where required, training in the recognition of signs and symptoms of hazardous particulate and gas / vapour exposure, emergency procedures and preventative measures must be provided.

### **15.37.1 Respiratory Protection Devices**

The selection of Respiratory Protection Devices (RPD's) must be based on:

- The potential particulate size distribution, gas / vapour types, substance toxicity and likely concentrations;
- Compatibility with the work tasks and other PPE; and
- Comfort (as it affects wear-time) and allowance for adequate communication.

Only RPD's approved by the nominated project management representative may be used. Suitable facilities must be available for cleaning and sanitary storage of RPD's.

Half-mask and full-face air-purifying respirators must NOT be used where:

- The atmosphere is oxygen deficient (< 19.5 per cent);
- The atmosphere is immediately dangerous to life or health (e.g. in areas where CO concentrations are > 1500 ppm, HF > 30 ppm or NH<sub>4</sub> > 300 ppm);
- Gases and vapours are more than ten times their OEL or greater than 1000 ppm for half-mask respirators, or more than 100 times their OEL for full-face respirators; or
- Particulates are more than five times their OEL for half-mask respirators, or more than 50 times their OEL for full-face respirators.

For atmospheres that are oxygen deficient, or contain unknown hazards, or have concentrations of gases and vapours that are unknown, or could potentially exceed levels that are immediately dangerous to life or health, an air-supplied type respirator must be worn.

For effective use of negative pressure RPD's (including disposable RPD's), fit testing must be qualitative and documented as a minimum, although quantitative fit testing is preferred. Fit testing must be performed by a competent person when RPD's are first issued and must be repeated periodically according to legal requirements or two-yearly as a minimum frequency. There must be a policy requiring a clean shaven face when using a negative or neutral pressure RPD for routine tasks, or the use of a positive pressure RPD will be required. A pulmonary function test and medical evaluation may be required to determine whether or not an individual is medically fit to wear a respirator.

For air-supplied RPD's, breathing air must be effectively filtered and / or isolated from plant and instrument air, and isolated from sources of potential contaminants. The quality of the breathing air must be checked for conformance with applicable standards.

The respiratory protection programme must include:

- Periodic inspection of RPD's, including before each use;
- Periodic evaluation of cleaning, sanitising, maintenance and storage practices by competent persons;
- Performance of positive and negative fit checks before each use by RPD wearers to ensure that the respirator is functioning properly; and
- Training at first issue of a RPD and regular refresher training thereafter in accordance with regulatory requirements or at least once every two years.

#### **15.37.2 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.

### **15.38 Hazardous Chemical Substances**

No chemical substance may be brought onto site unless it has been approved for use by the nominated project management representative and it appears on the Approved Chemical Substances Register which will be made available to all contractors.

The register will contain the following information:

- Trade name / product name of substance;
- Manufacturer / supplier of substance;
- Maximum inventory;
- Storage requirements and precautions;
- Inventory of special emergency items held for handling spillages, fires, etc. (e.g. reagents to neutralise spillages, firefighting foam, etc.); and
- Approved disposal methods.

If the contractor wishes to make use of a chemical substance that does not appear on the register, then the contractor must provide the following information to the nominated project management representative for review PRIOR to bringing the substance onto site:

- A detailed 16-point Material Safety Data Sheet (MSDS) issued by the manufacturer / supplier of the substance;
- The reason for wanting to bring the substance onto site (i.e. the intended use of the substance);
- The proposed method of transportation;
- The proposed arrangements for the safe storage of the substance;
- The quantity to be stored on site;
- The proposed methods for handling / using the substance (including PPE);
- The proposed method of disposal of the waste;
- Proof that the contractor is able to readily provide the necessary first aid measures as specified in the MSDS; and
- A risk assessment covering the transportation, use, handling, storage and disposal of the substance with specific reference to the substance's compatibility with other chemicals.

This information must be provided at least five (5) working days prior to the date on which the contractor intends to bring the substance onto site for use.

Any chemical substance brought onto site without adherence to the requirements stipulated above shall be removed from site immediately.

If the nominated project management representative approves the substance for use, the contractor must ensure that all necessary precautions are taken concerning the transportation, use, handling, storage and disposal of the substance, and that all required PPE and first aid materials / equipment (as stipulated in the MSDS) are readily available on site.

The contractor must ensure that a Material Safety Data Sheet (MSDS) is obtained for each chemical substance brought onto site. A file, or files, containing all of the MSDS's must be maintained and must be readily available to all personnel on site (particularly first aiders) as well as other potentially affected parties (e.g. emergency services personnel, persons from the local community, etc.). The MSDS's must be in the language(s) commonly used on site.

The contractor must appoint a trained and competent Hazardous Chemical Substances Coordinator who understands and is able to evaluate the risks associated with a wide variety of substances. This person shall be responsible for:

- Assessing the hazardous properties and risks associated with all chemical substances brought onto site by the contractor and appointed sub-contractors (using the MSDS's);
- Determining precautions and safe practices for transportation, use, handling, storage and disposal (including PPE requirements) (using the MSDS's);
- Determining first aid and emergency response requirements / procedures (using the MSDS's);
- Maintaining the MSDS file;
- Managing and monitoring the consumption of inventory; and
- Providing an "as needed" service to site personnel and suppliers.

The risks associated with the transportation, use, handling, storage and disposal of all hazardous chemical substances brought onto site must be assessed and managed by the contractor through a process that incorporates risk reduction using the hierarchy of controls as described in Section 6. Whenever a task-based risk assessment is carried out, consideration must be given to the use of chemical substances (e.g. greases, solvents, etc.).

The contractor must provide Safe Work Procedures for the transportation, use, handling, storage and disposal of all hazardous chemical substances to be used on site.

The contractor must provide his employees with all of the Personal Protective Equipment that is necessary to prevent exposure / injury while handling / using the hazardous chemical substances that they will be required to work with. Appropriate PPE must be selected with consideration given to the potential hazards, permeability, penetration, resistance to damage and compatibility with the work tasks.

The contractor's employees must be trained in the safe transportation, use, handling, storage and disposal of the hazardous chemical substances that they will be required to work with or may come into contact with. The training must specifically address PPE requirements (including the correct selection, fitment and use thereof).

All personnel must be trained to understand the potential health effects associated with exposure to hazardous chemical substances and therefore the importance of Safe Work Procedures and PPE.

All personnel must be trained on emergency response procedures and first aid measures.

Behaviour-based observations and coaching must include the use / handling of hazardous chemical substances.

An appropriate occupational exposure monitoring and medical surveillance programme must be in place for all personnel potentially exposed to hazardous chemical substances which have the potential to cause immediate or long-term harm.

Emergency showers and eyewash stations must be provided where required by law, or where a risk assessment indicates a need. The emergency showers and eyewash stations must be appropriately located, signposted, and regularly tested and maintained. Employees must receive training on the location and use of the showers / eyewash stations.

An emergency response plan for incidents involving hazardous chemical substances must be in place. Regular and appropriately staged emergency drills (possibly involving external spill response and ambulance support services) must be held and lessons learnt must be incorporated into the emergency response plan.

The contractor must provide appropriate storage facilities for all hazardous chemical substances to be used on site. The storage facilities must be secure and protected from damage. They must also be designed for easy access for firefighting purposes. Where applicable, the storage facility must protect chemical containers from physical damage due to temperature extremes, moisture, corrosive mists or vapours, and vehicles.

The inventory of hazardous chemical substances stored on site must be kept to a minimum. The quantity of each chemical stored must be justifiable.

Storage and segregation requirements for all hazardous chemical substances to be used on site must be based on:

- The quantities of the substances stored;
- The physical state of the substances (solid, liquid or gas);
- The degree of incompatibility; and
- The known behaviour of the substances.

Access to areas where hazardous chemical substances are stored and handled must be limited and controlled.

Every chemical substance container must be adequately and clearly labelled to identify its contents, to indicate precautionary requirements for the substance, and to indicate the date of expiry (if applicable). Pipes used to transfer / convey / distribute chemical substances must be clearly identified (e.g. colour coding). Directional flow must be indicated where practical.

Before any item, equipment or empty container containing a chemical residue is disposed of as general waste, it must be properly decontaminated (where applicable). Before being disposed of, empty chemical containers must also be rendered unusable for carrying water (by puncturing, cutting or crushing them).

Hazardous chemical substance waste (i.e. redundant / expired hazardous chemical substances, containers containing residues, contaminated items / materials, etc.) must be disposed of in accordance with the applicable legislation.

Maintenance, inspection and testing schedules and procedures must be in place for critical equipment associated with hazardous chemical substances.

A system must be in place to ensure that the risks are assessed before any changes are made to equipment and / or processes for the transportation, storage, handling, use or disposal of a hazardous chemical substance.

A programme must be in place to continually investigate possibilities / opportunities for replacing hazardous substances with safer alternatives.

### 15.39 Radiation

The risks associated with ionising (from naturally occurring radioactive minerals (NORM), radon, and man-made sources), ultra violet (UV) and electromagnetic field (EMF) radiation exposure must be assessed by a competent person.

There must be an inventory of all radiation sources that have the potential to cause adverse health effects. For each radiation source, the type of radiation (e.g. radioisotope, radon, x-ray, EMF, laser, etc.), the strength of the radiation, and the location must be recorded.

Where risk assessment indicates the need, a documented radiation management programme must be developed such that:

- All types of radiation sources are adequately characterised and described;
- Exposures are eliminated or reduced to as low as reasonably practicable (ALARP);
- A clearly defined chain of responsibility (with duties) is provided; and
- Education is provided for employees regarding radiation safety, including the radiation management programme elements.

The ionising radiation management programme must meet all applicable regulatory requirements, and as a minimum must include the following elements (as applicable):

- Surveyed radiation areas and quantification of exposure sources / levels;
- Exposure and medical monitoring programmes based on established investigation levels;
- Transport of radioactive materials in compliance with international radiation transport regulations, when no local regulations are in place;
- Waste monitoring and disposal programmes;
- Feedstock and equipment checks for naturally-occurring ionising radiation;
- Clearance and control procedures for all contaminated materials and equipment leaving or arriving at site (including scrap);
- Leak (wipe) tests on sealed radioactive containment equipment;
- Lock-out procedures for vessels and equipment containing radioactive sources and radon decay product measurement prior to entry;
- Emergency procedures;
- Environmental impact risk assessment (air, water, waste, foods, etc.);
- Product / waste life cycle control; and
- Dose assessment for employees and critical exposure groups, according to documented methods and by a competent person.

Areas with ionising radiation with annual doses greater than 5 milli Sieverts (mSv) must be designated as restricted access or controlled areas. These areas must be identified and mapped, signposted or otherwise clearly communicated to employees working in the area.

Each person whose potential exposure exceeds 5 mSv per annum or who is a designated radiation worker must undergo periodic personal radiation monitoring and medical surveillance designed to show continued fitness for radiation work.

All sources of ionising radiation must be managed in use and when they are either disposed of or securely stored in accordance with local regulations. Each operation where individual worker's

exposures could exceed 5 mSv per annum must have a trained radiation protection adviser or ready access to a trained protection consultant.

There must be documented procedures for the inspection, assessment and maintenance of the controls, and emergency procedures to deal with incidents involving ionising radiation sources (including fire and explosions). All controls must be reassessed annually to ensure their continued effectiveness and that operating practices are in accordance with written procedures.

## **15.40 Thermal Stress**

Hot areas or activities where employees have experienced or could experience excessive fatigue, muscle cramp, dehydration, dizziness and other symptoms of heat stress must be identified and described.

Where a risk of thermal stress is determined, a competent person must conduct monitoring surveys on site, in consultation with workers.

For defined extreme thermal conditions and job activities, medical examinations must include information about the operator's physiological and biomedical aspects, and an assessment of fitness for the working conditions.

Cold areas or activities where employees have experienced or could experience pain or loss of feeling in extremities, frostbite, severe shivering, excessive fatigue and other symptoms of cold stress must be identified and described.

Workplace thermal stress levels (temperature, air movement, humidity, etc.), activities (work level, etc.) and conditions (clothing, health, etc.) that have the potential to exacerbate thermal stress effects must be adequately characterised and described. Workplace exposure assessment must be repeated according to regulatory requirements or whenever there is a change in production, work organisation, process or equipment which may impact thermal stress levels.

Detailed heat stress assessment of identified tasks or jobs must be tiered to:

- Commence with the use of a simple heat stress index as a screening tool; then, if necessary;
- Use rational heat stress indices in an iterative manner to determine the 'best' control methods for alleviating potential heat stress; and
- Undertake physiological monitoring when exposure times are calculated to be less than 30 minutes, or where high level PPE that limits heat loss must be worn.

Detailed cold stress assessment of identified tasks or jobs must be conducted according to current appropriate guidelines that incorporate a cold stress index, to determine the 'best' control methods for alleviating potential cold stress.

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

- An acclimatisation 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.

### **15.41 Fitness for Work**

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 sub-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.

A programme to manage these risks must be implemented, and it must include:

- Mechanisms for managing fatigue, stress and lack of fitness;
- An alcohol and other (including prescription, pharmaceutical or illicit) drugs policy that includes testing;
- An Employee Assistance Programme providing confidential access to resources and counsellors; and
- Training and awareness programmes.

Each employee has an obligation to present himself fit for work at the start of the day / shift, and to remain fit for work throughout the work period. Reporting for work under the influence of alcohol or any other intoxicating substance will not be tolerated. Any transgression concerning the alcohol and other drugs policy applicable to the project may result in the offending employee's access to the project premises being temporarily or permanently withdrawn.

Alcohol and drug testing on the project premises will be carried out randomly (as employees report for duty and during the course of the day / shift), following significant incidents (all persons involved), and whenever there is reasonable suspicion. Alcohol and drug testing may also be carried out as part of a Pre-Employment Medical Examination.

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.

The contractor is responsible for the administration of the working hours of his employees as well as the employees of any appointed sub-contractors. The maximum working hours per day and the minimum rest times between shifts must be specified in the contractor's Health and Safety Management Plan and must comply with all applicable legislation.

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:

- Pre-Employment Medical Examination – to assess the physical 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 six months).

**Note:** The results of an Exit Medical Examination from previous employment will not be accepted as a Pre-Employment Medical Examination.

**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).

A detailed job (role) description and an exposure profile (noise, dust, heat, fumes, vapours, etc.) must be provided for each employee or group of employees. The medical examinations that an employee undergoes must be based on (i.e. the employee's fitness must be assessed against) the information contained in these documents as well as the baseline risk assessment for the work. This information must be made available to the occupational medical practitioner performing the medical examination.

For each role, the medical criteria for fitness must be documented and these must be based on an evaluation of the physical and medical requirements for the role.

Depending on the circumstances, certain vaccinations may need to be provided to employees.

The medical examinations carried out for all drivers and operators must include testing / assessment for medical conditions that could affect the safe operation of vehicles or equipment.

Specific testing / questioning must be carried out to determine if an individual:

- Suffers from epilepsy or any other medical condition deemed to be a risk by the occupational medical practitioner;
- Makes use of chronic medication that could affect performance;
- Is colour-blind; or
- Has poor day or night vision.

The medical examinations carried out for employees that are required to work at height must include testing / questioning to determine if an individual suffers from epilepsy, hypertension (high blood pressure) or any other medical condition deemed to be a risk (with regard to working at height) by the occupational medical practitioner.

Electricians must be tested for colour-blindness.

With regard to the placement of new employees:

- Prospective employees must be referred to a suitable occupational medical practitioner (doctor) for a "Pre-Employment Medical Examination";
- If an individual is found to be medically "unfit for placement", the doctor will indicate which work activities cannot be performed by the person;
- The individual may still be employed on the project if his medical restrictions can be accommodated and provided that no legislation is transgressed.

A process must be established to manage medical restrictions that may be placed on an employee. For every employee with a medical restriction, regular follow up visits with the occupational medical practitioner must be arranged to ensure that each case is proactively managed.

An employee in a safety critical job must report (to his supervisor) any condition that might impair his ability to safely perform the duties associated with his role. A mechanism must be in place for such reports to be referred to an occupational medical practitioner to determine if the employee is fit to continue with his work.

Proof of all medical examinations (i.e. certificates of fitness signed by an occupational medical practitioner) must be kept on site and these records must be readily available for inspection by the nominated project management representative.

An employee's certificates of fitness must be included in his Personal Profile (dossier). If an Employee Personal Profile (dossier) hasn't already been compiled for a particular employee, then this must be done without delay following the employee's Pre-Employment Medical Examination. No employee in a safety critical role may commence work on site without proof that he has undergone a Pre-Employment Medical Examination.

Occupational medical examinations and data interpretation may only be carried out by medical practitioners that are appropriately qualified and certified to do so.

Occupational medical data contained in reports to management must be grouped and summarised to ensure that the confidentiality rights of each individual employee are maintained.

All occupational medical data and records must be retained for at least 40 years.

## **15.42 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. Occupational Hygiene

These services are to be provided by TPT):

- Chemical agents =Gases, vapours, solids, fibres, liquids, dusts, mists, fumes, etc.
- Physical agents =Noise, Vibration, Heat, Cold, Electromagnetic fields, lighting etc.
- Biological agents =Bacteria, fungi, etc.
- Ergonomic factors =Lifting, stretching, and repetitive motion.
- Psychosocial factors =Stress, workload and work organisation

TPT Occupational health must provide the contractor with the health risk assessment in respect of existing Occupational Health Risk on Sites

Additionally an Occupational Health Program for monitoring the existing Occupational health Risk will be given to the Contractor

The contractor must conduct an Occupational Health Risk Assessment in respect of their trade. The contractor must appoint an Approved Inspection Authority (AIA) for Occupational Hygiene to conduct the identified Occupational hygiene Surveys.

### 16.1 Lighting

- Should be measured once-off within 6 months of new installations prior to work commencing for the first time in any area
- The installations should be placed on a maintenance/ repair/ replacement schedule by management. Proof of this should be available
- Lighting and ventilation shall comply with the National Building Regulations (SANS 10400-O: Lighting and Ventilation) before occupancy is established
- Measurements do not need to be conducted by an Approved Inspection Authority for Occupational Hygiene

### 16.2 Particulate and Gas/ Vapour Exposures

The concentration of an HCS in the air is, or maybe, such that the exposure of employees working in that workplace exceeds the recommended limit without the wearing of respiratory protective equipment, is zoned as a respirator zone

### 16.3 Thermal Stress

Hot areas or activities where employees have experienced or could experience excessive fatigue, muscle cramp, dehydration, dizziness and other symptoms of heat stress must be identified and described.

Where a risk of thermal stress is determined, a competent person must conduct monitoring surveys on site, in consultation with workers.

For defined extreme thermal conditions and job activities, medical examinations must include information about the operator's physiological and biomedical aspects, and an assessment of fitness for the working conditions. Transnet Port Terminals Health and Safety Management Health and Safety Specification 27 May 2015

Page 135

Cold areas or activities where employees have experienced or could experience pain or loss of feeling in extremities, frostbite, severe shivering, excessive fatigue and other symptoms of cold stress must be identified and described.

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Detailed heat stress assessment of identified tasks or jobs must be tiered to:

- Commence with the use of a simple heat stress index as a screening tool; then, if necessary;
- Use rational heat stress indices in an iterative manner to determine the 'best' control methods for alleviating potential heat stress; and
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- 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.

## **16.4 Measuring and Monitoring**

The workplace exposure (or potential exposure) of persons to occupational health stressors must be measured and monitored to determine the effectiveness of control measures as well as compliance with legal and other requirements, particularly Occupational Exposure Limits.

All such measuring and monitoring must be carried out by an Approved Inspection Authority (i.e. a specialist service provider that is appropriately registered with a governing authority).

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 programme.

All monitoring results obtained must be analysed 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.

## **17. Temporary works**

A contractor must appoint a temporary works designer in writing to design, inspect and approve the erected temporary works on site before use.

A contractor must ensure that all temporary works operations are carried out under the supervision of a competent person who has been appointed in writing for that purpose.

A contractor must ensure that all temporary works structures are adequately erected, supported, braced; and

A contractor must ensure that, all temporary works structures are adequately erected, supported, braced and maintained by a competent person so that they are capable of supporting all anticipated vertical and lateral loads that may be applied to them, and that no loads are imposed onto the structure that the structure is not designed to withstand;

All temporary works structures are done with close reference to the structural design drawings, and where any uncertainty exists the structural designer should be consulted; detailed activity specific drawings pertaining to the design of temporary works structures are kept on the site and are available on request to an inspector, other contractors, the client, the client's agent or any employee;

All persons required to erect, move or dismantle temporary works structures are provided with adequate training and instruction to perform those operations safely;

all equipment used in temporary works structure are carefully examined and checked for suitability by a competent person, before being used;

All temporary works structures are inspected by a competent person

all temporary works structures are inspected by a competent person immediately before, during and after the placement of concrete, after inclement weather or any other imposed load and at least on a daily basis until the temporary works structure has been removed and the results have been recorded in a register and made available on site;

No person may cast concrete, until authorization in writing has been given by the competent person; if, after erection, any temporary works structure is found to be damaged or weakened to such a degree that its integrity is affected, it is safely removed or reinforced immediately;

- adequate precautionary measures are taken in order to—
- secure any deck panels against displacement; and
- prevent any person from slipping on temporary works due to the application of release agents;
- as far as is reasonably practicable, the health of any person is not affected through the use of solvents or oils or any other similar substances;
- upon casting concrete, the temporary works structure is left in place until the concrete has acquired sufficient strength to safely support its own weight and any imposed load, and is not removed until authorization in writing has been given by the competent person contemplated in paragraph (a);
- The foundation conditions are suitable to withstand the loads caused by the temporary works structure and any imposed load in accordance with the temporary works design.
- provision is made for safe access by means of secured ladders or staircases for
- a temporary works drawing or any other relevant document includes construction sequences and methods statements;
- the temporary works designer has been issued with the latest revision of any relevant structural design drawing;
- a temporary works design and drawing is used only for its intended purpose and for a specific portion of a construction site; and
- The temporary works drawings are approved by the temporary works designer before the erection of any temporary works.

No contractor may use a temporary works design and drawing for any work other than its intended purpose.

## **18. 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 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.

## **19. 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 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 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 nominated project management representative for approval prior to site establishment.

The Emergency Response Plan must be formally reviewed (and amended if necessary) on at least an annual basis, and following any emergency situation, to ensure that it remains appropriate and effective.

At each project work site:

- 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 (refer to Section 14.2).
- 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.

Refer to the Transnet Port Terminals Health and Safety Management Site Emergency Managements HAS-P-0001.

## **19.1 Fire Fighting**

The contractor must ensure that Fire Fighting requirements are met and the fire fighting training must be done through an accredited training institution. The cost of this training shall be for the contractor's account.

## **19.2 First Aid**

The contractor must ensure that First Aiders are trained and appointed as described in (Section 10.5)

### **19.2.1 First Aid Kits**

A suitable first aid kit (i.e. appropriate to the level of training) must be readily available to each First Aider. All kits must be provided and maintained by the contractor.

Taking into account the type of injuries that are likely to occur in the workplace, each first aid kit must contain suitable equipment and supplies. First aid equipment and supplies required by applicable legislation must be provided as a minimum.

The contents of each first aid kit must be kept clean and dry. Each kit must be contained in either a portable weatherproof case / bag or a steel box mounted to a fixed structure. Access to first aid equipment / supplies must be limited to train First Aiders only. Access to portable kit bags must be controlled and steel first aid boxes mounted in the workplace must be kept locked.

Approved signage must be in place to indicate the locations of the first aid boxes / bags.

A record of each treatment administered must be kept in a suitable register.

The first aid kits must, as a minimum, contain the following equipment and supplies:

**Table 19-1 Minimum Requirements to be included when equipping first aid boxes**

Item 1:	Wound cleaner/ antiseptic – 100ml;
Item 2:	Swabs for cleaning wounds;
Item 3:	Cotton wool for padding – 100g;
Item 4:	Sterile gauze – minimum quantity 10;
Item 5:	1 x Pair of forceps – for splinters;
Item 6:	1 x Pair of scissors – minimum size 100mm
Item 7:	1 x Set of safety pins;
Item 8:	4 x Triangular bandages;
Item 9:	4 x Roller bandages – 75mm x 5m;
Item 10:	4 x Roller bandages – 100mm x 5m;
Item 11:	1 x Roll of elastic adhesive – 25mm x 3m;
Item 12:	1 x Non-allergenic adhesive strip – 25mm x 3m;
Item 13:	1 x Packet of adhesive dressing strips – minimum quantity 10 assorted sizes;
Item 14:	4 x First aid dressings – 75mm x 100mm;
Item 15:	4 x First aid dressings – 150mm x 200mm;
Item 16:	2 x Straight splints;
Item 17:	2 x Pairs large and 2 x pairs medium disposable latex gloves;
Item 18:	2 x CPR mouth pieces or similar devices.

Additional items / supplies may need to be provided depending on the nature of the workplace (specific hazards) and the level of training of the first aider in position of the kit.

## 20. Management Review

A review of the 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 contractor's scope, schedule, designs, etc.;
- Changes to the 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**

## 21. 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.



## 22. Sub-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-contractor's (or supplier's) ability to provide materials, equipment, services and labour that meet defined specifications must be in place. A prospective sub-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 sub-contractor must develop and implement a detailed Health and Safety Management Plan based on the requirements of the 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 sub-contractor personnel must receive comprehensive orientation and induction training (refer to Section 11).

All work carried out by a sub-contractor must be managed (activity supervised) throughout the contract period and performance must be reviewed (audited) on a regular basis (refer to Section 21).

## 23. Measuring and Monitoring

The workplace exposure (or potential exposure) of persons to hazardous substances or agents must be measured and monitored to determine the effectiveness of control measures as well as compliance with legal and other requirements, particularly Occupational Exposure Limits.

All such measuring and monitoring must be carried out by an Approved Inspection Authority (i.e. a specialist service provider that is appropriately registered with a governing authority).

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 programme.

All monitoring results obtained must be analysed 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.

## 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 sub-contractor) employee that suffers an occupational injury or illness. These arrangements must be described in the 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 Hit is an incident. All Near Hits must be reported.

Using the defined consequence scales contained in TPT 5x5 qualitative risk matrix, the Actual Consequence of each impact must be categorised as:

- A Near Hit;
- Insignificant (Level 4; as per TPT incident level classification guidance);
- Minor (Level 3; as per TPT incident level classification guidance);
- Moderate (Level 2; as per TPT incident level classification guidance);
- Major (Level 1; as per TPT incident level classification guidance); or
- Catastrophic (Level 1; as per TPT incident level classification guidance).

The Maximum Reasonable Outcome (MRO) is based on a risk evaluation of the maximum reasonable consequence of an impact and the likelihood of the event occurring again given a

reasonable failure of existing controls. Using the matrix referred to above, each impact must be evaluated and classified as:

- Low;
- Moderate;
- High; or
- Extreme.

All incident must be reported using a phone call or SMS on the same work day or shift on which it occurs and preliminary details must be recorded and a TPT 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 Labour or the Department of Mineral Resources).

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 nominated project management 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 contractor's Project Manager to assure completeness, accuracy and relevance before it is shared with (communicated to) all project personnel.

Refer to the Transnet Port Terminals Health and Safety Management Occurrence Reporting and Investigation HAS-P-0002.

## **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 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 sub-contractor employees on site;
- Total hours worked on site by contractor and sub-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;
- 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.

Should it be determined that the contractor's level of compliance is unsatisfactory, all work being performed by the contractor on the project site may be stopped (at the 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 done by contractor's Safety Manager who is registered as CHSM (Construction Health and Safety Manager) with SACPCMP on a monthly basis to assess compliance with the project health and safety requirements (including the requirements of this specification

and the contractor's Health and Safety Management Plan). Furthermore, the contractor must ensure that each appointed sub-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's Audit Conformance will be assessed as a percentage and where conformance is better than 90% it will be considered satisfactory and the Contractor must develop and implement an Action Plan within 4 weeks, to be reviewed at the next regular Audit. Where the Contractor's level of conformance is between 75 – 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 Contractor's conformance is less than 75% the Contractor must stop work until an investigation of the cause/s has been completed and corrective actions have been developed and implemented by the Contractor.

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. Reference Documents

**Table 28-1: Reference Documents**


Document Identification	Document Title
HAS-P-0001	Transnet Port Terminals Health and Safety Site Emergency Management
HAS-P-0002	Transnet Port Terminals Health and Safety Occurrence Reporting and Investigation
HAS-GN-0001	Transnet Port Terminals Health and Safety Management Guidelines for Managing Common Hazardous Activities and Tasks
Occupational health and safety act, 85 of 1993 and Regulations	Occupational health and safety act, 85 of 1993 and Regulations


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## Transnet Capital Projects Health and Safety Management

### Site Emergency Management

#### HAS-P-0001

Prepared by:  5 March 2008  
V. Narsai Date

Reviewed by:  5 March 2008  
N. Steyn Date

Approved by:  5 March 2008  
G. Bam Date

0	5 March 2008	ISSUED FOR USE
A	29 October 2007	ISSUED FOR REVIEW
<b>Rev No</b>	<b>Date</b>	<b>Revision Details</b>

Note: If hardcopy, check electronic system for latest revision

## Table Of Contents

<b>1. Purpose .....</b>	<b>3</b>
<b>2. Scope.....</b>	<b>3</b>
<b>3. References .....</b>	<b>3</b>
<b>4. Responsibilities.....</b>	<b>3</b>
<b>5. Procedure.....</b>	<b>3</b>
5.1 Legal Requirements .....	3
5.2 Planning.....	3
5.3 Site Specific Work Instruction .....	4
5.3.1 Greenfield.....	4
5.3.2 Existing Facility .....	5
5.4 Works Information.....	5
5.5 Communication .....	5
5.6 Supervision .....	5
5.7 Training .....	5
5.8 Change Management .....	6
<b>6. Records .....</b>	<b>6</b>



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## 1. Purpose

This procedure establishes the requirements for the management of emergencies on sites.

## 2. Scope

This procedure applies to all Transnet Capital Projects controlled sites.

## 3. References

- Occupational Health and Safety Act No.85 of 1993 and associated Regulations as amended.
- Guidelines for Managing Common Hazardous Activities and Tasks – HAS-GN-0001

## 4. Responsibilities

The Construction Manager is responsible for the implementation of this procedure.

The Health and Safety Manager shall ensure its effectiveness by regular surveillances and audits.

## 5. Procedure

### 5.1 Legal Requirements

As a minimum all applicable regulatory requirements shall be met.

Legislative requirements, hard copy or electronic version, shall be available at the site for review.

A system shall be in place to ensure that changes to applicable regulatory requirements are monitored.

### 5.2 Planning

The Construction Manager shall ensure that a Site Emergency Management System is planned, implemented and managed, to minimise the consequences of an emergency should it occur. The Site Emergency Management System shall include the following:

- Be in a clear and auditable form
- Be practical

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- Be working effectively
- Have clearly defined roles, responsibilities and accountabilities
- Include procedures and work instructions to communicate Emergency Management requirements which should be reviewed periodically and revised as appropriate

### 5.3 Site Specific Work Instruction

For any work site, existing Operating Division procedures and services must be taken into account when preparing a Site specific Emergency Management Work Instruction.

As a minimum the following situations should be covered following the requirements of the Emergency Management Section in the Guidance Note

HAS-GN-0001:

- Roles and responsibilities
- Fire
- Personal injury
- Bomb threat
- Natural disasters
- Industrial Action

#### 5.3.1 *Greenfield*

Prior to commencement of work on site, as part of the fact finding exercise of the Construction Manager, meet with local representatives of the Police, Ambulance Services and Fire Departments and establish requirements for:

- Reporting emergency situations
- Response time expected (consideration of distance and availability); and
- Type of response (equipment availability) contact point
- A joint site inspection is to be arranged to identify any access problems that are likely to be encountered on the site. These are to be noted and corrected, if necessary
- Setting up a joint consultative forum to continuously inform interested and affected parties of the situation on the site

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### **5.3.2 Existing Facility**

Where work is undertaken, discuss existing emergency procedures with the responsible official of the Division and establish its appropriateness for construction work within the existing facility. Agree if existing procedures are to be applied, modified to suit, or new procedures established, using the framework of the Site Emergency Management in the Guidance Note HAS-GN-0001.

Evaluate existing local and existing Divisional services to determine if they are adequate to cover the requirements of construction work. Based on the evaluation, prepare a recommendation for additional services and/or amendments to existing procedures if required.

Discuss the recommendations with the Division and agree on the use of existing services, amendment to existing procedures or the introduction of additional services.

Prepare the Site Specific Work Instruction referred to in 5.3 for signature by both the Division and Transnet Capital Projects.

## **5.4 Works Information**

The Emergency Management Procedures are to be included in the Works Information of Enquiry/Contract documents involving site work.

## **5.5 Communication**

All incidents requiring use of the Site Emergency Management Plan will be communicated to the project manager via a Job Safety Alert and discussed at the next weekly Toolbox Meeting.

## **5.6 Supervision**

The Construction Manager shall identify a competent person whom shall supervise the Site Emergency Management Plan.

Contractors shall identify a competent person to coordinate their participation in the Site Emergency Management Programme.

## **5.7 Training**

The requirements of the Site Emergency Management Programme shall be communicated to all site staff via the Induction Process for new employees and Contractors.

Construction staff's understanding of the requirements of the Site Emergency Management requirements shall be evaluated by the Transnet Capital Projects Risk officials on an on-going basis.

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### **5.8 Change Management**

Transnet Capital Projects shall implement a process to control and communicate changes associated with Site Emergency Management.

## **6. Records**



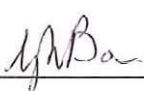
All documents generated during the life of the Contract will be retained in terms of the Document Management Procedure.

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 Transnet Capital Projects Health and Safety Management  
 Occurrence Reporting and Investigation  
 12 March 2008

## Transnet Capital Projects Health and Safety Management

### Occurrence Reporting and Investigation

### HAS-P-0002

Prepared by:	 <hr/> V. Narsai	19 March 2008 <hr/> Date
Reviewed by:	 <hr/> N. Steyn	19 March 2008 <hr/> Date
Approved by:	 <hr/> G. Bam	19 March 2008 <hr/> Date

0	19 March 2008	ISSUED FOR USE
<b>Rev No</b>	<b>Date</b>	<b>Revision Details</b>

Note: If hardcopy, check electronic system for latest revision

Transnet Capital Projects Health and Safety Management  
Occurrence Reporting and Investigation  
12 March 2008

## Table of Contents

<b>1. Purpose .....</b>	<b>1</b>
<b>2. Scope.....</b>	<b>1</b>
<b>3. References .....</b>	<b>3</b>
<b>4. Definitions.....</b>	<b>3</b>
<b>5. Responsibilities .....</b>	<b>8</b>
<b>6. Procedure.....</b>	<b>8</b>
6.1 Incident Scene .....	8
6.2 Investigation Assistance.....	9
6.3 Reporting and Recording of Incidents .....	9
6.3.1 Incident/Injury Classification Levels.....	10
6.3.2 Occurrence Notification Responsibility Matrix.....	10
6.3.3 Investigation Level .....	11
6.4 The Investigation .....	11
6.5 Analysis of Findings .....	12
6.5.1 Corrective and Improvement Action Planning .....	14
6.5.2 Compile Final Report .....	14
6.6 Implement Action Plan.....	14
<b>7. Associated Forms .....</b>	<b>15</b>
<b>8. Records .....</b>	<b>15</b>
<b>9. Annexures .....</b>	<b>15</b>
<b>Annexure A – Sample Occurrence Flash Report .....</b>	<b>16</b>
<b>Annexure B – Classification Levels of Occurrences/ Incidents .....</b>	<b>17</b>
<b>Annexure C – Witness Interviewing Guidelines .....</b>	<b>20</b>
Closing the Interview .....	23
<b>Annexure D - Incident Cause Analysis Worksheet and Guide to     Identification of Root Causes .....</b>	<b>24</b>
<b>Annexure E – Incident Investigation Report Example .....</b>	<b>26</b>

Note: If hardcopy, check electronic system for latest revision

Transnet Capital Projects Health and Safety Management  
Occurrence Reporting and Investigation  
12 March 2008

## 1. Purpose

This procedure provides the standardized criteria for the Reporting and Management of all work related occurrences involving Transnet Capital Projects Staff, Transnet Capital Projects Managed Contractors and/or Transnet Capital Projects controlled Work Sites.

The aim of this procedure is also to ensure and facilitate the effective reporting, recording and investigation of all work-related incidents, including those involving contractors and members of the public.

Incident Management leads to the containment of dangerous situations, effective caring for any injured persons, identification of corrective actions, and the recording of learning for the future.

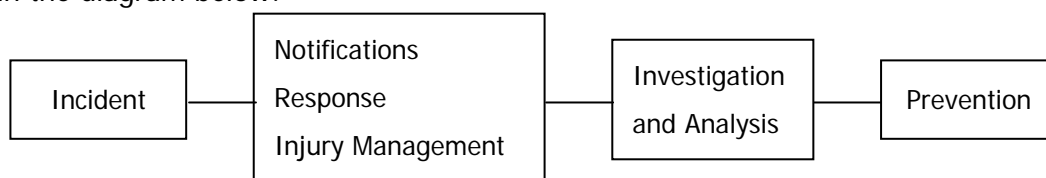
This procedure also assists Transnet Capital Projects fulfil its legal obligation to report certain levels of incidents to the relevant Statutory Authority.

## 2. Scope

Incident Management involves:

- Response
- Making the area safe
- Caring for any injured person
- Containing any environmental and/or plant damage
- Notification
- Investigation
- Analysis
- Prevention
- Reporting

The overall Incident Management Program in Transnet Capital Projects is illustrated in the diagram below:



A summary of the Transnet Capital Projects Incident Management Process is shown in Figure 1

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 Transnet Capital Projects Health and Safety Management  
 Occurrence Reporting and Investigation  
 12 March 2008

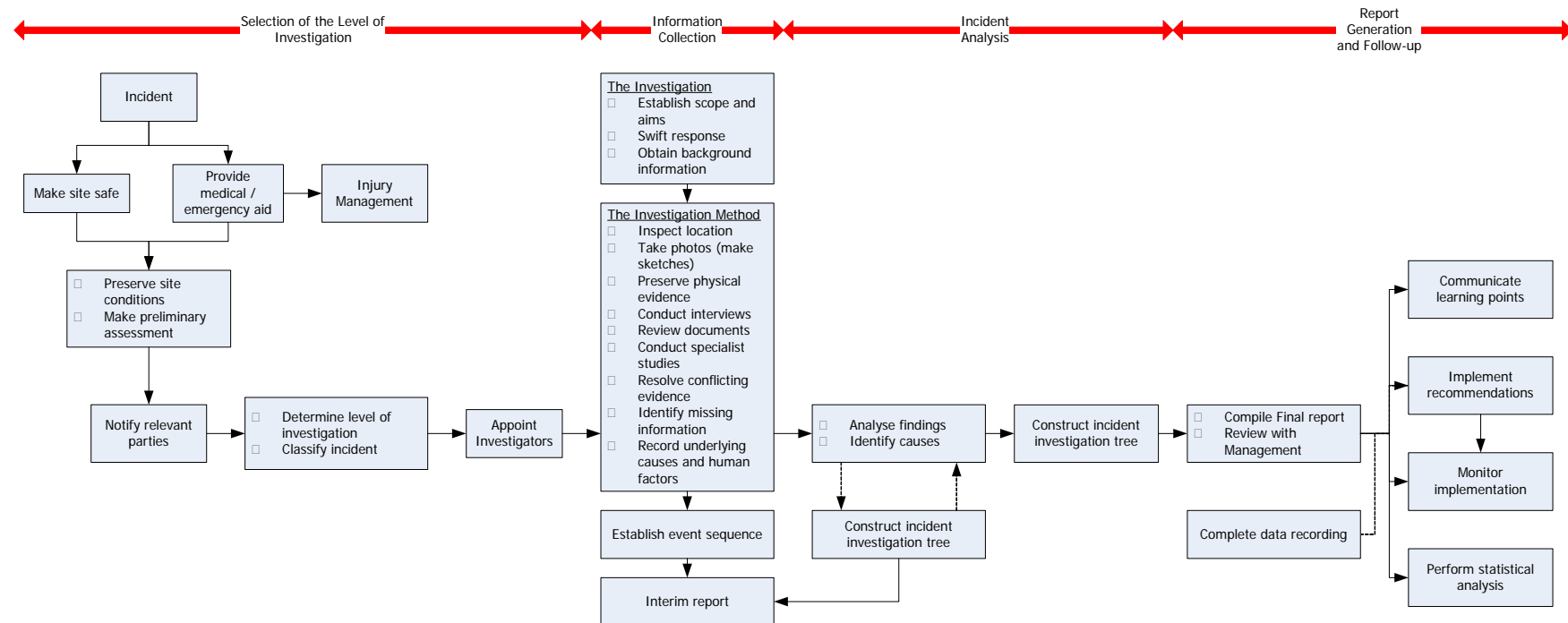


Figure 1 Summary of Incident Management Process



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Transnet Capital Projects Health and Safety Management  
Occurrence Reporting and Investigation  
12 March 2008

### 3. References

- ISO 9001
- Occupational Health and Safety Act No.85 of 1993 and associated Regulations as amended.
- GRM/SHEQ/STD 010 – Incident Notification and Investigation Standard

### 4. Definitions

**Actual** An actual incident/event.

**Contractor** Any person formally contracted by Transnet Capital Projects for the supply of a product, material or service, for example building a structure. A contractor in terms of construction work refers to an employer, as defined in Section 1 of the Act, who performs construction work, and includes principal contractors. This excludes any construction work performed by Transnet employees (or employees placed by a TES (Temporary Employment Service)).

**Employee** A person who has entered into or works under a contract of service, apprenticeship or learnership with an employer, whether the contract is express or implied, oral or in writing, whether the remuneration is calculated by time or work done and paid for in cash or in kind, or tactfully (by tacit agreement) and includes where such a person is under the control, instruction and supervision of Transnet Capital Projects, namely:

- a. A casual employee employed for the purpose of the employer's business;
- b. A person who has entered into a contract of service or of apprenticeship or learnership with the employer;
- c. A person provided to Transnet Capital Projects by a TES (Temporary Employment Service) or a Temporary Employment Service and who works under the control, instruction and supervision of a Transnet Capital Projects employee;
- d. A part-time worker;
- e. A temporary worker;
- f. An occasional employee;
- g. An unattached learner;

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Transnet Capital Projects Health and Safety Management  
Occurrence Reporting and Investigation  
12 March 2008

- h. A bursar whilst under the supervision of Transnet Capital Projects;
- i. Any contractor, where no written agreement as required in terms of Section 37(3) of the OHS Act is available; and/or
- j. Any contractor's employees who perform any work under the instruction and/or supervision of a Transnet Capital Projects employee where the instruction given directly resulted in an injury.

### **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
- Treatment for first degree burns
- Application of bandages during any visit to medical personnel
- 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
- Use of non-prescription medications and administration of single dose of prescription medication on first visit for any minor injury or discomfort
- Application of ointments to abrasions to prevent drying or cracking
- Negative x-ray diagnosis
- Administration of tetanus shot(s) or booster(s). However, these shots are often given in conjunction with more serious injuries, consequently injuries requiring these

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Transnet Capital Projects Health and Safety Management  
Occurrence Reporting and Investigation  
12 March 2008

shots may be recordable for other reasons

- 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

### **Incident /Occurrence**

An undesirable event occurring at work that results in physical harm to a person or death, or damage to environment, plant and/or equipment, and/or loss of production.

An event which causes or could have caused injury, illness, damage to plant, material, or changes in the environment, or public alarm. This definition shall include losses of containment, fire, explosion, non-compliance with environmental regulatory complaints, security breaches, vehicle incidents, off site incidents, and excursions above the accepted occupational hygiene or biological exposure limit

### **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. In any event, an injured employee should be treated with the necessary care and should be registered with the appropriate injury type i.e. Work Injury, Medical Treatment Injury or Lost Time Injury.

### **Lost Time Injury Frequency Rate (LTIFR)**

LTIFR =

The LTIFR is a proportional representation of the occurrence of industrial Lost Time injuries. It is used internationally as an indicator or measure of health and safety performance. The figure 200 000 refers to the average number of hours worked by 100 employees in one year. The LTIFR rate (12 month progressive) reflects a rough estimate of the percentage of the workforce that suffered a lost time in the preceding twelve months.

### **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 bodies etc.).

The following procedures are generally considered medical treatment:

- Treatment of infection

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Transnet Capital Projects Health and Safety Management  
Occurrence Reporting and Investigation  
12 March 2008

- Treatment for second or third degree burns
- Application of sutures (stitches)
- 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
- Use of prescription medications (except a single dose administered on first visit for minor injury or discomfort)
- Cutting away dead skin (surgical debridement)
- Positive x-ray diagnosis (fractures, broken bones etc.)
- Loss of consciousness due to an injury or exposure in the work environment
- 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

**Near Miss Incident**

Any unplanned incident that occurred at the workplace, which although not resulting in any injury, disease, damage or contamination, had the potential to do so.

**Occupational Disease**

Any confirmed disease arising out of and in the course of an employee's employment and which is listed in schedule 3 of the Compensation for Occupational Diseases Act. Confirmation must be done by a medical practitioner or, depending on the disease, a specialist (i.e. Ear Nose & Throat, Audiologist, Pathologist or panel established by the Department of Health, (NIOH)).

**Occurrence:**

See Incident

**Potential**

A potential incident/event.

**Recordable Injuries (RI)**

Equals Lost Time Injury, plus fatality plus occupational diseases plus Medical Treatment Injury with Restricted Duties.

**Recordable Injury Freq Rate (RIFR)**

RIFR =

The RIFR is a proportional representation of the occurrence of Total injuries. The figure 200 000 refers to the average number of hours worked by 100 employees in one year. The RIFR rate (12 month progressive) reflects a rough estimate of the percentage of the

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Transnet Capital Projects Health and Safety Management  
Occurrence Reporting and Investigation  
12 March 2008

workforce that suffered injuries in the preceding twelve months

**Restricted Work  
Day Injuries  
(RWDI)**

Injuries that results in restriction of work or motion for one full shift or more

**Restricted Work  
Case (RWC)**

Is an occupational illness or injury which leaves a person, although at work, unable to perform the full duties of his or her regular work on the next calendar day (including weekends and public holidays), after the day of the injury.

This may involve the injured employee being assigned to another job or restricted/alternative duties (any duties/activities carried out that accommodate agreed restrictions and limitations) as a result of the injury; or returned to their pre-injury or normal duties where they may not be able to perform all the associated activities with their regular work.

**Serious Incident**

- Any incident where there was a Lost Time Injury (LTI) or there was a potential for a LTI
- An actual or potential for damage to assets of greater than \$R100,000.00
- An actual or potential to be out of business or to sustain damage to our business reputation of local area significance or worse
- Where there has been or was potential for a transient environmental event that may attract public attention or a statutory fine

**Severity**

A relative measure of the actual or potential injury or damage that is consequent of an incident.

**Severity Index  
(SI)**

The number of days lost per million labour hours.

**Work Injury**

An occupational injury or disease which arises out of, or in the course of a person's employment and which requires First Aid, medical treatment, lost time injury or involves a fatality.

Employment, in this sense, includes the following:

- All work or activity performed in carrying out an assignment or request by the Employer, including incidental and related activities not specifically covered by the Assignment or Request
- All voluntary work or activity undertaken while on duty

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Transnet Capital Projects Health and Safety Management  
Occurrence Reporting and Investigation  
12 March 2008

with the intention of benefiting the Employer or with the consent and approval of the Employer

Note: Commuting injuries are not classified as a work injury.

### **Working days lost due to Lost Time Injury**

The number of working days lost through Lost Time Injury/disease refers to the total number of working days, irrespective of the number of hours that would normally have been worked each day. A maximum of 12 months may be recorded for any individual occurrence.

For a fatality the maximum period of lost time (12 months {220 days}) should be ascribed.

## **5. Responsibilities**

1. The Group Executive (Transnet Capital Projects) or his/her designate, is legally responsible for ensuring adherence to this procedure.
2. The Section 16(2) assignee in terms of the Occupational Health and Safety Act, is responsible for ensuring adherence to this procedure in his/her area of responsibility or jurisdiction of control.
3. Management shall be responsible for ensuring that all incidents are reported, recorded, investigated and followed-up in order to determine the root causes of incidents, institute corrective measures and ensure the prevention of similar incidents.
4. The Legal and Risk Department shall support and advise Line Management in ensuring adherence to this procedure.

## **6. Procedure**

### **6.1 Incident Scene**

On notification of an incident or on arrival at an incident scene, first:

- Make the site safe for the injured person, other employees or any emergency services that may be called to the scene
- Implement any Site Emergency Procedures
- Provide First/Emergency Aid if necessary
- Make preliminary assessments and identify any immediate actions required to prevent the incident happening again.

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Transnet Capital Projects Health and Safety Management  
Occurrence Reporting and Investigation  
12 March 2008

### 6.2 Investigation Assistance

To assist with any resultant investigation:

- Cordon off, isolate and secure the area to restrict access
- Identify all personnel or third parties directly involved
- If possible, keep witnesses separated
- Await the arrival of any incident investigation team

Some details that may be required are:

- Time, date and nature of the incident
- Persons injured, equipment/environmental damage caused
- Nature of injury/damage and estimate of severity
- Immediate corrective actions taken
- Details of assistance provided
- Operations in progress at the time

### 6.3 Reporting and Recording of Incidents

- a. All incidents/accidents shall be reported internally using the Occurrence Flash Report as indicated in Annexure A. This form is designed to facilitate speedy internal reporting and notification of an incident/accident.
- b. All incidents/accidents shall be reported before the end of the shift or day or within 24 hours of the incident/accident occurring or as soon as anyone becomes aware of the fact that an incident/accident has occurred, in which case the same reporting timeframes will apply.
- c. Employees involved in incidents/accidents must notify their immediate supervisors or managers immediately.
- d. The person completing the Flash Report is required to provide all the relevant information as detailed in Annexure B. One flash report shall be completed per incident/accident.
- e. The completed Flash Report must be forwarded to the relevant Line/Project/Departmental Manager and the safety manager within 24 hours from the date of the incident/accident.
- f. The safety manager will assess the Flash Report and shall advise management in terms of the type of investigation that is required.
- g. For further information regarding the reporting of specific incident/accident types refer to Annexure A, the Reporting Responsibility Matrix.

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Occurrence Reporting and Investigation  
12 March 2008

- h. The SHEQ administrator shall be responsible for ensuring that the incident is recorded in the Transnet Occurrence Management System (TOMS)

All information for all stages of Incident Investigation, Analysis, and Corrective Actions etc. shall be entered into the TOMS database by the SHEQ administrator.

### 6.3.1 Incident/Injury Classification Levels

Consequences of incidents include injury and illness, the environment, plant and equipment, financial, outage/reputation, security, motor vehicle and quality.

The classification level of incidents or occurrences will be as per Annexure B. This is aligned to the Transnet Group classification level for incidents and occurrences.

### 6.3.2 Occurrence Notification Responsibility Matrix

Capital Projects Occurrence Notification Reporting requirements are shown in Table 1.

**Table 1 - Reporting requirements**

Incident / Occurrence Level	Reported by who	Reported to whom	How and what	When
Level 1, 2, 3 or 4	Employee or contractor	Supervisor and Safety Officer	<ul style="list-style-type: none"> <li>Telephonically</li> </ul>	<ul style="list-style-type: none"> <li>Immediately</li> </ul>
Level 1, 2, 3 or 4	Supervisor	First Line Manager (e.g., Departmental Manager, Project Manager, Project Services Manager, Planning manager, Construction Manager, etc)	<ul style="list-style-type: none"> <li>Telephonically</li> </ul>	<ul style="list-style-type: none"> <li>Immediately</li> </ul>
Level 1, 2, 3 or 4	First Line Manager	Health and Safety Manager Senior managers and directors Programme Managers or leads Insurance Manager Department of Labour Compensation Commissioner SAPS	<ul style="list-style-type: none"> <li>Telephonically to Safety Manager and flash report to all</li> </ul>	<ul style="list-style-type: none"> <li>Telephone immediately and flash report before end of shift or day</li> </ul>
Level 1 or 2	Health and Safety Manager	Transnet Capital Projects EXCO members	<ul style="list-style-type: none"> <li>SMS and flash report</li> </ul>	<ul style="list-style-type: none"> <li>SMS immediately and flash report within 24 hours</li> </ul>
Level 1	Transnet Capital Projects Group Executive or delegated person	Transnet Group SHEQ Manager	<ul style="list-style-type: none"> <li>Telephonically and flash report</li> </ul>	<ul style="list-style-type: none"> <li>Telephone immediately and flash report within 24 hours</li> </ul>
Level 1	Transnet Group Chief Risk Officer	Transnet Group Chief Executive	<ul style="list-style-type: none"> <li>As determined by Group Risk</li> </ul>	<ul style="list-style-type: none"> <li>As determined by Group Risk</li> </ul>



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Transnet Capital Projects Health and Safety Management  
Occurrence Reporting and Investigation  
12 March 2008

Prior to the recommencement of any operations the following should be considered:

- Obtaining any Health and Safety Authority Clearances to continue operations/production if required
- Advising other sites if affected by the incident
- Initiating any off-site isolation of similar plant until checked
- Discontinuing operations until all hazards are assessed and control measures put in place
- Correcting any non-conformances
- Temporary repairs to ensure compliance
- Taking equipment out of service
- Deferring any response until after the investigation is completed
- Assessing work alternatives with the Work Group
- Assessing if any Injury-causing Task needs to be completed
- Assess engineering repairs and modification possibilities
- Initiate any immediate Preventative Maintenance Programs
- Upgrade the existing Maintenance Program
- Conduct a total Hazard Assessment of the specific operation

### **6.3.3 Investigation Level**

Determine the level of investigation and appoint Investigator/s. For serious incidents the Investigation Team should always include at least one Transnet Capital Projects Safety Representative or Project Manager.

Complete the Analysis Requirements detailed in Incident Management - Analysis Requirements (Annexure B).

These requirements apply to all work activities managed or performed by Transnet Capital Projects. The minimum standard of all Incident Analysis, shall meet Transnet Group Requirements:

- Generally, for Level 1 and 2 incidents a Brief Report and Summary Analysis is required
- For Level 3 incidents a Detailed Analysis is required
- For Level 4 and 5 incidents a Detailed Analysis and Formal Report are required

## **6.4 The Investigation**

- Establish Scope and Aim of Investigation

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Occurrence Reporting and Investigation  
12 March 2008

- Respond swiftly
- Obtain background information
- Inspect location
- Take photos/make sketches
- Preserve physical evidence
- Gather witness statements;
- Conduct interviews; refer to Witness Interviewing Guidelines - see Annexure C
- Conduct specialist studies where required
- Resolve conflicting evidence
- Identify missing information;
- Establish event sequence. Refer to example - Incident Time Line in Annexure E
- Issue Interim Report

### 6.5 Analysis of Findings

- Construct an incident investigation tree
- Conduct a Root Cause Analysis

Identify and Group Root Causes into:

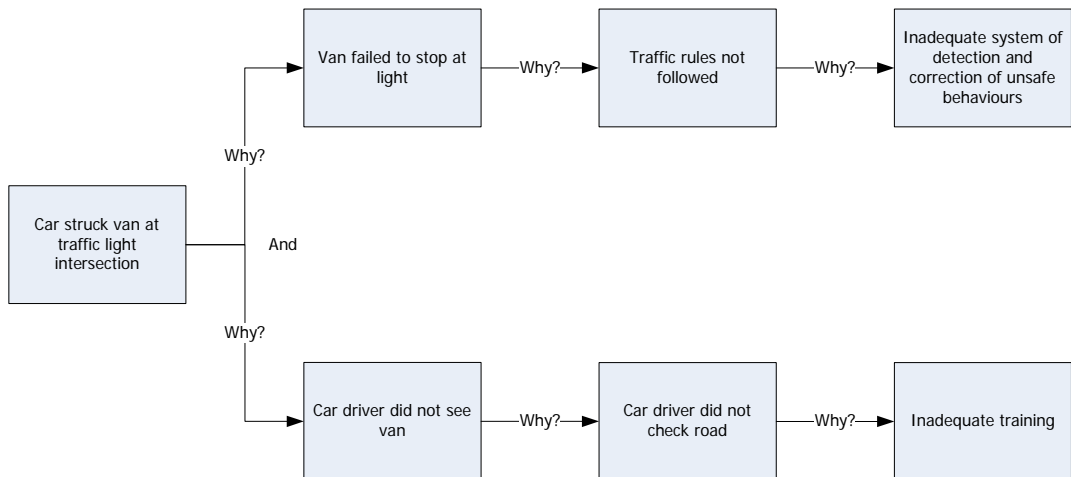
- Defences breached and/or failed
- Person/Team errors and/or violations
- Workplace error and/or violations producing conditions
- Organisation Management decisions/Organisational Processes

An example of an Incident Cause Analysis Worksheet and Guide to Identification of Root Cause Analysis for Incidents can be found in Annexure D.

A Basic Incident Tree is shown in Figure 2

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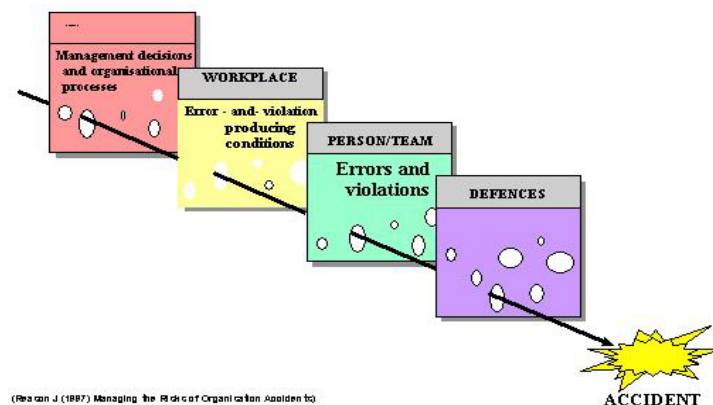
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12 March 2008



**Figure 2 Root Cause Analysis - Event Tree Example**

For a **Serious Incident Investigation Tree**, see example in Annexure E.

Refer to the Accident Causation Model Figure 3:



**Figure 3 Accident Causation Model**

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Occurrence Reporting and Investigation  
12 March 2008

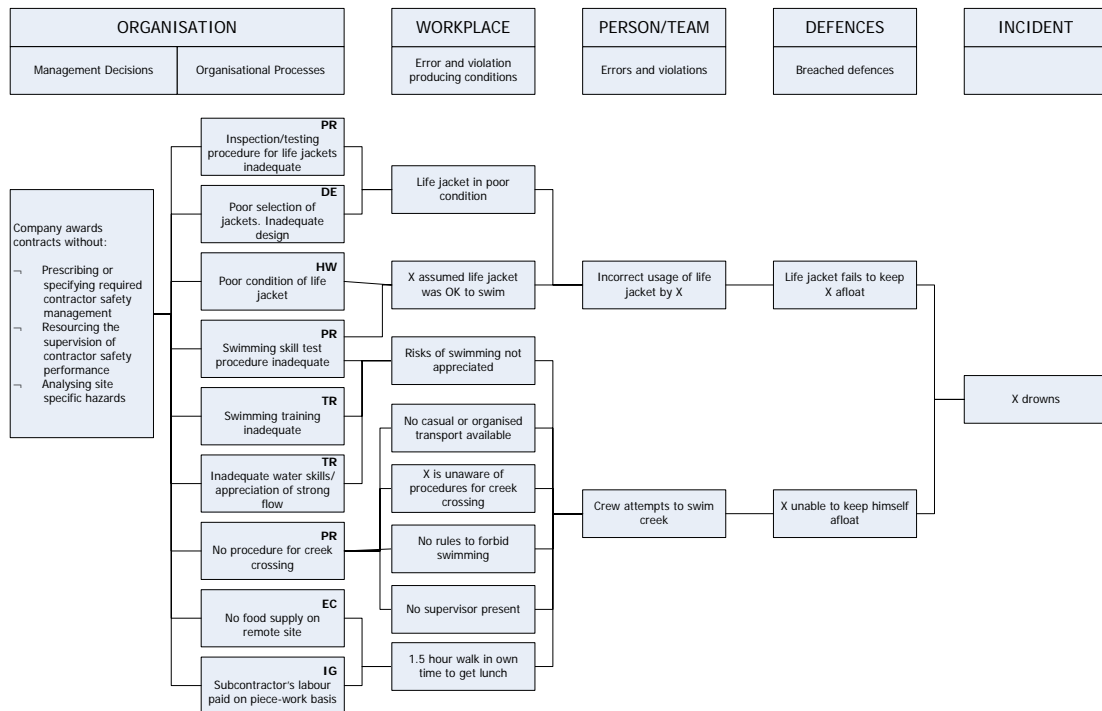


Figure 4 Cause Analysis Example - Drowning Incident

### 6.5.1 Corrective and Improvement Action Planning

- Identify the most powerful causes
- Generate possible solutions
- Evaluate and select the best
- Develop Action Plan
- Review with Management

### 6.5.2 Compile Final Report

Sample Incident Report Example may provide guidance (see Annexure E).

On completion of the investigation, a Significant Safety Occurrence (SSO) Report should be generated and distributed for information and learning purposes.

## 6.6 Implement Action Plan

- Implement corrective and improvement actions
- Communicate learning points
- Monitor implementation
- Review effectiveness

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Occurrence Reporting and Investigation  
12 March 2008

- Audit effectiveness of correct action implementation
- Ensure correct sign-off (see Table 2)
- Close out incident in TOMS

## 7. Associated Forms

To be advised

## 8. Records

All documents generated during the life of the contract will be retained in terms of the Document Management Procedure for records retention Archiving of Hard Copy Documentation – DOC-P-0013.

## 9. Annexures

Annexure A – Sample Occurrence Flash report

Annexure B – Classification Level of incidents

Annexure C – Witness Interviewing Guidelines

Annexure D – Incident Cause Analysis Worksheet and Guide to Identification of Root Causes

Annexure E – Incident Report Example

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Occurrence Reporting and Investigation  
12 March 2008

## Annexure A – Sample Occurrence Flash Report

OCCURRENCE DETAILS							
Date		Level	1	2	3	4	
Time		Department					
Location							
OCCURRENCE CLASSIFICATION (Mark appropriate box with an X)							
Fatality		Near Miss		Plant/Equipment		Security	
Injury		Environment		Motor Vehicle			
INJURY CLASSIFICATION (Mark appropriate box with an X)							
First Aid (FA)		Lost Time (LT)		Occupational Disease (OD)		Not Applicable (NA)	
Medical (M)		Fatality (F)		No injuries (NI)			
CLASS OF PERSONS INVOLVED IN THE OCCURRENCE (Mark appropriate box with an X)							
Employee (E)		HMG JV (JV)		Principal contractor (PC)		Not Applicable (NA)	
Public (P)		Sub contractor (SC)					
	Full Name	Class of Person		Injury Classification		Name of Company	
1							
2							
3							
DESCRIPTION OF OCCURRENCE:							
REPORTED BY		DATE		TEL. NO.			

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Occurrence Reporting and Investigation  
12 March 2008

## **Annexure B – Classification Levels of Occurrences/ Incidents**

### **Level 1**

1. An undesirable occurrence/incident that meets one or more of the following criteria:
  - 1.1. Technical:
    - 1.1.1. Plant /Asset damage exceeds R2 million in the case of Spoornet and R500 000 in respect of all other Divisions.
    - 1.1.2. Incident/Occurrence that have caused maximum business interruptions in the opinion of the Divisional Chief Executive Officer.
    - 1.1.3. An incident impacting on more than one Division.
    - 1.1.4. Impact on customers, stakeholders or outside parties where costs might exceed R2 million in the case of Spoornet and R500 000 in respect of all other Divisions.
  - 1.2. Operational:
    - 1.2.1. The death of an employee, a passenger or a member of the public
    - 1.2.2. Physical harm to a person(s) or a member of the public requiring hospitalisation.
    - 1.2.3. Any incident where any person's health or safety was endangered: (this effectively requires most if not all near miss incidents to be formally investigated with a presiding officer and a board of enquiry – may pose a practical challenge)
    - 1.2.4. Where a dangerous substance was spilled.
    - 1.2.5. Uncontrolled release of any substance under pressure took place.
    - 1.2.6. Machinery or any part thereof fractured or failed resulting in flying, falling or uncontrolled moving objects.
    - 1.2.7. Machinery ran out of control.
    - 1.2.8. Exposure of any person or group of persons to any workplace where the noise ratings are at or above 120 dB(A) as a single exposure (e.g. explosion) or a continuous exposure (SANS 10083 item 3.13, 8.1.4 and 8.2) without double hearing protection which is properly fitted.
    - 1.2.9. Exposure to any hazardous chemical substance:
      - 1.2.9.1. above the occupational exposure limit Control Limit (OEL - CL) listed in table 1 of the Regulations for Hazardous Chemical Substances with or without the required use of respiratory protection unless BA sets

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Occurrence Reporting and Investigation  
12 March 2008

were used as part of rescue situations. This is in terms of Regulation 10 (1)b.

- 1.2.9.2. Including exposure to uncontrolled regulated asbestos dust and/or PCB oil fumes without the required use of respiratory protection.
- 1.2.10. An official strike by organised labour;
- 1.2.11. Major fraud or theft that is likely to be punished by demotion or dismissal.
- 1.2.12. Incidents of interpersonal conflict that are likely to stop production for more than two days.
- 1.2.13. Transnet Limited becoming liable to prosecution or other legal action.
- 1.2.14. Major political or media focus on the image of Transnet Limited.

### Level 2

2. An undesirable occurrence/incident that meets one or more of the following criteria:

2.1. Technical:

- 2.1.1. Plant/asset damage more than R1 000 000 in the case of Spoornet and R200 000 in respect of all other Divisions.
- 2.1.2. Capacity loss considered significant by the Divisional Chief Executive Officer.
- 2.1.3. Events that have resulted in serious business interruption and other impact to customers.
- 2.1.4. An environmental incident as defined by NEMA section 30(1)(a) and the National Water Act (36 of 1998) Section 20 (1).

2.2. Operational:

- 2.2.1. Physical harm to a person or persons that does not result in hospitalisation.
- 2.2.2. Threat of strike.
- 2.2.3. Significant fraud or theft.
- 2.2.4. Non-routine security responses, including interventions by the SAPS.
- 2.2.5. Incidents or circumstances that have the potential to generate significant reaction from trade unions and/or customers.
- 2.2.6. Changes in security risk.
- 2.2.7. Significant political or media focus on the image of Transnet Limited.



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Occurrence Reporting and Investigation  
12 March 2008

### Level 3

3. An undesirable occurrence/accident that meets one or more of the following criteria:
  - 3.1. Plant/asset damage which exceeds R500 000 in the case of Spoornet and exceeds R100 000 in respect of all other Divisions.
  - 3.2. Business interruption considered significant by the Executive of the Business Unit concerned.

### Level 4

4. An minor incident that could be service disruption, daily incidents or safety occurrence with a lesser significance or an incident that did not necessarily result in damage or injury but that had the potential to cause major plant damage/or loss of production or result in injury or death and/or damage to environment. A Level 4 incident includes the following:
  - 4.1. An incident with the potential, or have caused, plant/asset damage greater than R50 000.
  - 4.2. An incident with the potential to cause medical or disabling injury.
  - 4.3. An incident with the potential to affect a person's health.
  - 4.4. An incident with the potential to cause severe damage to the environment.
  - 4.5. Business interruption of a minor nature.
  - 4.6. First aid injuries or minor spills or impact to the environment.

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Occurrence Reporting and Investigation  
12 March 2008

## Annexure C – Witness Interviewing Guidelines

### In a Typical Investigation

- About 50% of the information comes from witnesses
- About 50% of fact finding time is spent interviewing

### Necessity for Speed

- Memory
- Friendly → unwilling → hostile
- Rationalisation by witness distorts testimony
- Conversation with others distorts testimony
- Physical evidence changes

Interview each person as soon as possible after the event. This will minimise subconscious adjustment of the events to fit what they may perceive the Interviewers wish to hear. Take evidence in a chronological order as soon as possible. Consider if there should be two Interviewers and if the witness should be accompanied by a friend.

Let witness(s) and personnel involved in the investigation tell their story in their own words. *It is imperative to listen to what they have to say.*

All questions should be “open” structured to *facilitate discussion*, not a yes/no answer.

Interviewed persons should ideally not discuss their observations with others prior to the investigation being completed.

Conduct the interviews with tact, compassion (especially if an injury has occurred) and skill. It is quite likely, especially in serious cases, for the victim and those present, to have long-term psychological problems.

*Witnesses must be convinced that the purpose of the investigation is to identify the immediate and then real causes of the accident and not to attribute blame.*

Eliminate the apprehension of incriminating either themselves or others - bearing in mind the legal consequences of the various OH&S Acts.

Convince them of the need to disclose all of their observations in order to prevent recurrence of the accident.

Conduct the interview in a quiet place to minimise distractions from others, and follow normal interview good practice. A relaxed manner, non-confrontational

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Occurrence Reporting and Investigation  
12 March 2008

setting (why sit behind a desk?) and no telephone calls/interruptions, are essential to maximise the benefits of this investment in OH&S resources.

Document the responses and evidence obtained.

**Note:** *Contradictory evidence and statements and attempt to resolve differences. If this is not possible, note the evidence considered, the most reliable Interviews should be conducted individually with each witness.*

### **Be aware of the following:**

- Your key witness may or may not be able to tell you exactly what happened
- The same witness may give a different story when questioned in subsequent interviews
- Don't be surprised if different witnesses come up with different versions of the same event
- Given the above, your witness is not necessarily lying or trying to hide something

### **Interviewing Witnesses to Incidents - Prompt List**

#### **Do's of Witness Interviewing**

- Do aid the witness with indices, e.g. "How did the lighting compare to the lighting in this room?" "How did he compare in size to you?"
- Do assist the witness with props (photos, drawings, graphs, manuals etc.)
- Do treat the witness with respect and keep the interview from becoming an interrogation
- Do listen to the answers and ask follow-up and clarifying questions
- Do observe how things are said (voice inflections, gestures, facial expressions etc.)

#### **Don'ts of Witness Interviewing**

- Don't ask questions that suggest an answer e.g. "Was the odour like rotten eggs?", "Was the colour the same as your dress?", "Was the victim about your height?"
- Don't use inflammatory words e.g. "violate", "kill", "steal", "lie", "stupid" etc.
- Don't make promises that cannot be kept e.g. "You tell us something and we will keep it confidential"
- Don't threaten or blame the witness
- Don't leave questions out of the interview just because you think you know the answer

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Occurrence Reporting and Investigation  
12 March 2008

### Questioning Techniques

Question Type	Example
Overhead question, to open discussion	Where shall we start?
Direct question, to gain information	Were you trained to operate?
Relaxing question, to gain opinion	Would you like to comment?
Reverse question, to encourage thought	Tell me your experiences?
Factual question, to get the facts	When, how, who?
Broadening question, to broaden discussion	What other factors were involved?
Justifying question, to gauge a further perspective	Is that important though?
Hypothetical question, to change discussion	Did we ever consider?
Alternative question, to decide an alternative	What is the best solution?

### The factual questions:

- WHO?** Was involved i.e. injured employee, witnesses, people present at the time, people who worked in the area immediately prior to accident.
- WHAT?** Happened: what was the apparent cause, what did the people concerned do/not do?
- WHERE?** Did it happen? i.e. where were the parties concerned at the time of the accident?
- WHEN?** Did all the contributory events occur? This is not just a matter of the precise timing of the accident but also issues such as maintenance schedules, training sessions, reorganisation of the workplace, hazard surveys. The questions focus on the interrelation between events and actions.
- HOW?** Did it happen? A subjective view by the individual concerned but it also covers qualitative factors such as training effectiveness (how well?) etc.
- WHY?** Were procedures not followed? This should give some indication of corrective action as answers will focus on unsafe acts and conditions.

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Occurrence Reporting and Investigation  
12 March 2008

### **Closing the Interview**

Summarise the discussion to ensure that no misunderstanding exists.

A written record should be made of the interview and this should be discussed with the witness to clarify any anomalies. Any conflicting evidence should be clarified.

#### **Ask:**

- "What else should we know?"
- "Who else should we talk to?"
- "May we call you back later if we need to?"

### **Summary**

- Don't rush
- Shake hands
- Be friendly
- Ware up with 'non-business' items
- Request permission to record
- Explain your purpose
- Stress witnesses' importance to investigation
- Do not judge, anger, refute, or suggest
- Start with routine matters e.g. job title, experience level, training etc.

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 Occurrence Reporting and Investigation  
 12 March 2008

## Annexure D - Incident Cause Analysis Worksheet and Guide to Identification of Root Causes

### Incident Cause Analysis Worksheet

Organisation		Workplace	Person/Team	Defenses	Incident
Management Decisions	Organisational Processes	Error and Violation Producing Conditions	Errors and Violations	Breached Defences	

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Occurrence Reporting and Investigation  
12 March 2008

## Guide to Defining Root Causes of Incidents

Examples of Common Organisational Deficiencies		Examples of Error & Violation Producing Conditions
Level	Definition	Error Producing Conditions
Senior Management	<p><b>Incompatible Goals</b> - Conflicting requirements between safety objectives and individual, group or organisational goals.</p> <p><b>Communications</b> - Information necessary (or some part of it) does not reach correct recipients in a clear, unambiguous and intelligible form.</p> <p><b>Organisation</b> - Deficiencies in the structure or way of doing business which allow safety responsibilities and accountabilities to be ill defined and warning signs to be overlooked.</p>	<ul style="list-style-type: none"> <li>• Unfamiliarity</li> <li>• Time shortage</li> <li>• Noisy/unclear communication between groups</li> <li>• Poor man-machine interface</li> <li>• Designer-user mismatch</li> <li>• Irreversibility</li> <li>• Information overload</li> <li>• Need to "unlearn" old habits</li> <li>• Need to transfer knowledge</li> <li>• Misperception of risk</li> <li>• Poor feedback</li> <li>• Inexperience</li> <li>• Inadequate checking</li> <li>• Poor instructions</li> <li>• Educational mismatch</li> <li>• Sleep disturbance</li> <li>• Hostile environmental</li> <li>• Monotony and boredom</li> </ul>
Front Line Management	<p><b>Design</b> - Poor design, plant and equipment fundamentally inadequate.</p> <p><b>Hardware</b> - Deficiencies in quality and availability of tools, plant and equipment.</p> <p><b>Procedures</b> - Deficiencies in quality, accuracy, relevance, availability and workability of procedures.</p> <p><b>Training</b> - Deficiencies in knowledge and skills due to deficiencies in the training process.</p> <p><b>Maintenance Management</b> - Inadequate Management of maintenance (not execution of maintenance tasks).</p> <p><b>Housekeeping</b> - Poor housekeeping usually present in the workplace.</p>	<p>Violation Producing Conditions</p> <ul style="list-style-type: none"> <li>• Poor safety culture</li> <li>• Worker Management conflict</li> <li>• Poor morale</li> <li>• Poor supervision</li> <li>• Inappropriate work group norms</li> <li>• Misperception of risk</li> <li>• Perceived managerial indifference</li> <li>• Little pride in work</li> <li>• Belief that "it can't happen to me"</li> <li>• Low self-esteem</li> <li>• Learned helplessness (who gives a damn anyway)</li> <li>• Perceived licence to bend the rules</li> <li>• Unclear or meaningless rules</li> <li>• "Macho" culture</li> <li>• "Can do" culture</li> <li>• Excessive zeal</li> </ul>
Task Level	<p><b>Error - Producing Conditions</b> - Conditions that lead to errors and violations.</p> <p><b>Defences</b> - Inadequate or absent protection against consequence of failure once it has occurred.</p>	

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Occurrence Reporting and Investigation  
12 March 2008

## **Annexure E – Incident Investigation Report Example**

### **Facts Resulting from the Investigation**

#### **Basic Situation:**

A Contractor Rigger (A) working under 122' floor level on the No.1 System Upgrade at approximately 7:45am on 12<sup>th</sup> May 2000, moved a sling along a beam under a channel holding an electrical conduit. The sling contacted the conduit causing it to bounce and sparks were noticed. The Rigger was wearing gloves and rubber sole boots.

At about the same time, a Company Electrician (B) was called to fix the lights that were not working on the 90' level. The fuses were found to have blown, were replaced and blew again. Shortly afterwards a cut conduit was found, the cable was pulled back and made safe.

The subsequent investigation found that the conduit and 415v 3 phase cables had been cut immediately east of junction box 1 by another contractor employee (C), using an oxy torch. This employee was wearing gloves and rubber sole boots. The cut was made during night shift on the 11<sup>th</sup> - 12<sup>th</sup> May. The cut was made in order to remove junction box 1 and make way for a new column base. Diagram 1 illustrates the empty stub end of conduit and junction box 1. Diagram 2 illustrates the relative location of junction box 1 and the next junction box immediately to the east of junction box 1.

When interviewed, contractor employee (C) said that when he cut the conduit, he had assumed that the power had been disconnected. He had made this assumption based on his belief that when the conduit and cables to the west of the junction box were removed in late January 2000. He believed that the cables had been confirmed as dead by the Company Electricians and he and others in his work crew had been instructed to cut and remove the conduit.

The removal of the conduit west of junction box 1 had been done on a day prior to 2<sup>nd</sup> February, 2000. This conduit was removed in order to make way for preparation work for the installation of the new saturator. Diagram 3 illustrates.

It has been concluded from the investigation, after interviews with the Company Supervising Area Electrician, that when the cables were cut with the oxy torch, some if not all three of the phase fuses were blown. The sparks observed by contractor employee (A), the following morning, were probably due to either an induced voltage (typically 50 v) in the neutral conductor or one of the phase fuses may not have blown the night before. Contractor employee (C) was therefore at risk of electric shock and contractor employee (A) was at a lower risk of electric shock.



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12 March 2008

## Previous Incident on 2<sup>nd</sup> February, 2000

Following removal of the conduit in the "saturator hole", a conduit to a light from junction box 2 was found to be partially cut by an angle grinder which cut the insulation on a cable exposing the wire. The exposed conductors were made safe and the light removed.

After the light was removed, it seems that contractor employee working on the preparation work at this time gained a somewhat common, if ill-conceived, belief that the conduit and the cables to the west of junction box 2 were dead.

In interviews with contractor employees on the job on 12<sup>th</sup> and 13<sup>th</sup> May, it was found that about 60% believed that the cables in the conduit between junction box 1 and junction box 2 had been removed or were at least dead.

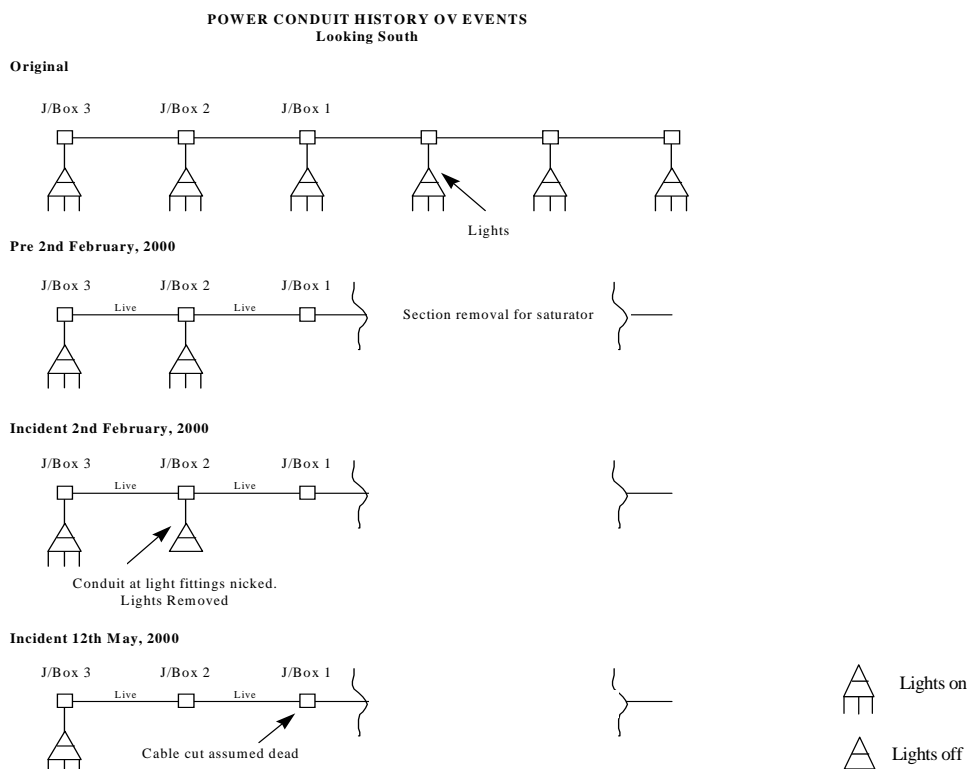
The Incident Report for the incident on 2<sup>nd</sup> February is attached for reference.

Diagram 4 shows a pictorial history of events for the electrical conduit.

Photograph 1 shows the empty stub end of conduit prior to oxy cutting.

Photograph 2 shows the continuation of the conduit on the West side of the saturator 'hole'.

## Diagram 4



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### Cause Analysis

An Incident Tree was prepared, see Diagram 6, causes analysed and categorised into:

1. **Defences** - in place/breached.
2. **Person/Team** - errors and/or violations.
3. **Workplace** - error and/or violation producing conditions.
4. **Organisation** - Organisational processes and/or management decisions that may have contributed to the incident.

#### 1. Defences

a) The hazard (the live electrical service) was left in the construction zone and not identified by any of the many scheduled or the informal hazard inspections/observations/audits that were held prior to the shutdown and during the shutdown.

b) Supervision on the job did not predict that this electrical service would need removing in order to complete the construction work at this location.

#### 2. Person/Team

a) The cardinal rule "do not cut any electrical services unless confirmed dead and supervised by the area electrician" was violated. Not deliberately, or maliciously, but under the ill-conceived belief that the electrical service was dead.

#### 3. Workplace

a) The electrical conduit had been cut and appeared to be redundant. The stub end of the conduit to the west of junction box 1 was roughly cut by oxy torch and there were no visible cables, possibly misleading to a non-electrical trades person.

b) The conduit was underneath the working floor level and out of sight.

c) There was a fairly common belief amongst the work crew that the conduit was redundant and dead.

#### 4. Organisation

a) The Electricians in January 2000 isolated the electrical service back to junction box 1. This was still within the future construction zone. They say they were instructed to only isolate the section of conduit immediately within the "saturator hole" and were not aware of the extent of the future works towards the east.

It was a mistake to leave a disused section of electrical service live and within the construction zone. There was also no obvious visual means of identifying the services as still being live. The next functional electrical device on that power circuit was a light at junction box 3.

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12 March 2008

b) The Contractor advised that the cardinal rule “do not cut electrical services .....” was repeated by Crew Supervisors at every Toolbox Meeting daily. The effectiveness of the communication needs to be re-examined.

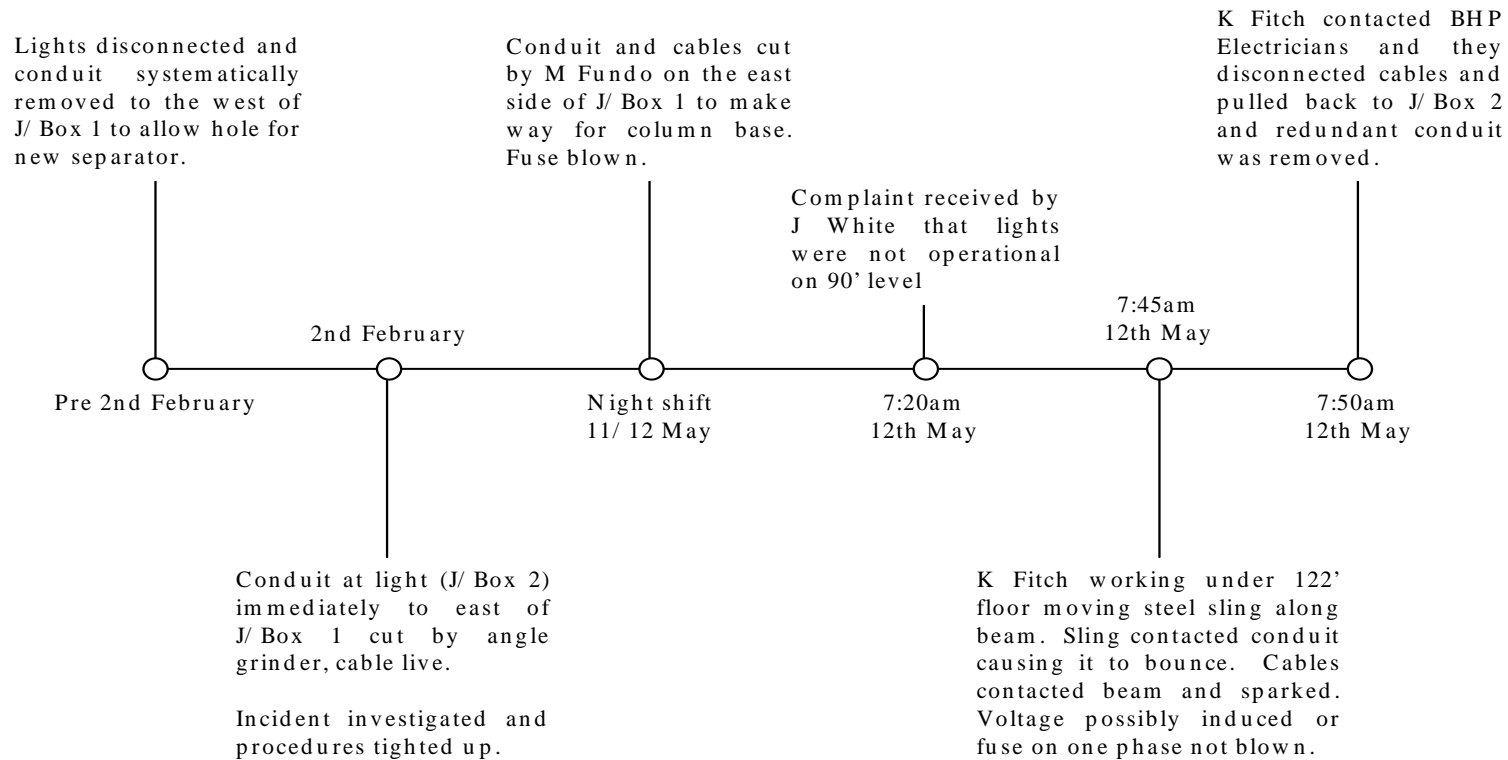
The Project Induction does not address cardinal safety rules or critical safety procedures. The Contractor advised that these would be discussed at Toolbox Meetings.

c) Interface with operational services was identified in a HAZAN (a Hazard Identification and Analysis Workshop) prior to commencement of the shutdown. A Specific Site Inspection was held to identify services that would require relocation. The service was not identified.

Prior to the start of the current shutdown work, a number of other initiatives were taken with the aim to further reduce the risk of an incident such as this. Unfortunately, this electrical service was overlooked by all.

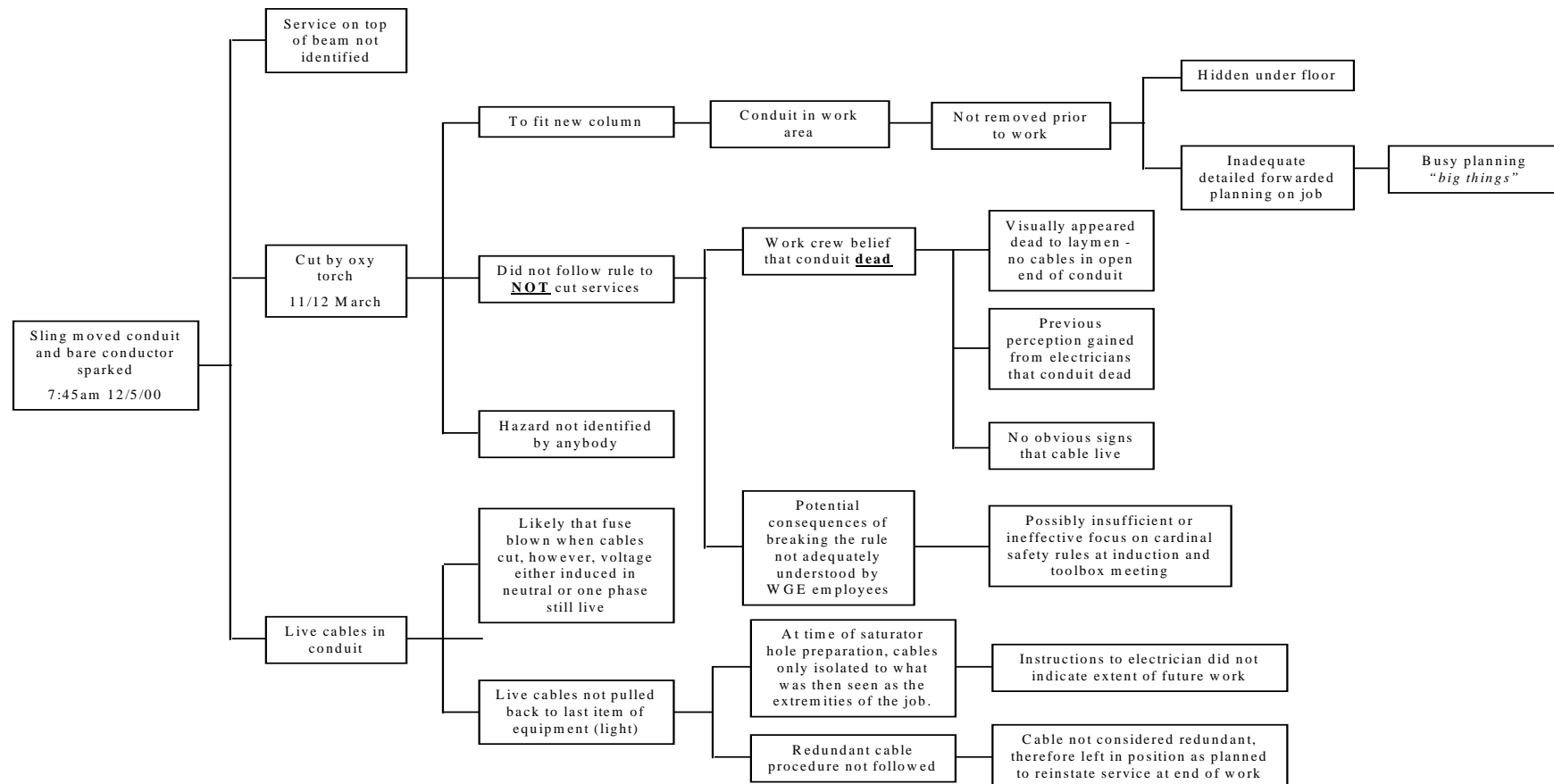
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## TIMELINE Incident 12th May 2000



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## INCIDENT TREE Incident 12th May, 2000



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## 5. CORRECTIVE ACTIONS

A number of possible solutions were developed and narrowed down to the following approach.

On all brown field jobs:

1) Clearly identify the extremities of the construction zone and include a safe buffer. Aim to have all services in construction zone isolated, where necessary it is preferable to use temporary power then leave permanent services in a construction zone.

Clearly identify all live services that remain in the construction zone.

Have a written Cardinal Rule such as 'only electrical qualified people are permitted to isolate, disconnect, cut, handle, remove electrical cables, junction boxes, conduits' It is unacceptable to rely on verbal communication alone.

### Action Plan

Corrective Actions	Responsibility	Date	Sign Off
1. Hatch to implement the above principles immediately.	Transnet Capital Projects		
2. Contractor to implement the above principles immediately.	Contractor		
3. Hatch to take to the Company site safety committee to put the issue on the agenda with the proposed solutions	Transnet Capital Projects		


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## Transnet Capital Projects Health and Safety Management Guidelines for Managing Common Hazardous Activities and Tasks

### HAS-GN-0001

Prepared by:  5 March 2008  
V. Narsai Date

Reviewed by:  5 March 2008  
N. Steyn Date

Approved by:  5 March 2008  
G. Bam Date

0	4 March 2008	ISSUED FOR USE
A	19 October 2007	ISSUED FOR REVIEW
<b>Rev No</b>	<b>Date</b>	<b>Revision Details</b>

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## Table Of Contents

<b>1. Purpose .....</b>	<b>4</b>
<b>2. Scope.....</b>	<b>4</b>
<b>3. References .....</b>	<b>4</b>
<b>4. Abbreviations and Definitions .....</b>	<b>4</b>
4.1 Abbreviations .....	4
4.2 Definitions.....	4
<b>5. Responsibilities.....</b>	<b>6</b>
<b>6. Requirements.....</b>	<b>6</b>
6.1 Safety Barriers and Barricades.....	6
6.1.1 Requirements.....	6
6.2 Confined Space .....	8
6.2.1 Requirements.....	8
6.3 Cranes and Lifting Equipment.....	10
6.3.1 Requirements.....	10
6.4 Excavation and Trenching .....	12
6.4.1 Requirements.....	12
6.5 Falling Objects.....	15
6.5.1 Requirements.....	15
6.6 Isolation from Hazardous Energy .....	16
6.6.1 Requirements.....	16
6.7 Mobile Equipment and Light Vehicles .....	18
6.7.1 Requirements.....	18
6.8 Working at Height .....	21
6.8.1 Requirements.....	21
6.9 Steel Erection .....	23
6.9.1 Requirements.....	23
6.10 Designing for Safety .....	25
6.10.1 Responsibilities for this Guidance Note.....	25
6.10.2 Requirements.....	25
6.11 Respiratory Protection.....	27
6.11.1 Requirements.....	27
6.12 Site Emergency Management .....	29
6.12.1 Requirements.....	29
6.13 Dangerous Goods and Hazardous Substances.....	31
6.13.1 Requirements.....	31



Note: If hardcopy, check electronic system for latest revision

6.14 Explosive Actuated Hand Tools .....	32
6.14.1 Requirements.....	32
6.15 Permit to Work .....	35
6.15.1 Requirements.....	35
6.16 Welding, Cutting and Hot Work .....	36
6.16.1 Requirements.....	36
6.17 Electrical Safety.....	38
6.17.1 Requirements.....	38
6.18 Blasting and Use of Explosives.....	40
6.18.1 Requirements.....	40
6.19 Scaffolding and Ladders.....	42
6.19.1 Requirements.....	42
<b>7. Records .....</b>	<b>45</b>

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## 1. Purpose

This guideline establishes project requirements to ensure that the most common hazardous activities encountered during project work are adequately managed so as to protect and prevent people from exposure to danger.

## 2. Scope

This guideline applies to all project activities where the use of the requirements listed in Section 6 are necessary to eliminate or reduce the risk to people of exposure to hazards.

## 3. References

- Occupational Health and Safety Act No.85 of 1993 and associated Regulations as amended
- Explosives Act No

## 4. Abbreviations and Definitions

### 4.1 Abbreviations

JSA	Job Safety Analysis
JHA	Job Hazard Assessment

### 4.2 Definitions

<b>Authorised person</b>	A suitably qualified person who holds a certificate of competency/authorisation issued by a statutory authority or the employer wherever applicable and includes a person deemed competent by local legislation.
<b>Barricade</b>	Used as a physical barrier to prevent personnel from coming in contact with a hazard. Barricades must be of a fixed nature that can restrain personnel when used in situations where crossing the barricade poses an immediate and serious hazard to personnel.
<b>Barriers</b>	Used as a warning to personnel of hazards that exist in work areas. Include rope and flags, rope and bunting,

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barrier tapes, para webbing/snow fencing and traffic cones.

**Confined space**

A vessel or enclosed space, other than the normal workplace, which is, or may become dangerous from:

- The presence of gases, liquids or solids which are flammable, toxic, asphyxiating, radioactive, hot or refrigerative; or
- Oxygen deficiency; or
- Restricted means of entry and exit

Examples include:

- Storage tanks, ore bins, process vessels, boilers, large ventilation ducts, and any other tank like compartments which usually have only a manhole or similar opening for entry purposes
- Open topped spaces of more than 1.5 metres depth, such as pits, ditches and degreasers; and
- Pipes, sewers, drains, tunnels, shafts, ducts and similar structures

**Fall Arrest**

Where a 'Fall Prevention' solution is not provided where working at height, 'Fall Arrest' apparatus must be used.

**Fall Prevention**

Is the protection applied to prevent a person or object falling from a height. This is commonly in the form of a physical barrier at or before the edge of a penetration.

**Fall Protection**

A person has applied fall protection when they are prevented from falling due to physical edge protection barriers or are secured with an approved Personal Fall Protection System.

**Work Positioning System**

Means an assembly of components capable of restricting a worker's movement on a work surface and preventing the worker from reaching a location from which he or she could fall.

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## 5. Responsibilities

The Project/Contract/Construction Manager is responsible for the implementation of this Health and Safety Guideline and that it is verified by regular Audits. Roles and Responsibilities

## 6. Requirements

The following requirements will be applicable to all the guidelines in this section:

- Legal Requirements
  - ♦ As a minimum all applicable regulatory requirements shall be met
  - ♦ Local legislative requirements will take precedence over these (Transnet Capital Projects) Guidelines, except in those cases where the Transnet's Standard calls for a more stringent approach
  - ♦ Legislative requirements, hard copy or electronic version, shall be available at the project site for review
  - ♦ A system shall be in place to ensure that changes to applicable regulatory requirements are monitored
- Training
  - ♦ There shall be a system for ensuring that employees are trained and equipped to carry out their work according to applicable work procedures that minimise exposure to hazards and that their understanding and capability of this has been evaluated. There shall be an Induction Process for new employees and Contractors. Understanding of their awareness shall be evaluated

### 6.1 Safety Barriers and Barricades

Barriers and barricades are used to protect people from exposure to the dangers of, for example:

- Being struck by falling objects or moving materials
- Falling into open excavations or holes
- Hazardous substances or processes; and
- Falling from elevated positions

#### 6.1.1 Requirements

- Planning

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- ♦ The use of barriers and barricades shall be properly planned, managed, supervised and carried out to prevent incidents, with a documented Safe System of Work that shall:
  - Be in a clear and auditable form
  - Be practical
  - Be working effectively
  - Have clearly defined roles, responsibilities and accountabilities; and
  - Include procedures for periodic review and revision
- Protection of Public
  - ♦ To reduce the risk of injury or harm to people who are likely to be in the vicinity of, but not on the construction site, barriers and barricades appropriate for the hazard must be used for their protection
- Protection in the vicinity of Cranes:
  - ♦ People and vehicles must be prevented from entering any area in or adjacent to the site where there is a risk of injury or damage from cranes lifting, lowering or moving material or gear
  - ♦ Acceptable prevention measures are barricades with warning signs and flashing lights or Traffic Controller
- Excavations
  - ♦ Excavations or holes in areas of high vehicular or pedestrian traffic shall have barricades or barrier fencing, based on the hazard present
- Signs and Tagging
  - ♦ All barriers shall have signage that clearly communicates the hazard. An Information Tag shall also be prominently displayed. The information on the Tag must include:
    - Purpose and date of erection; and
    - Name of person who is authorised to place or remove the barrier
- Supervision
  - ♦ A competent person shall supervise the installation, alteration or removal of barriers and barricades
- Change Management
  - ♦ A process shall be in place to control Change Management associated with barriers and barricades

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## 6.2 Confined Space

The hazards associated with persons working in confined spaces require that there be safe entry, exit and work in such spaces.

### 6.2.1 Requirements

- Planning
  - ◆ Confined Space Entries (CSE) shall be properly planned, managed, supervised and carried out to prevent incidents, with a documented Safe System of Work that shall:
    - Be in a clear and auditable form
    - Be practical
    - Be working effectively
    - Have clearly defined roles, responsibilities and accountabilities; and
    - Include procedures for periodic review and revision
- Permits
  - ◆ Prior to all confined space entries a Confined Space Entry Permit will be obtained. The pre-requisite for a Confined Space Entry Permit will be a written procedure detailing the work to be performed
- Cleaning and Purging
  - ◆ Where practicable, all solids and liquids, which may present a hazard to persons inside the confined space, shall be removed prior to entry
- Gas Detection
  - ◆ Prior to entry into a confined space the atmosphere will be tested and Transnet Capital Projects best practice requires that it is subject to continuous monitoring. A Log will be kept of all readings, hourly that readings are taken
- Ventilation
  - ◆ Natural ventilation in confined spaces is usually minimal therefore ventilation by mechanical means shall always be made available
  - ◆ Ventilation equipment will be positioned so that contaminated air such as exhaust gases and welding fumes are not drawn into the confined space
- Lighting
  - ◆ Explosion-proof lighting will be used where there is a potential for flammable products to be present

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- ♦ All 110 volt lighting will be protected by ground fault interrupters
- ♦ All personnel in confined spaces and the Safety Watch will carry portable lighting in case of power failure
- Safety Watch
  - ♦ All confined space entries shall have a Safety Watch posted immediately outside the confined space that will be able to communicate with workers inside and initiate a rescue. Shall not be involved in the rescue
- Isolation
  - ♦ All mechanical and electrical equipment within the space shall be positively isolated
  - ♦ Blinds shall be placed in piping at the first flange as soon as the piping is connected onto any confined space requiring entry
- Signage
  - ♦ Where practicable, signs shall be placed at confined spaces stating a Confined Space Entry Permit must be obtained before entry
- Rescue
  - ♦ A Rescue Plan shall be developed, reviewed with all entrants and be posted at the entrance to the confined space. An independent team shall be trained and on continuous standby
- Completion of the Job
  - ♦ Before a confined space is closed after entry, the authorised person shall check that no person is inside and all equipment and materials have been removed
- Record Keeping
  - ♦ The Permit shall be kept for the duration of the Project or one year; which ever is less
  - ♦ The Confined Space Risk Assessment shall be kept for the duration of the Project or one year; which ever is less
  - ♦ Training Records shall be kept for the duration of the Project
  - ♦ In the event of an incident involving a CSE the documentation will be archived for 25 years
- Supervision
  - ♦ A competent person shall supervise all CSE work

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- Change Management
  - ◆ A process shall be in place to control Change Management associated with CSE

### 6.3 Cranes and Lifting Equipment

The safe and efficient use of crane and lifting equipment requires that the following minimum requirements to be followed:

#### 6.3.1 Requirements

- Planning
  - ◆ The use of cranes and lifting equipment shall be properly planned, managed, supervised and carried out to prevent incidents, with a documented Safe System of Work that shall:
    - Be in a clear and auditable form
    - Be practical
    - Be working effectively
    - Have clearly defined roles, responsibilities and accountabilities; and
    - Include procedures for periodic review and revision
- Lift Studies
  - ◆ The use of a Specialist Heavy Lift Engineer to produce a Crane Lift Study to minimise risk to personnel and structures are required when:
    - All loads greater than 20 t or
    - Any load in excess of 70% of crane capacity or
    - Any crane lift involving two or more cranes
    - Loads below 20 t identified as having extra ordinary risks
- Selection of Operators
  - ◆ All Crane Operators shall have a certificate of competency for the equipment they are operating. In locations where certification is not available, the Project shall adopt a recognized international standard
  - ◆ Crane and industry experience shall be checked prior to commencing on site
  - ◆ An On-site Assessment of Operators' competency for specific cranes shall be held. Training in specific project procedures will be given
- Lifting Equipment



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- ♦ Includes but is not limited to; wire rope, chain, polyester, kevlar and nylon slings as well as come-alongs, chain falls, shackles, hooks, spreader bars and other load bearing hoisting attachments
- ♦ When slings are applied to sharp edge loads, the sharp edges must be protected with softeners to prevent damage to the slings
- ♦ Slings should be double wrapped when used in choke application
- ♦ All hooks shall have functioning safety latches. When beam or plate clamps are used they must be locking or designed so that slackening of the hoist cable does not release the clamp
- ♦ Loads shall not be left unsecured or unattended supported from a come-along or chain fall/block
- Pull Testing
  - ♦ All lifting equipment shall be pull tested or inspected using an accepted non-destructive method prior to initial use on a project
- Inspection
  - ♦ A Daily Log Book must be maintained by the Operator and kept with the crane at all times
  - ♦ Prior to starting work, each crane or hoist must receive a complete inspection and certification on the Project. Additional inspection and re-certification is required at least once a year and after every major assembly thereafter
  - ♦ Cranes involved in incidents that result in shock loading of the boom or other components shall be removed from service and subjected to a complete inspection and certification prior to resuming work
  - ♦ Mobile cranes requiring frequent access/egress from the Project will not be required to be certified at every re-entry. Inspection and certification will be initially performed on the Project and every six months thereafter regardless of the number of re-entries to the Project This provision does not apply to conventional crawler or truck mounted lattice boom cranes, requiring significant assembly or cranes performing lifts requiring engineered lift studies
  - ♦ A competent person shall supervise the assembly, alteration and use of all project cranes
  - ♦ Lifting equipment shall be given a visual inspection and certification prior to every use on the Project
- Dogging/Rigging

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- ♦ Slinging and directing of loads shall only be done by or under the direct supervision of doggers or riggers with Certificates of Competency. In locations where certification is not available, the Project shall adopt a recognized international standard
- Tag Lines/Guide Ropes
  - ♦ When manual control of a load is required, tag lines shall be used to prevent doggers or riggers from being struck
- Overhead Lifting
  - ♦ There shall be no lifting over personnel performing on-going activities
- Work near Electrical Lines
  - ♦ All operations shall be performed in full compliance with applicable legislation. Warning signs and/or markers shall be placed in locations where cranes are required to pass under live lines
- Obstructed Vision
  - ♦ Whenever the Operator has his vision obstructed, a competent Signal Person will be used. The Signal Person will be identified with unique clothing
- Travelling with a Load
  - ♦ The Travelling Procedures will be in accordance with the Manufacturer's recommendations. A Hazard Assessment shall be conducted appropriate to the risk
- Safety Devices
  - ♦ Anti two block cut out systems shall be fitted to all cranes
  - ♦ Load cut out device shall be fitted to all cranes
  - ♦ All cranes must operate in a power down mode
- Change Management
  - ♦ A process shall be in place to control Change Management associated with cranes and lifting equipment

## 6.4 Excavation and Trenching

### 6.4.1 Requirements

- Planning
  - ♦ Excavations and trenching shall be properly planned, managed, supervised and carried out to prevent incidents, with a documented Safe System of Work that shall:

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- Be in a clear and auditable form
  - Be practical
  - Be working effectively
  - Have clearly defined roles, responsibilities and accountabilities
  - Include procedures for periodic review and revision
  - Include Excavation Permit and Underground Facilities Plan records
- Existing Underground Facilities
  - ◆ Underground installations, such as sewer, water, fuel, electrical lines or telecommunication lines shall be identified and clearly shown on drawing or sketch prior to any work commencing
  - ◆ The underground installations shall be located by hand digging to locate the exact position before any mechanical digging commences. Sonic or other detection techniques can be used to assist only. Hydrovac is suitable for location as approved by the Client
  - ◆ The Permit Issuer shall be present during the uncovering of the service
  - ◆ No mechanical excavation shall take place within one metre of any parallel services without approval
- Excavation Collapse
  - ◆ Prevent the sides and ends from collapsing by battering them to a safe angle or supporting them with timber, sheeting or proprietary support systems. Any excavation where there is a risk of collapse or is at least 1.5 m deep shall be shored, unless the sides have been assessed by a suitably experienced and qualified person to be self-supporting
  - ◆ Suitable trench boxes and hydraulic walling shall be in place without requiring people to enter the excavation
- Loading Near Sides
  - ◆ Ensure that items of plant, excavated material or any other load is not placed near the excavated area in a position where there is a risk that the sides will collapse or materials may fall into the excavation
- People and Vehicles Falling into Excavations
  - ◆ Take steps to prevent people falling into excavations by providing substantial barriers to a minimum height of 900 mm, for example, rails and toe boards, between the person and the likely cause of danger. Timber or earth bumper stops shall be provided where there is a risk of vehicles or plant

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driving or backing into excavations. Transit of heavy equipment near the trench should be evaluated by a qualified Civil Engineer as it can be cause of vibration and soil collapse into the trench

- People Being Struck by Plant
  - ◆ Keeping people separate from moving plant, such as excavators
- Undermining Nearby Structures or Scaffolds
  - ◆ Decide if the structure needs temporary support before digging starts. Building foundations shall be inspected by a Structural Engineer
- Underground Services
  - ◆ A Systematic and Penetration Permit Procedure shall be used
- Access
  - ◆ Provide ladder access or other safe ways of getting in and out of the excavation at least every 20 m
- Spoil Pile
  - ◆ Loose material and soil to be 2 m away from excavation edge
- Fumes
  - ◆ Do not allow site petrol or diesel engines in, or near the edge of an excavation unless fumes can be ducted away or the area can be ventilated
- Protecting the Public
  - ◆ Fence off excavations in public places. Provide lighting or barricading at night
- Supervision
  - ◆ A competent person shall supervise the installation, alteration or removal of excavation supports
- Inspections
  - ◆ All excavations shall be inspected by a person experienced and competent in the stability of excavations. Inspections shall be daily; after any event likely to have affected the strength or stability of the excavation; and after any accidental fall of rock, earth or other material. Regular surveillance shall be done. An Inspection Checklist is included in the Code of Practice for Excavation
- Do Not Work in Isolation

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- ♦ Ensure that if a person works in an excavation that is at least 1.5 m deep, then at least one other person is present in the immediate vicinity
- Training
  - ♦ As part of training activities, all personnel working in trench and excavations shall know the Emergency Procedure as flooding, soil collapse and hazardous atmosphere may occur
- Surface Crossing
  - ♦ All personnel, vehicle and mobile equipment crossing the trench should be discouraged. Only if necessary, in exceptional circumstances will it be permitted by means of walkways or bridges designed under Engineering and Safety Standards
- Hazardous Atmospheres
  - ♦ When necessary an Air Monitor Procedure should be followed if a hazardous atmosphere occurs or could be expected to occur. When applicable a Confined Space Entry Procedure should be applied. No excavation activities with a internal combustion equipment shall be performed as may produce oxygen reduction or hazardous gases may concentrate in the space
- Water Accumulation
  - ♦ Prevent water accumulation using diversion, pumping, evacuation or protection means. No activities will be performed in the trench when water accumulation occurs due to weather conditions or "boiling effect" from underground water deposits
- Change Management
  - ♦ A process shall be in place to control Change Management associated with excavation and trenching

## 6.5 Falling Objects

### 6.5.1 Requirements

- Planning
  - ♦ Prevention of falling objects shall be properly planned, managed, supervised and carried out to prevent incidents, with a documented Safe System of Work that shall:
    - Be in a clear and auditable form
    - Be practical
    - Be working effectively

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- Have clearly defined roles, responsibilities and accountabilities; and
- Include procedures for periodic review and revision
- Hazards related to falling objects must be identified during the planning of the work activities
- Risk assessment
  - ◆ Must be completed in order to determine the potential to do harm and to allow development of appropriate control measures. One factor to be considered at all times is there shall be no work overhead of employees. Effective Risk Control Measures must be determined, implemented and monitored in the following order of priority:
    - Preventing an Object from Falling
      - For example, by using containment sheeting, toe boards, lanyards to secure tools and equipment, lift boxes, brick cages and loads secured to cranes and hoisting equipment
    - Protecting a Person after an Object has Fallen
      - For example, have exclusion zones, overhead gantries, catch platforms, signs, warning devices and traffic controllers
    - Personal Protective Equipment
      - Protective equipment is a last line of defence and must be worn
- Change Management
  - ◆ A process shall be in place to control Change Management associated with falling objects

## 6.6 Isolation from Hazardous Energy

This Guidance Note establishes the project requirements for isolation of plant and equipment from hazardous materials, mechanical, electrical or other energy sources, to protect employees from personal injury. It applies to all project activities with energy sources such as, but not limited to:

electrical, mechanical, hydraulic, pneumatic, chemical, radiation, thermal, compressed air and gas, energy started by pressure, tension or in springs and ropes, and the potential energy from suspended parts (gravity) and equipment due to its position.

### 6.6.1 Requirements

- Planning

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- ♦ The isolation of hazardous energy sources shall be properly planned, managed, supervised and carried out to prevent incidents, with a documented Safe System of Work that shall:
  - Be in a clear and auditable form
  - Be practical
  - Be working effectively
  - Have clearly defined roles, responsibilities and accountabilities; and
  - Include procedures for periodic review and revision
- Isolation Program
  - ♦ Shall be established for all projects whenever the release of energy during replacement, repair, renovation, or modification of machines or equipment, or during installation of new machines or equipment may cause injury to personnel, create property damage, or release a harmful substance to the environment
- Lock and Tag Requirements
  - ♦ The Project shall specify the physical appearance of the Locks and Tags to be used on the Project
  - ♦ A Tag alone is not sufficient for isolation, a physical Lock is required
  - ♦ All isolations must be tested to ensure all energy sources have been properly de-energized
  - ♦ Locks shall be uniquely numbered and have a single key
  - ♦ Each person working on the system requires their own Lock
  - ♦ Tags shall contain a space to identify the person placing the Tag
  - ♦ Locks and Tags shall be sufficiently strong to resist inadvertent removal or casual vandalism, and shall not be significantly affected by the ambient environmental conditions
- Delinquent Lock
  - ♦ A procedure shall be developed in the event a person has not removed their Lock and/or Tag and cannot be contacted
  - ♦ A person familiar with the status of the equipment shall together carry out the following:

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- Carry out an inspection of the area, including interlocking equipment to satisfy themselves that there is no person in a position of potential danger, and no equipment is in an unsafe condition
  - The Lock and/or Tag shall only be removed on the authority of the Senior Project Manager. An Incident Report shall be completed after the removal
- Logbook
  - ♦ The issuance and application of Locks and Tags must be documented
- Testing
  - ♦ Testing may arise which requires plant/equipment to be accessed while not subject to isolation. These situations shall be strictly controlled by an approved Risk Assessment and written procedure
- Blinds
  - ♦ Are required for pressure testing, vessel entry purposes, and to provide isolation from live systems
  - ♦ The use of valves for isolating confined spaces where leakage from the valve may pose a hazard to workers is prohibited
  - ♦ Valves will not be used to isolate sections of pipe for pressure testing
  - ♦ A system shall be established to identify blinds installed for safety purposes and a process developed for their removal
- Gas/Pressure Testing
  - ♦ All isolated lines shall be gas and pressure tested prior to opening
- Supervision
  - ♦ A competent person shall supervise all work involving isolations
- Change Management
  - ♦ A process shall be in place to control Change Management associated with isolation

## 6.7 Mobile Equipment and Light Vehicles

### 6.7.1 Requirements

- Planning
  - ♦ The use of mobile equipment and light vehicles shall be properly planned, managed, supervised and carried out to prevent incidents, with a documented Safe System of Work that shall:



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- Be in a clear and auditable form
- Be practical
- Be working effectively
- Have clearly defined roles, responsibilities and accountabilities; and
- Include procedures for periodic review and revision
- Safety Equipment
  - ◆ All mobile equipment and vehicles shall have back-up alarms suitable to be heard in the work environment
  - ◆ All mobile equipment and vehicles shall be equipped with a ABC fire extinguisher and a First Aid kit
  - ◆ All mobile equipment shall be equipped with roll-over protective structures as designed and required in accordance with Statutory Regulations
- Safe Operation
  - ◆ All personnel using mobile equipment and vehicles shall be in possession of a valid Drivers License or Certificate
  - ◆ All mobile equipment or light vehicle shall be kept with lights on when operating or driving
  - ◆ All mobile equipment must be fitted with a rotating light
  - ◆ Personnel will not start any mobile equipment and vehicle unless they are thoroughly familiar with its operation and they have been authorized to do so
  - ◆ Personnel shall not ride on or in equipment, unless in a seat designed for the purpose and equipped with a safety belt. Seat belts must be used at all times
  - ◆ Vehicles must be turned off when refuelling; smoking or hot work is prohibited in the vicinity of refuelling
  - ◆ Loads shall not be left suspended while the equipment is unattended
  - ◆ Equipment with poor visibility or oversized loads shall be moved or "spotted" with the assistance of a Signal Person. The Signal Person will be identified with unique clothing
  - ◆ A walk-around shall be done prior to moving any mobile equipment or light vehicle

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- ♦ All vehicles left unattended will have the parking brake applied and the motor turned off. When necessary reinforce safe parking on grade (edge) terrain using chock blocks on the wheels
- ♦ All personnel surrounding mobile equipment shall be aware of its action radius. If a vehicle, equipment or person approaches or needs to enter equipment working area shall make visual –two way – contact with the Operator prior to entering the area
- ♦ Heavy mobile equipment shall be accompanied by a Signal Person when moving
- ♦ When Maintenance Procedures are to be carried out, equipment will be suitably locked out and tagged or rendered immobile during the maintenance work. All pinch points will be blocked or locked open
- ♦ Although it is discouraged, when transporting material that by length or width exceeds mobile equipment or light vehicle size it shall be mandatory to place light reflective signals or flags to notify its presence. Evaluate the need to have an escort vehicle
- Inspection
  - ♦ All equipment and vehicles shall be mechanically inspected prior to mobilizing on the Project
  - ♦ All equipment and vehicles shall be maintained and operated in accordance with Manufacturer's specifications
  - ♦ Equipment and vehicles shall be inspected at the start of each shift, and shall not be operated if conditions pose a hazard to safe operation
- Supervision
  - ♦ A competent person shall supervise the use, repair and maintenance of all mobile equipment and light vehicles
- Training
  - ♦ All Operators of personnel hoists and platforms shall be trained in the operation. All Drivers and Operators shall know Emergency Procedures and be aware of use of mobile phone, fatigue, alcohol and medication adverse effects when driving
- Change Management
  - ♦ A process shall be in place to control Change Management associated with mobile equipment and light vehicles

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## 6.8 Working at Height

This Guidance Note applies whenever work is performed 2.0 metres or more above a permanent floor level, and/or, the situation exists where tools, equipment or anything else can fall or be dropped and cause injury to personnel or damage to equipment.

### 6.8.1 Requirements

- Planning
  - ◆ All work at heights shall be properly planned, managed, supervised and carried out to prevent incidents, with a documented Safe System of Work that shall:
    - Be in a clear and auditable form
    - Be practical
    - Be working effectively
    - Have clearly defined roles, responsibilities and accountabilities; and
    - Include procedures for periodic review and revision
- Anchor Point
  - ◆ Where possible, a safety restraint device should be attached to an anchorage point above the point of anchorage on the harness, or in parallel to the back attachment on the harness
  - ◆ Anchorage points shall withstand a force of 22kN or 5000 lbs
- Testing
  - ◆ There must be a system for ensuring that Fall Protection equipment is:
    - Inspected by the user before use
    - Personal fall prevention and arrest equipment shall not be used if it is damaged or has been exposed to shock-loading
    - Personal fall prevention and arrest equipment that is damaged or has been exposed to shock-loading shall be tagged "Out of Service" and removed from the workplace
    - Personal fall protection and arrest equipment shall be visually inspected and retagged by a competent person every three months and an Inspection Register maintained
- Rescue
  - ◆ A Rescue Plan shall be developed prior to commencing any work at heights

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- Securing Equipment and Tools
  - ◆ Tools, equipment and personal items shall be secured against falling from heights
  - ◆ Wrist restraints, tool lanyards and safety helmet chin straps shall be considered
- Platforms
  - ◆ Work at heights shall be carried out from permanent platforms when they are suitable for the work
  - ◆ When a suitable permanent platform does not exist, a temporary platform shall be provided to prevent the risk of falling, or an alternative method shall be used
  - ◆ The working platform shall be of a size and strength to carry the required loading of personnel, tools and materials
  - ◆ The Responsible Engineer shall provide engineering input to design or arrange for the design of temporary work platforms that are not scaffolding, and approve those designs when appropriate
- Ladders
  - ◆ Where ladders are approved for work at heights, a safety harness shall be worn and used in accordance with standard personal protective equipment
  - ◆ If a ladder and secured safety harness is not suited to the task, the work shall not proceed. A further review shall take place to determine if a safe method for the work can be established
  - ◆ Employees shall visually inspect ladders and harnesses before use
- Fall Protection
  - ◆ Workers shall be 100% tied-off when working above 2 m in unprotected areas
  - ◆ Only use approved full body harness with double lanyard
- Working on roofs
  - ◆ Any work on a roof requires a Permit to Work
  - ◆ A JHA will be developed for all work on roofs
  - ◆ Edge protection shall be provided to the perimeter of all roofs. Where edge protection is not installed a work positioning system shall be provided
- Supervision

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- ♦ A competent person shall supervise all work at heights
- Training
  - ♦ All personnel required to work at heights shall be trained on the hazards and control measures available
- Change Management
  - ♦ A process shall be in place to control Change Management associated with work at heights

## 6.9 Steel Erection

### 6.9.1 Requirements

- Planning
  - ♦ Steel erection shall be properly planned, managed, supervised and carried out to prevent incidents, with a documented Safe System of Work that shall:
    - Be in a clear and auditable form
    - Be practical
    - Be working effectively
    - Have clearly defined roles, responsibilities and accountabilities; and
    - Include procedures for periodic review and revision
- Safety Review Meeting
  - ♦ Prior to the start of the erection of structural steel or skeletal structure, a Safety Review Meeting shall be held to plan safe execution of the work, and recorded
  - ♦ The Construction Manager, as well as the Superintendent and Engineer involved in the work shall be in attendance
  - ♦ Job Safety Analysis shall be used to sequence the execution and identify the hazards. The following issues shall be addressed at the Meeting:
    - Delivery - off-loading
    - Placement and storage in lay down areas - stability of material
    - Cranes and rigging - lift calculation forms
    - Fall protection, types - required approvals, 100% tie-off requirement
    - Falling objects - flagging, barricades, securing of tools/equipment
    - Temporary access - ladders, stairwells, scaffolds

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- Temporary decking and hand rail requirements
- Erection sequence - structural members, stairwells, decking
- Bolting and fitting, installation of braces
- Temporary guying
- Rescue Plan
- ♦ Shall be developed prior to beginning steel erection
- Fall Arrest
  - ♦ Fall arrest shall be provided where there exists a fall hazard over 2m
  - ♦ Workers shall maintain 100% tie-off. This may necessitate the use of double lanyards
  - ♦ Fall arrest equipment such as lifelines and anchors, that are not part of an approved manufactured system, shall be certified by a professional Engineer
  - ♦ Engineer specifications for fall arrest anchors and systems shall be incorporated, as far as reasonable and practical into the design of skeletal structures
  - ♦ Climbing columns and braces or walking beams is prohibited unless protected by fall protection specific to the hazard
- Multi Piece Lifting
  - ♦ Is prohibited, structural steel members shall be rigged and placed singularly
- Containers
  - ♦ Proper canvas tool bags with rope handles shall be provided for storing bolts and drift pins. Containers shall be secured against dislodgement when used at elevations
- Access
  - ♦ Ladders, scaffolds and stairwells shall provide safe access and egress from work areas
- Tools
  - ♦ Impact wrenches shall be provided with retaining devices for sockets
- Material Delivery
  - ♦ Material shall be ordered and received to support the installation of permanent floors and stairwells as the erection of structural members progress

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- Secure Work Area
  - ◆ The use of barricades, barriers and signage to prevent unauthorized access to erection areas is required. Steel erection must not take place over other trades
- Supervision
  - ◆ A competent person shall supervise all steel erection
- Change Management
  - ◆ A process shall be in place to control Change Management associated with steel erection

## 6.10 Designing for Safety

This Guidance Note establishes the requirements to identify and effectively manage safety and health risks during the Engineering Design Process to result in the elimination of any potential injuries to people and damage to plant. This Guidance Note applies to all projects where Transnet Capital Projects has engineering design input or control.

### 6.10.1 Responsibilities for this Guidance Note

The Project Manager or Engineering Manager is responsible for the implementation of this H&S Guidance Note and that it is verified by regular Audits.

Programme Safety Functional Lead is responsible for auditing and conformance to GN.

Programme Engineering Manager is responsible for implementing and enforcing across all projects.

Project Engineering Manager is responsible for implementing and enforcing across all disciplines per project.

### 6.10.2 Requirements

- Design Safety Objectives
  - ◆ List the safety objectives that are important to the Project as agreed by Transnet Capital Projects and the Client. For example:
    - Meet all the requirements of the Client Requirement Specification
    - Provide an 'item' design that is easy and safe to install and maintain
    - Provide an 'item' that allows safe access for operations and maintenance personnel
- Design Safety

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- ♦ Criteria using the list of Safety Objectives developed above, list the design criteria that will be used to ensure that the safety objectives are met
- Design Safety
  - ♦ The Design Safety Methodology is a description of how the Project will be managed from the point of view of Design for Safety tasks and review points
- The Methodology Statement
  - ♦ Can be in the form of written text but it is often easier to summarise as a flowchart
  - ♦ The Design Safety Methodology should include the following elements:
    - Preliminary Hazard Identification
    - Risk Assessment
    - Hazard Analysis Studies that may be required (HAZAN)
    - Hazard and Operability Studies that may be required (HAZOP)
    - Safety Review Meetings
    - Safety Data
    - Safety Audits
- Design Safety Organisation
  - ♦ Show diagrammatically the Designing for Safety Organisation Structure to be adopted for the Project
  - ♦ Specifically identify the following:
    - Key Design Personnel and Qualifications
    - Responsibilities and Authority:
      - Sign off resolution for hazards
      - Formal sign-off of design safety criteria
      - Reporting responsibilities
- Hazard Studies
  - ♦ Identify list and schedule the hazard studies (Hazop 1 – Hazop 6) that will be undertaken during the detail design phase of a project e.g. HAZANS or HAZOP's
- Project Schedule and Design Safety Milestones



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- ♦ Project Schedule should be included to identify when each Safety Task shall be completed
- ♦ Designing for Safety Milestones are to be identified and included in the overall Project Schedule. Typical milestones may include:
  - Design Reviews
  - Safety Audits
  - Key Design and/or Calculation Verifications
  - Resolution of Identified Hazards
- ♦ Periodic Reviews of the overall Design for Safety Program should be scheduled and included in the Project Schedule where applicable
- Design for Safety and the Environment Checklist and Risk Assessment
  - ♦ Checklists and Risk Assessment should be completed at the preliminary stage identifying all hazards, completing a Risk Assessment and verifying that identified controls are adequate to complete the design
- Design Safety Verification
  - ♦ Specify the Designing for Safety Verification Tasks that will be undertaken in order to ensure the Design Safety objectives and criteria will be met
  - ♦ Designing for Safety Design Verifications should be scheduled, to address the following design interfaces; including Transnet Capital Projects and Contractor designs:
    - Intra discipline
    - Across discipline
    - Across defined plant/equipment
    - Between combined plant/equipment/facility
- Supervision
  - ♦ A competent person shall supervise the implementation of this standard
- Change Management
  - ♦ A process shall be in place to control Change Management associated with Designing for Safety

## 6.11 Respiratory Protection

### 6.11.1 Requirements

#### Planning

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- ♦ The use of respiratory protective equipment shall be properly planned, managed, supervised and carried out to prevent incidents, with a documented Safe System of Work that shall:
  - Be in a clear and auditable form
  - Be practical
  - Be working effectively
  - Have clearly defined roles, responsibilities and accountabilities; and
  - Include procedures for periodic review and revision
- Respiratory Selection and Use
  - ♦ Specific procedures and requirements for the use of respiratory equipment shall be developed as part of Health and Safety Work Plans. Topics to cover include:
    - Assessment of the employee's medical capacity to wear respiratory protection
    - Respiratory selection
    - Fit testing
    - Employee Training and Instruction
    - Respirator Inspection, Cleaning, Maintenance, and Storage
- Seal
  - ♦ There can be no obstruction of contact between the wearer's skin and the mask whatsoever. Affected employees shall be required to be clean shaven each day when assigned to use respiratory protection
- Equipment
  - ♦ Only equipment that has been certified to a recognized international standard shall be provided
- Medical Surveillance
  - ♦ A medical questionnaire for respirator users shall be completed by all potential candidates, prior to respiratory use and reviewed by a licensed Occupational Physician. A more comprehensive medical evaluation may be required based on the results of the questionnaire, or the details of the work assignment. No employee shall be fit tested, or assigned to a task that requires the use of a respirator unless it has been determined that they are physically able to perform the work while using the required respirator

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- Compressed Air Systems
  - ◆ Compressed air used for respiration shall be of high purity, and shall meet the requirements of a recognized international standard. The Supplier shall certify compliance with these requirements for each lot of breathing air supplied
- Compressed Air Cylinder Systems (Cascade)
  - ◆ Breathing air cylinders shall be legibly identified with the word "Breathing Air" by means of stencilling, stamping, or labelling as near to the valve end as practical
  - ◆ Cascade Systems shall be equipped with low pressure warning bells or similar warning devices to indicate air pressure in the manifold below 500 psi
  - ◆ When a Cascade System is used to supply breathing air, one employee shall be assigned as safety standby within audible range of the low pressure alarm
- Air Compressors
  - ◆ Used to supply breathing air shall be equipped with:
    - A trap and carbon filter to remove oil, water, particulate and odour
    - A pressure reducing valve
    - A carbon monoxide alarm calibrated to alarm at 5 ppm
    - Automatic controls to sound an alarm in the event of overheating or compressor failure
    - The compressor intake shall be located to assure that only respirable (uncontaminated) air is admitted
- Supervision
  - ◆ A competent person shall supervise the use of respiratory protection
- Change Management

A process shall be in place to control Change Management associated with the use of respiratory protection

## 6.12 Site Emergency Management

This Guidance Note applies to all Transnet Capital Projects controlled projects, sites or offices.

### 6.12.1 Requirements

- Planning

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- ♦ Emergency Management shall be properly planned, managed, supervised and carried out to prevent incidents, with a documented Safe System of Work that shall:
  - Be in a clear and auditable form
  - Be practical
  - Be working effectively
  - Have clearly defined roles, responsibilities and accountabilities; and
  - Include procedures for periodic review and revision
- Written Procedure
  - ♦ Based on the services to be provided, a Site Emergency Procedure document is to be prepared
  - ♦ As a minimum the following situations should be covered:
    - Roles and responsibilities
    - Fire
    - Personal injury
    - Bomb threat
    - Natural disasters
    - Industrial Action
- Greenfield
  - ♦ Prior to commencement of work on site, meet with local Representative of Police, Ambulance, and Fire Departments, and establish requirements for:
    - Reporting emergency situations
    - Response time expected (consideration of distance and availability); and
    - Type of response (equipment availability) contact point
    - A joint Site Inspection is to be arranged to identify any access problems that are likely to be encountered on the site. These are to be noted and corrected, if necessary
- Existing Facility
  - ♦ Where work is to be carried out on an existing plant site, discuss existing Emergency Procedures with the Plant Safety Officer and their adequacy for the new work. Agree if existing procedures are to be applied, modified to suit, or new procedures established

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- ♦ Based on local services available and, if applicable, existing plant services, determine if they are adequate to cover the new work. A written report of the existing situation is required along with recommendations for additional services if required
- ♦ The recommendation is to be discussed with the Customer and agreement reached on the use of existing services or the provision of additional services
- Tender
  - ♦ The Emergency Procedures are to be included in all Tender/Contract documents involving site work, either in full or advising the Tenderer/Contractor of their presence and requirement for compliance
- Communication
  - ♦ All incidents requiring use of the Site Emergency Management Plan will be communicated to the Project via a Job Safety Alert and discussed at the next weekly Toolbox Meeting
- Supervision
  - ♦ A competent person shall supervise the Site Emergency Management Program
- Change Management
  - ♦ A process shall be in place to control Change Management associated with Site Emergency Management

### **6.13 Dangerous Goods and Hazardous Substances**

This Guidance Note applies to all Transnet Capital Projects activities where dangerous goods or hazardous materials are stored, handled, transported or used.

#### **6.13.1 Requirements**

- Planning
  - ♦ Working with dangerous goods or hazardous materials shall be properly planned, managed, supervised and carried out to prevent incidents, with a documented Safe System of Work that shall:
    - Be in a clear and auditable form
    - Be practical
    - Be working effectively
    - Have clearly defined roles, responsibilities and accountabilities; and
    - Include procedures for periodic review and revision

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- Labelling
  - ◆ All hazardous products must be adequately labelled to inform those in the workplace of the hazards and proper controls. Consideration should be given for the various languages spoken in the workplace
- Material Safety Data Sheets (MSDS)
  - ◆ MSDS shall be available to employees at the workplace
  - ◆ MSDS shall be centrally filed and controlled
  - ◆ MSDS will be updated on a regular basis as per applicable legislation
  - ◆ Suppliers will be required to supply current MSDS for all shipments of hazardous products
  - ◆ Provide for and adhere to MSDS requirements
- Shipping
  - ◆ Ensure local legislative requirements are met for shipping material off site
  - ◆ Ensure consideration for material being shipped to different jurisdictions, such as internationally
- Approval
  - ◆ All hazardous products brought into a Transnet Capital Projects controlled area must receive approval prior to being brought onto site
- Supervision
  - ◆ A competent person shall supervise the use and control of dangerous goods and hazardous substances
- Training
  - ◆ All personnel will receive formal training on the hazardous products, including information on labelling and MSDS
  - ◆ First use of controlled products by personnel will involve a review of the MSDS and the precautions to be used when handling the products
- Change Management
  - ◆ A process shall be in place to control Change Management associated with dangerous goods and hazardous substances

## 6.14 Explosive Actuated Hand Tools

### 6.14.1 Requirements

- Planning

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- ♦ The use of explosive actuated tools shall be properly planned, managed, supervised and carried out to prevent incidents, with a documented Safe System of Work that shall:
  - Be in a clear and auditable form
  - Be practical
  - Be working effectively
  - Have clearly defined roles, responsibilities and accountabilities; and
  - Include procedures for periodic review and revision
- Competent and Authorised Operator(s)
  - ♦ To be deemed competent, a person must be able to provide sufficient evidence of having successfully completed a training course based on the Manufacturer's requirements
- Job Safety Analysis (JSA)
  - ♦ Shall be performed for all tasks requiring the use of explosive actuated tools. The JSA shall consider, as a minimum, the following:
    - PPE - eye protection – face shield and safety glasses and hearing protection
    - Safe work area – the area shall be roped off and signposted to restrict entry to authorised personnel only
    - Confined or restricted spaces
    - Hazardous hot work site
    - Flying particles of work surfaces
    - Presence of any explosive or flammable gas, dust, or vapour or an atmosphere which is compressed. Do not use explosive powered tools in these circumstances
    - Presence of excessive heat which may cause the charge to be unintentionally exploded. Do not use the explosive powered tool in these circumstances
    - Where operation of explosive powered tools is required in a confined space, at height or in a hazardous hot work area, additional precautions may be required including the requisitioning of a Work Permit
- Misfiring

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- ♦ In the event of a misfire, observe the Manufacturer's Misfire Precautions and Procedures. Where the Manufacturer has not provided specific instructions, perform a Risk Assessment and implement the necessary Control Measures
- Barricade/Signage
  - ♦ At all times when an actuated power tool is being used, appropriate barricades and signage shall be posted to warn personnel in the area or coming into the area
- Equipment
  - ♦ The firing of any tool must require two separate actions i.e. pressure on the nozzle and pulling of trigger
- Inspection
  - ♦ An explosive powered tool must be inspected in accordance with the Manufacturer's Instructions immediately prior to use on any particular day to ensure it is fully operational and it is free from defect
- Maintenance
  - ♦ Authorised users must ensure the Manufacturer's Instructions are observed to ensure each tool is kept in good working order and to ensure it functions correctly
- Repairs
  - ♦ Explosive powered tools must only be serviced and repaired by suitably trained persons. Operators of explosive powered tools shall only carry out simple replacement of worn parts which are specifically listed in the Supplier's 'Instructions for Use'
- Storage of Explosive Powered Tool and Charges
  - ♦ Persons in control of the explosive actuated tool and charges shall comply with the following requirements:
    - Before and after using the tool, the Operator shall ensure:
      - The charges and unloaded explosive powered tool are in their box or case
      - The box or case is locked
      - When not in use, shall ensure the equipment and charges are stored in separate and secure places
      - Controlled access to tools



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- Supervision
  - ♦ A competent person shall supervise all work involving the use explosive actuated tools
- Change Management
  - ♦ A process shall be in place to control Change Management associated with explosive actuated tools

## 6.15 Permit to Work

This Guidance Note establishes the project requirements to control work activities, restrictions and responsibilities in hazardous areas, or involving high-risk procedures. This Guidance Note applies to all project activities where personnel wish to perform maintenance or other works in a process area, or non-process area where control of personnel and activities is essential.

### 6.15.1 Requirements

- Planning
  - ♦ Permitting shall be properly planned, managed, supervised and carried out to prevent incidents, with a documented Safe System of Work that shall:
    - Be in a clear and auditable form
    - Be practical
    - Be working effectively
    - Have clearly defined roles, responsibilities and accountabilities; and
    - Include procedures for periodic review and revision
- Permit to Work System shall:
  - ♦ Identify, communicate and manage work hazards
  - ♦ Provide authorisation to proceed with work
  - ♦ Monitor job progress (issue and closure times)
  - ♦ Control access to the work site
  - ♦ Identify Work Instructions for the work site; and
  - ♦ Establish Job Handover and Completion Procedures
- Permits shall be required for the following:
  - ♦ Entry into confined spaces
  - ♦ Excavation

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- ♦ Hot Work
- ♦ Movement of radiation sources; and
- ♦ Work on high voltage equipment and systems
- Job Hazard Analysis (JHA)
  - ♦ The person in control of the job shall complete a JSA and communicate its requirements to all persons on the job
- Recordkeeping
  - ♦ Permits and JHA shall be kept for 1 month following the task; if an incident is involved during the Permitted Task the Permit shall be attached to the Incident Report
- Supervision
  - ♦ A competent person shall issue and supervise all tasks involving a Work Permit
- Change Management
  - ♦ A process shall be in place to control Change Management associated with Permits

## **6.16 Welding, Cutting and Hot Work**

### **6.16.1 Requirements**

- Planning
  - ♦ All work involving welding, grinding and burning shall be properly planned, managed, supervised and carried out to prevent incidents, with a documented safe system of work that shall:
    - Be in a clear and auditable form
    - Be practical
    - Be working effectively
    - Have clearly defined roles, responsibilities and accountabilities; and
    - Include procedures for periodic review and revision
- Creating less fume
  - ♦ Adopting sensible work practices and following manufacturer's guidelines, to avoid generating unnecessary fume. Explore different methods of welding such as, sub arc welding, induction welding, friction welding resistance and

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ultrasonic welding all of which will remove the risk of exposure to fumes and gases

- ♦ Apply the hierarchy of control when reviewing strategies on fume reduction
- Fire Prevention
  - ♦ Prior to starting work the work area shall be checked for flammable and combustible material. Spark and slag shall be contained as much as possible with fire blankets or similar devices. Where sparks cannot be contained and there is a possibility of contact with combustibles, spark watches shall be used
  - ♦ Fire protection must be kept in the immediate vicinity of all hot work, and shall be inspected, and on hand, prior to starting work
- Personal Protective Equipment (PPE)
  - ♦ Respiratory protection shall be selected in accordance with the hazard
  - ♦ Hard hat/hood combinations are required for welding. Safety glasses shall be worn under the hoods
  - ♦ Approved goggles shall be used for all torch burning
  - ♦ Polycarbonate face shield or equivalent shall be worn for all grinding activities
  - ♦ Craftsmen assisting the welders shall be protected in the same manner as the welder when exposed to similar hazard
  - ♦ Double eye protection shall be used by welders
- Welding
  - ♦ Welding screens shall be installed to protect personnel from exposure to the arc
  - ♦ All welding work shall have a separate and proper ground. The ground shall be located as close as possible to the work. Grounds shall not be attached to rotating equipment, stems of valves, or other equipment where a short could damage the equipment
  - ♦ Welding cables and Grinding hoses shall be placed in a manner that does not create a tripping hazard
  - ♦ Where welding occurs at elevated heights, welding blanket will be placed underneath area where welding occurs, to protect people and equipment underneath
- Grinding

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- ♦ All grinding tools/wheels will be equipped with a safety guard
- ♦ Tool rests will be set 3 mm (1/8 inch) from the face of the grinder and set below the centreline of the wheel
- ♦ Grinding stones, disks and wheels will be inspected frequently to ensure no chips or cracks exist which may cause failure; and
- ♦ The rated rotational speed of the wheel or disc exceeds that of the grinder to which it is attached
- ♦ All 9" grinders shall be fitted with manufactures additional safety back plates
- Burning
  - ♦ An approved flashback device shall be used at the gauge and torch end
  - ♦ Workers will prevent sparks, flames, or hot objects from coming into contact with cylinders, regulators or hoses
  - ♦ A proper striker will be used to light a torch. Cigarette lighters or matches will not be used
- Supervision
  - ♦ A competent person shall supervise all welding, grinding or burning activities
- Training
  - ♦ All personnel required to perform welding, grinding or burning duties shall be trained on the hazards and control measures available
- Change Management
  - ♦ A process shall be in place to control change management associated with welding, grinding and burning operations

## 6.17 Electrical Safety

### 6.17.1 Requirements

- Planning
  - ♦ All work involving electrical equipment shall be properly planned, managed, supervised and carried out to prevent incidents, with a documented Safe System of Work that shall:
    - Be in a clear and auditable form
    - Be practical

Note: If hardcopy, check electronic system for latest revision

- Be working effectively
- Have clearly defined roles, responsibilities and accountabilities; and
- Include procedures for periodic review and revision
- Electrical Equipment
  - ◆ Shall be designed and manufactured in accordance with the appropriate international standard. The Electrical Distribution System shall permit the interconnection and use of the equipment in a manner which does not cause danger to staff or the public
- Operation and Maintenance of Electrical Equipment
  - ◆ Electrical equipment shall be operated and maintained in such a manner as to avoid danger to staff or the public and to permit the continued use of the equipment in service
  - ◆ Only persons authorized in writing by the Project Manager or Responsible Electrical Engineer shall enter or operate equipment in high voltage switch rooms or substations
- Static Electricity and Lightning
  - ◆ The hazards arising from static electricity and lightning shall to be considered, and appropriate measures taken so as to avoid danger
- Certification of Conformance
  - ◆ The design of all new or modified electrical equipment or systems to be installed in those areas in which explosive gas, vapour or dust mixtures with air are likely to cause the area to be classified as hazardous shall conform with internationally recognised concepts and the equipment provided with a Certificate of Conformance
- Written Instructions
  - ◆ Safe Working Practices for Operation and Maintenance (including Testing) shall be in place for:
    - High Voltage and Low Voltage Distribution System
    - Isolation, Testing and Live Work
    - External Liaison - A defined system shall exist for liaison with external groups
    - Written Authorisations
    - Electrical Distribution Systems

Note: If hardcopy, check electronic system for latest revision

- Access to Written Rules and Documents
- Competence of Staff
- Electrolytic Plants - The hazards arising from electrolytic plants, which involve the use of high currents, shall be considered, and appropriate measure taken to avoid danger
- Pre-commissioning and Commissioning
- Registration and Inspection
  - ◆ The following electrical equipment shall be subject to Site Registration and Quarterly Inspection. Registration will allocate a unique identification and colour code:
    - Equipment and systems for use in potentially explosive atmospheres
    - Electrical power tools, cords, cables, portable generators
    - Equipment known or suspected of deterioration and in such location that failure would give rise to a situation hazardous to the public, people on-site or the environment
- Operator Manual
  - ◆ Shall be kept at site for each piece of electrical equipment
- Supervision
  - ◆ A competent person shall supervise all work with electrical tool or equipment
- Training
  - ◆ All personnel required to perform welding, grinding or burning duties shall be trained on the hazards and control measures available
- Change Management
  - ◆ A process shall be in place to control Change Management associated with electrical safety hazards

## 6.18 Blasting and Use of Explosives

### 6.18.1 Requirements

- No blasting shall take place without the approval of the PM/CM and Client
- Planning

Note: If hardcopy, check electronic system for latest revision

- ♦ Blasting and the use of explosives shall be properly planned, managed, supervised and carried out to prevent incidents, with a documented safe system of work that shall:
  - Be in a clear and auditable form
  - Be practical
  - Be working effectively
  - Have clearly defined roles, responsibilities and accountabilities; and
  - Include procedures for periodic review and revision
- Legislative Requirements
  - ♦ Ensure compliance with legal requirements for:
    - Blaster Qualifications
    - Handling of Explosives
    - Storage of Explosives
    - Transportation of Explosives
    - Drilling
    - Loading
    - Wiring
    - Firing of Explosives
    - Electrical firing
    - Transmitter Hazards
    - After Blast
    - Misfire
    - All Clear
- Supervision
  - ♦ A competent person shall supervise all work involving blasting and explosives
- Change Management
  - ♦ A process shall be in place to control change management associated with blasting and explosives

Note: If hardcopy, check electronic system for latest revision

## 6.19 Scaffolding and Ladders

### 6.19.1 Requirements

- Planning
  - ◆ The use of scaffolding and ladders shall be properly planned, managed, supervised and carried out to prevent incidents, with a documented Safe System of Work that shall:
    - Be in a clear and auditable form
    - Be practical
    - Be working effectively
    - Have clearly defined roles, responsibilities and accountabilities; and
    - Include procedures for periodic review and revision
- Scaffold
  - ◆ Shall be designed for their intended purpose and shall be constructed of materials that will not be adversely affected by process or physical conditions
  - ◆ All scaffolds must be erected, used, maintained and dismantled in accordance with the Manufacturer Specifications
  - ◆ Scaffolds shall only be erected, altered, maintained or demolished by suitably qualified and authorised personnel
- Material Inspection
  - ◆ Suppliers shall inspect material prior to site delivery for defect
- Fall Protection
  - ◆ Workers shall be protected from falling at all times during the erection and dismantling of a scaffold using approved Fall Protection Method
- Inspection/Tagging
  - ◆ Scaffolding shall be inspected/tagged by an authorised person at weekly intervals or more frequently as directed by the responsible Engineer and results recorded. All Inspections shall be documented
- Tagging
  - ◆ Scaffold Supervisor shall be responsible for the Inspection and Tagging of scaffolds. The following colour coded Tags shall be used:
    - RED: Scaffold Incomplete - Danger: Do Not Use -This Tag is placed by the Foreman at the start of erection. Red Tags can be placed by any project personnel at any time the scaffold is deemed unsafe for use



Note: If hardcopy, check electronic system for latest revision

- YELLOW: Caution -This Tag is used to indicate special requirements for safe use. One requirement it could indicate is the requirement for fall arrest, due to decking or handrails removed for equipment installation
- GREEN: Safe for Use
- Access to Scaffolding
  - ♦ Shall be via an approved stairway or properly installed ladder. The access to each landing shall be unobstructed and shall be protected by a swinging gate. Where possible the gate shall be self-closing
- Damage to Scaffolding
  - ♦ Use of a scaffold shall be prohibited immediately upon the scaffold being damaged in any way. Damaged scaffolding shall be repaired as soon as it is practical to do so
- Dismantle of Scaffolding
  - ♦ Scaffolds shall be dismantled progressively with items being carried or lowered to the floor. Under no circumstances shall any item be thrown or dropped from the scaffold
- Tie-in
  - ♦ Free standing scaffolds shall not exceed a height of 3 times the smallest dimension of its base
- Scaffold Deck
  - ♦ Work platform must be free of holes and have handrails/midrails (knee rail) with toe boards and must be installed per legislative requirements for all scaffold over 2 m
- Rolling Scaffold shall:
  - ♦ Not be supported on its pneumatic tires during its erection, dismantling or use
  - ♦ Have wheels that are equipped with locking devices that are used whenever personnel are on the scaffold
  - ♦ Not have personnel on them when they are being moved
- Barricades/Barriers
  - ♦ Shall be erected to prevent entry of unauthorised personnel to areas where scaffolding work is being performed and to prevent entry to areas below scaffolding work
- Ladders

Note: If hardcopy, check electronic system for latest revision

- ♦ All portable and fixed ladders shall be designed and used in compliance with applicable legislation
- ♦ All fixed ladders shall have protection such as a ladder hoop or ladder cage installed according to applicable legislation
- ♦ All portable and fixed ladders shall be inspected by personnel on each occasion before use and actions taken to correct defects immediately
- ♦ Under no circumstance shall a ladder that has been damaged or is defective in any way be used for any purpose
- ♦ Glass reinforced plastic is the preferred material for all portable ladders. Metal ladders and ladders with metal stiles or reinforcing shall not be used for any electrical work
- ♦ Ladders shall be installed so that the side rails or stiles rest on firm, level footing with the top or base of the ladder securely fixed to prevent slippage
- ♦ Where it is not practical to securely fix the ladder, a person shall be stationed at the foot of the ladder whenever it is being used
- ♦ Stepladders may be used without being lashed or otherwise secured to prevent slipping, provided:
  - The floor is non slip, flat and level; and
  - The work is light duty, such as replacing bulbs and fluorescent tubes
- ♦ A person working from a stepladder shall not stand any higher than the second step from the top level
- ♦ Portable ladders shall be used to provide a safe means of access to all places where persons have to work:
  - Until such time as temporary or permanent stairways are made available; or
  - Where the work to be carried out is light duty e.g. changing light bulbs, and will be completed in a short period of time
- ♦ Personal protective equipment (safety harness) shall be worn where a person may fall from a height of 2.0 metres or more (see HAS-GN-0008)
- ♦ A ladder shall extend at least one metre above the platform it services. A clear landing space at the head and base of every ladder and an unobstructed, safe access and egress at each landing shall be provided
- ♦ Where possible, every ladder shall be used at such an angle that the horizontal distance from the top support to the foot of the ladder is equal to one quarter of the length of the ladder

Note: If hardcopy, check electronic system for latest revision

- Supervision
  - ♦ A competent person shall supervise the implementation of this standard
- Change Management
  - ♦ A process shall be in place to control Change Management associated with scaffolding and ladders

## 7. Records

All documents generated during the life of the contract will be retained in terms of the Document Management Procedure for records retention Archiving of Hard Copy Documentation – DOC-P-0013.

## Transnet Integrated Management System (TIMS) POLICY COMMITMENT STATEMENT

Transnet is a State-Owned Company that operates as an integrated freight transport company, formed around six core operating divisions namely Transnet Freight Rail (TFR), Transnet Engineering (TE), Transnet National Ports Authority (TNPA), Transnet Port Terminals (TPT) and Transnet Pipelines (TPL) and Transnet Property (TP) that complement each other.

Transnet has developed and implemented a TIMS that forms an integral part of the core business. We are committed to **transporting freight, passengers, and provide excellent service** to our customers along key transport corridors. This is done in order to **competitively grow our business**, enhance efficiency of South Africa's logistics system and thereby contribute to economic vibrancy.

TIMS is established, implemented and maintained in accordance with recognised best practices that will enable us to:

- Incorporate and comply with applicable **legislation, regulations, codes, standards, protocols, best practices and customer requirements** to which we subscribe in order to achieve our business objectives;
- Set and achieve **objectives and targets** that address significant enterprise-wide **strategic, tactical and operational risks, opportunities and mitigate the consequences** thereof;
- Proactively implement **waste and pollution prevention strategies** to prevent **environmental degradation**;
- Continually promote the prudent and **sustainable** use of **energy and natural resources**;
- Provide **quality products and services** in order to meet our customers' requirements;
- Provide **safe and secure environment** for our employees and stakeholder;
- Carry out our business in a manner which **protects our assets and information** and **prevents injuries and ill health** to our employees and stakeholders;
- Promote **safe operational principles** during operations to minimize occurrences of safety incidents;
- Strategically **source our contractors** through fair, equitable and transparent processes;
- Provide **socio-economic development** as a good corporate citizen;
- Promote **food safety practices** in our food preparation and handling environments;
- Ensure **proficiency and preparedness** to deal with and **effectively recover** from any **emergency situations**;
- **Develop, train and manage our employees** through inspirational leadership, provide the necessary **organizational information, knowledge and resources** to achieve the intention of this policy statement;
- **Communicate, engage and provide support** and **appropriate information** to relevant stakeholders in order to build relationships based on care, openness, mutual trust and involvement as well as promote a TIMS risks awareness culture;
- Allocate **responsibilities and accountabilities** for meeting the requirements of the TIMS policy statement.
- Drive an **integrated assurance management programme** to ensure **continual improvement** of TIMS.

The TIMS Policy Commitment Statement shall be **reviewed every three years or as circumstances dictate** to ensure that it remains **current and relevant**. Our progress on the achievement of the policy statement commitments shall be reported in the respective Governance Structures. Transnet recognises its accountability for TIMS; all employees including contractors have a role to play in delivering on the commitment set out in this policy statement.

  
Group Chief Executive

Date: 29/07/2020  
Next Review Date: 29/06/2023

Copies of the approved TIMS Policy Commitment Statement can be made available to external Stakeholders on request.

Transnet Port Terminals

Tender Number: **?????**

Description of the Works: **UPGRADE OF EMPTY STACK (AREA 100) AT PIER 1, DURBAN CONTAINER TERMINAL FOR TRANSNET SOC LTD (REG. NO 1990/000900/30) OPERATING AS TRANSNET PORT TERMINALS (HEREINAFTER REFERRED TO AS "TPT")**

---

## **T2.2-XX: Health and Safety Questionnaire**

## Health, Safety Questionnaire

<b>1. SAFE WORK PERFORMANCE</b>													
1A. Injury Experience / Historical Performance - Alberta													
Use the previous three years injury and illness records to complete the following:													
Year													
Number of medical treatment cases													
Number of restricted work day cases													
Number of lost time injury cases													
Number of fatal injuries													
Total recordable frequency													
Lost time injury frequency													
Number of worker manhours													
<table border="1"> <tr> <td>1 - Medical Treatment Case</td> <td>Any occupational injury or illness requiring treatment provided by a physician or treatment provided under the direction of a physician</td> </tr> <tr> <td>2 - Restricted Work Day Case</td> <td>Any occupational injury or illness that prevents a worker from performing any of his/her craft jurisdiction duties</td> </tr> <tr> <td>3 - Lost Time injury Cases</td> <td>Any occupational injury that prevents the worker from performing any work for at least one day</td> </tr> <tr> <td>4 - Total Recordable Frequency</td> <td>Total number of Medical Treatment, Restricted Work and Lost Time Injury cases multiplied by 200,000 then divided by total manhours</td> </tr> <tr> <td>5- Lost Time Injury Frequency</td> <td>Total number of Lost Time Injury cases multiplied by 200,000 then divide by total manhours</td> </tr> </table>				1 - Medical Treatment Case	Any occupational injury or illness requiring treatment provided by a physician or treatment provided under the direction of a physician	2 - Restricted Work Day Case	Any occupational injury or illness that prevents a worker from performing any of his/her craft jurisdiction duties	3 - Lost Time injury Cases	Any occupational injury that prevents the worker from performing any work for at least one day	4 - Total Recordable Frequency	Total number of Medical Treatment, Restricted Work and Lost Time Injury cases multiplied by 200,000 then divided by total manhours	5- Lost Time Injury Frequency	Total number of Lost Time Injury cases multiplied by 200,000 then divide by total manhours
1 - Medical Treatment Case	Any occupational injury or illness requiring treatment provided by a physician or treatment provided under the direction of a physician												
2 - Restricted Work Day Case	Any occupational injury or illness that prevents a worker from performing any of his/her craft jurisdiction duties												
3 - Lost Time injury Cases	Any occupational injury that prevents the worker from performing any work for at least one day												
4 - Total Recordable Frequency	Total number of Medical Treatment, Restricted Work and Lost Time Injury cases multiplied by 200,000 then divided by total manhours												
5- Lost Time Injury Frequency	Total number of Lost Time Injury cases multiplied by 200,000 then divide by total manhours												
1B. Workers' Compensation Experience													
Use the previous three years injury and illness records to complete the following (if applicable):													
Industry Code:		Industry Classification:											
Year													
Industry Rate													
Contractor Rate													
% Discount or Surcharge													
Is your Workers' Compensation account in good standing? (Please provide letter of confirmation)		<input type="checkbox"/> Yes <input type="checkbox"/> No											
<b>2. CITATIONS</b>													
2A.	Has your company been cited, charged or prosecuted under Health, Safety and/or Environmental Legislation in the last 5 years? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, provide details:												
2B.	Has your company been cited, charged or prosecuted under the above Legislation in another Country, Region or State? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, provide details:												
<b>3. CERTIFICATE OF RECOGNITION</b>													

Transnet Port Terminals

Tender Number: **?????**

Description of the Works: **UPGRADE OF EMPTY STACK (AREA 100) AT PIER 1, DURBAN CONTAINER TERMINAL FOR TRANSNET SOC LTD (REG. NO 1990/000900/30) OPERATING AS TRANSNET PORT TERMINALS (HEREINAFTER REFERRED TO AS "TPT")**

Does your company have a Certificate of Recognition?	
<input type="checkbox"/> Yes <input type="checkbox"/> No    If Yes, what is the Certificate No. _____	Issue Date _____

#### 4. SAFETY PROGRAM

Do you have a written safety program manual? <input type="checkbox"/> Yes <input type="checkbox"/> No					
If Yes, provide a copy for review					
Do you have a pocket safety booklet for field distribution? <input type="checkbox"/> Yes <input type="checkbox"/> No					
If Yes, provide a copy for review					
Does your safety program contain the following elements:					
	YES	NO		YES	NO
CORPORATE SAFETY POLICY	<input type="checkbox"/>	<input type="checkbox"/>	EQUIPMENT MAINTENANCE	<input type="checkbox"/>	<input type="checkbox"/>
INCIDENT NOTIFICATION POLICY	<input type="checkbox"/>	<input type="checkbox"/>	EMERGENCY RESPONSE	<input type="checkbox"/>	<input type="checkbox"/>
RECORDKEEPING & STATISTICS	<input type="checkbox"/>	<input type="checkbox"/>	HAZARD ASSESSMENT	<input type="checkbox"/>	<input type="checkbox"/>
REFERENCE TO LEGISLATION	<input type="checkbox"/>	<input type="checkbox"/>	SAFE WORK PRACTICES	<input type="checkbox"/>	<input type="checkbox"/>
GENERAL RULES & REGULATIONS	<input type="checkbox"/>	<input type="checkbox"/>	SAFE WORK PROCEDURES	<input type="checkbox"/>	<input type="checkbox"/>
PROGRESSIVE DISCIPLINE POLICY	<input type="checkbox"/>	<input type="checkbox"/>	WORKPLACE INSPECTIONS	<input type="checkbox"/>	<input type="checkbox"/>
RESPONSIBILITIES	<input type="checkbox"/>	<input type="checkbox"/>	INVESTIGATION PROCESS	<input type="checkbox"/>	<input type="checkbox"/>
PPE STANDARDS	<input type="checkbox"/>	<input type="checkbox"/>	TRAINING POLICY & PROGRAM	<input type="checkbox"/>	<input type="checkbox"/>
ENVIRONMENTAL STANDARDS	<input type="checkbox"/>	<input type="checkbox"/>	COMMUNICATION PROCESSES	<input type="checkbox"/>	<input type="checkbox"/>
MODIFIED WORK PROGRAM	<input type="checkbox"/>	<input type="checkbox"/>			

#### 5. TRAINING PROGRAM

5A. Do you have an orientation program for new hire employees? <input type="checkbox"/> Yes <input type="checkbox"/> No					
If Yes, include a course outline. Does it include any of the following:					
	YES	NO		YES	NO
GENERAL RULES & REGULATIONS	<input type="checkbox"/>	<input type="checkbox"/>	CONFINED SPACE ENTRY	<input type="checkbox"/>	<input type="checkbox"/>
EMERGENCY REPORTING	<input type="checkbox"/>	<input type="checkbox"/>	TRENCHING & EXCAVATION	<input type="checkbox"/>	<input type="checkbox"/>
INJURY REPORTING	<input type="checkbox"/>	<input type="checkbox"/>	SIGNS & BARRICADES	<input type="checkbox"/>	<input type="checkbox"/>
LEGISLATION	<input type="checkbox"/>	<input type="checkbox"/>	DANGEROUS HOLES & OPENINGS	<input type="checkbox"/>	<input type="checkbox"/>
RIGHT TO REFUSE WORK	<input type="checkbox"/>	<input type="checkbox"/>	RIGGING & CRANES	<input type="checkbox"/>	<input type="checkbox"/>
PERSONAL PROTECTIVE EQUIPMENT	<input type="checkbox"/>	<input type="checkbox"/>	MOBILE VEHICLES	<input type="checkbox"/>	<input type="checkbox"/>
EMERGENCY PROCEDURES	<input type="checkbox"/>	<input type="checkbox"/>	PREVENTATIVE MAINTENANCE	<input type="checkbox"/>	<input type="checkbox"/>
PROJECT SAFETY COMMITTEE	<input type="checkbox"/>	<input type="checkbox"/>	HAND & POWER TOOLS	<input type="checkbox"/>	<input type="checkbox"/>
HOUSEKEEPING	<input type="checkbox"/>	<input type="checkbox"/>	FIRE PREVENTION & PROTECTION	<input type="checkbox"/>	<input type="checkbox"/>
LADDERS & SCAFFOLDS	<input type="checkbox"/>	<input type="checkbox"/>	ELECTRICAL SAFETY	<input type="checkbox"/>	<input type="checkbox"/>
FALL ARREST STANDARDS	<input type="checkbox"/>	<input type="checkbox"/>	COMPRESSED GAS CYLINDERS	<input type="checkbox"/>	<input type="checkbox"/>
AERIAL WORK PLATFORMS	<input type="checkbox"/>	<input type="checkbox"/>	WEATHER EXTREMES	<input type="checkbox"/>	<input type="checkbox"/>

<b>5B. Do you have a program for training newly hired or promoted supervisors?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No (If Yes, submit an outline for evaluation. Does it include instruction on the following:					
	Yes	No		Yes	No
EMPLOYER RESPONSIBILITIES	<input type="checkbox"/>	<input type="checkbox"/>	SAFETY COMMUNICATION	<input type="checkbox"/>	<input type="checkbox"/>
EMPLOYEE RESPONSIBILITIES	<input type="checkbox"/>	<input type="checkbox"/>	FIRST AID/MEDICAL PROCEDURES	<input type="checkbox"/>	<input type="checkbox"/>
DUE DILIGENCE	<input type="checkbox"/>	<input type="checkbox"/>	NEW WORKER TRAINING	<input type="checkbox"/>	<input type="checkbox"/>
SAFETY LEADERSHIP	<input type="checkbox"/>	<input type="checkbox"/>	ENVIRONMENTAL REQUIREMENTS	<input type="checkbox"/>	<input type="checkbox"/>
WORK REFUSALS	<input type="checkbox"/>	<input type="checkbox"/>	HAZARD ASSESSMENT	<input type="checkbox"/>	<input type="checkbox"/>
INSPECTION PROCESSES	<input type="checkbox"/>	<input type="checkbox"/>	PRE-JOB SAFETY INSTRUCTION	<input type="checkbox"/>	<input type="checkbox"/>
EMERGENCY PROCEDURES	<input type="checkbox"/>	<input type="checkbox"/>	DRUG & ALCOHOL POLICY	<input type="checkbox"/>	<input type="checkbox"/>
INCIDENT INVESTIGATION	<input type="checkbox"/>	<input type="checkbox"/>	PROGRESSIVE DISCIPLINARY POLICY	<input type="checkbox"/>	<input type="checkbox"/>
SAFE WORK PROCEDURES	<input type="checkbox"/>	<input type="checkbox"/>	SAFE WORK PRACTICES	<input type="checkbox"/>	<input type="checkbox"/>
SAFETY MEETINGS	<input type="checkbox"/>	<input type="checkbox"/>	NOTIFICATION REQUIREMENTS	<input type="checkbox"/>	<input type="checkbox"/>

**6. SAFETY ACTIVITIES**

Do you conduct safety inspections? Yes   No   Weekly   Monthly   Quarterly

☐   ☐   ☐   ☐   ☐

Describe your safety inspection process (include participation, documentation requirements, follow-up, report distribution).

\_\_\_\_\_

\_\_\_\_\_

Who follows up on inspection action items? \_\_\_\_\_

Do you hold site safety meetings for field employees? If Yes, how often?

Yes   No   Daily   Weekly   Biweekly  
☐   ☐   ☐   ☐   ☐

Do you hold site meetings where safety is addressed with management and field supervisors?

Yes   No   Weekly   Biweekly   Monthly  
☐   ☐   ☐   ☐   ☐

Is pre-job safety instruction provided before to each new task? ☐ Yes ☐ No

Is the process documented? ☐ Yes ☐ No

Who leads the discussion? \_\_\_\_\_

Do you have a hazard assessment process? ☐ Yes ☐ No

- Are hazard assessments documented? If yes, how are hazard assessments communicated and implemented on each project? Who is responsible for leading the hazard assessment process?

\_\_\_\_\_

\_\_\_\_\_

Does your company have policies and procedures for environmental protection, spill clean-up, reporting, waste disposal, and recycling as part of the Health & Safety Program?

☐ Yes ☐ No

How does your company measure its H&S success?

- Attach separate sheet to explain



## 7. SAFETY STEWARDSHIP

7A Are incident reports and report summaries sent to the following and how often?

	Yes	No	Monthly	Quarterly	Annually
Project/Site Manager	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Managing Director	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Safety Director/Manager	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
/Chief Executive Officer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

7B How are incident records and summaries kept? How often are they reported internally?

	Yes	No	Monthly	Quarterly	Annually
Incidents totaled for the entire company	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Incidents totaled by project	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Subtotaled by superintendent	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Subtotaled by foreman	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

7C How are the costs of individual incidents kept? How often are they reported internally?

	Yes	No	Monthly	Quarterly	Annually
Costs totaled for the entire company	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Costs totaled by project	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Subtotaled by superintendent	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Subtotaled by foreman/general foreman	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

7D Does your company track non-injury incidents?

	Yes	No	Monthly	Quarterly	Annually
Near Miss	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Property Damage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fire	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Security	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Environmental	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## 8 PERSONNEL

List key health and safety officers planned for this project. Attach resume.

Name	Position/Title	Designation

Supply name, address and phone number of your company's corporate health and safety representative. Does this individual have responsibilities other than health, safety and environment?

Name	Address	Telephone Number

Other responsibilities:

## 9 REFERENCES

List the last three company's your form has worked for that could verify the quality and management commitment to your occupational Health & Safety program

Name and Company	Address	Phone Number

*Note: If hardcopy, check electronic system for latest revision*

6 May 2010

## Transnet Capital Projects: Project Development and Execution: Engineering

### CAD Standards

### ENG-STD-0001

Prepared by:



Drawing Standards Committee  
(Chairman: Ketan Bindapersad)

20 SEPT 2010

Date

Reviewed by:

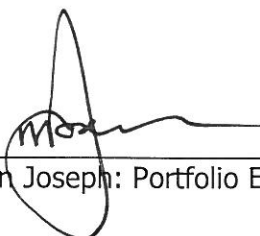


Engineering Management  
(Represented by Ashley Haridas)

2011/09/20

Date

Approved by:



Mervin Joseph: Portfolio Executive: Engineering

20/09/2011

Date

00	20.09.10	Issued for Use
<b>Rev No.</b>	<b>Date</b>	<b>Revision Details</b>

*Note: If hardcopy, check electronic system for latest revision*

## Table of Contents

<b>1. Purpose .....</b>	<b>1</b>
<b>2. Scope .....</b>	<b>1</b>
<b>3. References .....</b>	<b>1</b>
<b>4. Responsibility .....</b>	<b>2</b>
<b>5. Procedure .....</b>	<b>2</b>
<b>6. Drawing Standard .....</b>	<b>2</b>
6.1 Glossary of Terms .....	2
6.2 Software .....	2
6.3 Units .....	2
6.4 Language .....	3
6.5 Templates .....	3
6.6 Drawing sizes .....	3
6.7 Scales .....	3
6.8 Text Attributes .....	4
6.9 Dimensioning .....	5
6.10 Hatching .....	5
6.11 Layer Control .....	6
6.12 Section Lines .....	14
6.13 North Point .....	14
6.14 The Title Block .....	15
6.15 Fields in the Signature Block .....	16
6.16 Revised Drawings .....	16
6.17 Reference Drawings .....	18
6.18 Key Plan usage .....	18
6.19 Symbols and abbreviations .....	18
6.20 Identification of Views .....	19

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## 1. Purpose

The purpose of this document is to ensure that all CAD files and drawings are created in a logical and consistent format, and in a manner reflecting consistent design practice during the execution of the Projects within Transnet Capital Projects.

## 2. Scope

This standard applies to all PD&E and engineering personnel within Transnet Capital Projects, as well as external contractors and consultants appointed by PD&E, whom are responsible for developing, creating and issuing drawings.

All Engineering staff, contractors and consultants that are involved in the production of drawings for TCP, will be issued with this standard and must ensure compliance. It is noted that where fabrication shop details are required, it is not necessary for the contractor to comply with these standards and their own CAD packages may be used.

General drawing practice shall comply with current discipline-specific South African Standards.

In certain cases clients may prescribe standards different from this document.

## 3. References

- ISO 9001: Quality management systems- Requirements
- SANS 10144: Detailing of steel reinforcement for concrete
- SANS 10143: Building Drawing Practice
- SANS 1044-2: Welding Part II: Symbols
- SANS 10111: Engineering Drawing Part 1,2 and 3
- SANS 282: Bending dimensions of bars for concrete reinforcement
- South African Institute of Steel Construction (SAISC) Standard
- SYS-P-0001: Transnet Programme Numbering/Codification Procedure
- BS 3939: Graphical symbols for electrical power, telecommunications and electronic diagrams
- BBB0041: Preparation of Drawings for Transnet Freight Rail
- BBB4354 : Preparation of signalling documents
- BBD 5371 : CAD Standard for technical Documentation
- SANS NRS 1002 : Graphical symbols for Electrical Diagrams
- CSE Z 148: Symbols for Signalling

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- Transnet Bridge Code 1983
- BBB4354: Technical asset life cycle management configuration management
- ENG-P-0105: Engineering Drawings

## 4. Responsibility

Administrators of the Drawing Standards are responsible for monitoring the implementation of the Standards and ensuring adherence to the Standards.

Any proposed changes to the Drawing Standards must be reviewed by the Drawing Standards Committee, as constituted from time to time by the Portfolio Executive, Engineering. Final approval vests in the Portfolio Executive Engineering.

## 5. Procedure

This standard should be read together with Engineering Procedure ENG-P-0105: Engineering drawings

## 6. Drawing Standard

### 6.1 Glossary of Terms

2D	Two Dimensional
3D	Three Dimensional
CAD	Computer Aided Design
DGN	MicroStation format graphics files and suffix
DWG	AutoCAD format graphics files and suffix
NTS	Not to Scale

### 6.2 Software

Only the most current versions of AutoCad and Microstation are to be used.

### 6.3 Units

All drawings will conform to SI units (Systems International)

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## 6.4 Language

All notes, comments and text will be in the English language (UK Standard)

All instructions on a drawing shall be in the imperative tense i.e.: Pipe to be cut, connection to be welded.

## 6.5 Templates

A template with all title blocks, text attributes, layer or level controls must be used when starting a new drawing. Templates are set up for each specific discipline i.e. Civil must use their specific templates, Architects their specific template etc. These discipline specific templates contain the discipline specific layer or level control.

Drawings/models must be done in model space. Viewports must then be created in the paper space at the required scale.

Notes must be done in paper space i.e. on the actual drawing sheet.

## 6.6 Drawing sizes

Designation	Trimmed Size
A0	841 x 1189
A1	594 x 841
A2	420 x 594
A3	297 x 420
A4	210 x 297

Long drawings, where necessary for wiring/circuit diagrams, cable run diagrams, track layouts etc. shall be prepared with widths equal to the widths of "A" series sheets, as required.

## 6.7 Scales

The requirements of scale settings are as follow:

When using model space, the design must always be full size, i.e. active scale = 1:1.  
The title block shall not be scaled.

The viewport will be created on the drawing sheet (in paper space) and scaled to the required scale, rather than trying to scale the drawing sheet to a scale.

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In the case of non-dimensional drawings such as diagrammatic drawings, the viewport must be scaled to suit the drawing sheet.

Different vertical and horizontal scales may be chosen in order to exaggerate a profile or to clarify thin layers of a section.

**The preferred scales are:**

1:1	1:2	1:5
1:10	1:25	1:50
1:100	1:20	1:500
1:1000	1:200	1:5000
1:10000	1:2000	1:50000
1:100000	1:20000	

## 6.8 Text Attributes

All text shall be in Arial font, with a width factor of 0.7mm

Layer	Colour	Line type	Line weight	Plot style	Use/description
T2	WHITE	CONT	0.25	MONO	General text 2.5mm
T3	YELLOW	CONT	0.35	MONO	General text 3.5mm
T5	RED	CONT	0.50	MONO	General text 5.0mm
T7	GREEN	CONT	0.70	MONO	General text 7.0mm

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## 6.9 Dimensioning

All detailed dimensions shall be in millimetres

All elevations shall be in metres up to 3 decimal places, and clearly indicated, i.e.:

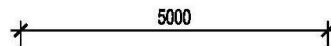
EL 23.000 m

Co-ordinates shall be stated in metres to 3 decimal places.

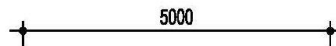
Dimensioning must be done whilst in paper space, in an **active** viewport. This is done so that the dimension size will always be consistent in scale i.e. it will be relative in scale to the scale that the viewport is set at.

Dimensions are not to be exploded.

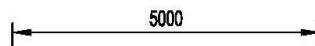
Examples:



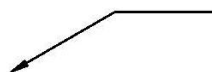
*Dimension with oblique line*



*Dimension with dot*



*Dimension with arrow*



*Leader*

## 6.10 Hatching

All hatching to be done in accordance with SANS 10143



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## 6.11 Layer Control

Standard layers with their own identities will be used in all drawings. The following categories apply:

1. Common layers (without discipline prefix)
2. Architectural layers (A\_)
3. Civil layers (C\_)
4. Structural layers (S\_)
5. Electrical, light and power layers (E\_)
6. Mechanical layers (M\_)
7. Overhead Track Equipment layers (O\_)
8. Signal layers (N\_)
9. Telecommunications layers (V\_)
10. Bridge layers (B\_)
11. Water layers (W\_)
12. Perway layers (P\_)
13. G.I.S. / Land surveying layers

There are no specific layers set out in this document; save to say that text and all different objects and features must be named in its own layer.

***Should further Layers or Levels be required the discipline specific prefix should be used.***

COMMON LAYERS						
LAYER NAME	DESCRIPTION	COLOUR	LINE TYPE	LINE WEIGHT	PLOT STYLE	PLOT
0	STANDARD LAYER	WHITE	CONT	0.25	MONO	YES
DIMS	DIMENSIONS (PER SCALE)	WHITE	CONT	0.25	MONO	YES
HATCH	GENERAL HATCHING	11	CONT	0.18	MONO	YES
HATCH- 252	HATCHING IN COLOUR 252	252	CONT	DEFAULT	COLOUR	YES
HATCH- 254	HATCHING IN COLOUR 254	254	CONT	DEFAULT	COLOUR	YES
T2	GENERAL TEXT 2.5mm	WHITE	CONT	0.25	MONO	YES
T3	GENERAL TEXT 3.5mm	YELLOW	CONT	0.35	MONO	YES
T5	GENERAL TEXT 5.0mm	RED	CONT	0.50	MONO	YES
T7	GENERAL TEXT 7.0mm	GREEN	CONT	0.70	MONO	YES
VPORT	VIEWPORTS IN LAYOUTS	254	CONT	DEFAULT	NORMAL	NO
FRAME	TITLE BLOCK FRAME	WHITE	CONT	0.25	MONO	YES
LOGOS	LOGO LAYER	WHITE	CONT	0.25	MONO	YES

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ARCHITECTURE						
LAYER NAME	DESCRIPTION	COLOUR	LINE TYPE	LINE WEIGHT	PLOT STYLE	PLOT
A_BR-N	NEW BRICKWALLS	RED	CONT	0.5	MONO	YES
A_BR-X	EXTG BRICKWALLS	YELLOW	CONT	0.35	MONO	YES
A_CONC-N	NEW CONCRETE	GREEN	CONT	0.7	MONO	YES
A_CONC-X	EXTG CONCRETE	YELLOW	CONT	0.35	MONO	YES
A_DOOR	DOORS	MAGENTA	CONT	0.18	MONO	YES
A_FIT	FITTINGS	CYAN	CONT	0.18	MONO	YES
A_FLFIN	FLOOR FINISH	8	CONT	0.13	MONO	YES
A_GRID	GRIDLINES	9	CENTRE	0.18	MONO	YES
A_HIDE	HIDDEN LINES	CYAN	HIDDEN	0.18	MONO	YES
A_PART-N	NEW PARTITIONS	BLUE	CONT	0.7	MONO	YES
A_PART-X	EXTG PARTITIONS	YELLOW	CONT	0.35	MONO	YES
A_REM	DEMOLISH/REMOVE	9	DASHED	0.18	MONO	YES
A_WIN	WINDOWS	MAGENTA	CONT	0.18	MONO	YES
G1	GENERAL 0.18	11	CONT	0.18	MONO	YES
G2	GENERAL 0.25	WHITE	CONT	0.25	MONO	YES
G3	GENERAL 0.35	YELLOW	CONT	0.35	MONO	YES
G5	GENERAL 0.5	RED	CONT	0.5	MONO	YES
G7	GENERAL 0.7	BLUE	CONT	0.7	MONO	YES
H	HATCH	11	CONT	0.18	MONO	YES
H-252	SOLID HATCH/INFILL	252	CONT	0.25	COLOUR	YES
H-254	SOLID HATCH/INFILL	254	CONT	0.25	COLOUR	YES
A_SITE	SITE AND LOCALITY PLANS	RED	CONT	0.18	MONO	YES
A_DIM	DIMENSIONS	RED	CONT	0.18	MONO	YES
A_BR-N2	CAVITIES	RED	CONT	0.18	MONO	YES
A_SEW	DRAINAGE PLAN	GREEN	CONT	0.40	MONO	YES
A_SW	STORMWATER PLAN & SECTION	RED	CONT	0.18	MONO	YES
A_BL	BUILDING LINE	8	HIDDEN	0.13	MONO	YES

CIVIL						
NAME	DESCRIPTION	COLOUR	LINE TYPE	LINE WEIGHT	PLOT STYLE	PLOT
C_BENCH	BENCH MARKS	WHITE	CONT	0.25	MONO	YES
C_BLD-N	PROPOSED BUILDINGS	GREEN	CONT	0.35	MONO	YES
C_BLD-X	EXISTING BUILDINGS	RED	CONT	0.18	MONO	YES
C_BRG-N	PROPOSED BRIDGES	GREEN	CONT	0.35	MONO	YES
C_BRG-X	EXISTING BRIDGES	RED	CONT	0.18	MONO	YES
C_CHAIN	CHAINGE	MAGENTA	CONT	0.15	MONO	YES
C_CONC	CONCRETE SURFACING	GREEN	CONT	0.35	MONO	YES
C_CONC-B	CONCRETE BELOW GROUND LEVEL	YELLOW	DASH	0.25	MONO	YES
C_CRANE	CRANE RAILS & EQUIPMENT	YELLOW	CONT	0.25	MONO	YES



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CIVIL						
NAME	DESCRIPTION	COLOUR	LINE TYPE	LINE WEIGHT	PLOT STYLE	PLOT
C_CULV-N	PROPOSED CULVERTS	GREEN	CONT	0.35	MONO	YES
C_CULV-X	EXISTING CULVERTS	MAGENTA	CONT	0.15	MONO	YES
C_FNC-PA-X	EXISTING FENCING- PALISADE	MAGENTA	FENCE2	0.15	MONO	YES
C_FNC-PC-X	EXISTING FENCING- PRECAST CONCRETE	MAGENTA	DIVIDE	0.15	MONO	YES
C_FNC-ST-X	EXISTING FENCING-STEEL/WIRE	CYAN	FENCE3	0.25	MONO	YES
C_FNC-PA-N	FENCING-PALISADE	YELLOW	FENCE2	0.25	MONO	YES
C_FNC-PC-N	FENCING-PRECAST CONCRETE	YELLOW	DIVIDE	0.25	MONO	YES
C_FNC-ST-N	FENCING-STEEL/WIRE	YELLOW	FENCE3	0.25	MONO	YES
C_FORM-N	PROPOSED FORMATION	4	CONT	0.70	MONO	YES
C_FORM-X	EXISTING FORMATION	41	CONT	0.25	MONO	YES
C_GRID	GRID LINES	251	CONT	0.01	MONO	YES
C_GR-LN	GROUND LINE	MAGENTA	DASH	0.15	MONO	YES
C_KERB-N	PROPOSED KERBING	GREEN	CONT	0.35	MONO	YES
C_KERB-X	EXISTING KERBING	MAGENTA	CONT	0.15	MONO	YES
C_PAV	PAVING	WHITE	CONT	0.25	MONO	YES
C_PREM	PREMIX SURFACING	YELLOW	CONT	0.25	MONO	YES
C_RD-M	PROPOSED ROAD MARKINGS	WHITE	CONT	0.25	MONO	YES
C_RD-N	EXISTING ROAD MARKINGS	251	CONT	0.01	MONO	YES
C_REM	REMOVED/DEMOLISHED CIVIL WORKS	251	HIDDEN	0.01	MONO	YES
C_RES	RESERVOIRS	YELLOW	CONT	0.25	MONO	YES
C_RET	RETAINING STRUCTURES	GREEN	CONT	0.35	MONO	YES
C_SERV	SERVITUDES	93	DASHED2	0.25	MONO	YES
C_SEW-N	PROPOSED SEWER	40	DASH/DOT	0.50	MONO	YES
C_SEW-X	EXISTING SEWER	41	DASH/DOT	0.25	MONO	YES
C_SHORE	SHORE LINE, QUAY WALLS	CYAN	CONT	0.25	MONO	YES
C_SIGN-N	PROPOSED SIGNAGE	WHITE	CONT	0.25	MONO	YES
C_SIGN-X	EXISTING SIGNAGE	251	CONT	0.01	MONO	YES
C_SW-N	PROPOSED STORMWATER	150	DIVIDE	0.50	MONO	YES
C_SW-TXT-N	PROPOSED STORMWATER TEXT	2	CONT	0.25	MONO	YES
C_SW-X	EXISTING STORMWATER	151	DIVIDE	0.25	MONO	YES
C_SW-TXT-X	EXISTING STORMWATER TEXT	MAGENTA	CONT	0.15	MONO	YES
C_STEEL	STEEL STRUCTURES	YELLOW	CONT	0.25	MONO	YES
C_SLEV	SLEEVE PIPES	WHITE	DASH	0.25	MONO	YES
C_TR-CUR	CURVE DATA	WHITE	CONT	0.25	MONO	YES
C_TR-N	PROPOSED RAIL TRACKS	CYAN	CONT	0.50	MONO	YES
C_TR-X	EXISTING RAIL TRACKS	251	CONT	0.01	MONO	YES
C_TR-T	TEMPORARY RAIL TRACKS	YELLOW	CONT	0.25	MONO	YES
C_TUN-N	PROPOSED TUNNELS	102	DASH	0.70	MONO	YES
C_TUN-X	EXISTING TUNNELS	101	DASH	0.25	MONO	YES
C_WR-N	PROPOSED WATER (PIPES/FITTINGS)	80	BORDER	0.50	MONO	YES
C_WR-X	EXISTING WATER (PIPES/FITTINGS)	81	BORDER	0.25	MONO	YES

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CIVIL						
NAME	DESCRIPTION	COLOUR	LINE TYPE	LINE WEIGHT	PLOT STYLE	PLOT
C_BB	BANK BOTTOM EXISTING	35	HIDDEN	0.25	MONO	YES
C_BT	BANK TOP EXISTING	35	DASHED	0.25	MONO	YES
C_BA	BANK BATTER EXISTING	35	CONT	0.25	MONO	YES
C_BB-N	BANK BOTTOM NEW	41	HIDDEN	0.25	MONO	YES
C_BT-N	BANK TOP NEW	41	DASHED	0.25	MONO	YES
C_BA-N	BANK BATTER NEW	41	CONT	0.25	MONO	YES
C_SHORE	SHORE LINE	CYAN	CONT	0.25	MONO	YES
C_QUAY	QUAY WALL	GREEN	CONT	0.25	MONO	YES
C_FIRE-E	FIRE EQUIPMENT	RED	CONT	0.25	MONO	YES
C_FIRE-P	FIRE SUPPLY PIPING	RED	DASHDOT	0.25	MONO	YES

STRUCTURES						
NAME	DESCRIPTION	COLOUR	LINE TYPE	LINE WEIGHT	PLOT STYLE	PLOT
S_STEEL1	DETAIL1:5/1:10	GREEN	CONT	0.7	MONO	YES
S_STEEL2	PLAN/SECT/ELEV	WHITE	CONT	0.5	MONO	YES
S_STEEL3	DET/PLAN/SECT	YELLOW	DASHED	0.25	MONO	YES
S_STEEL4	DETAIL1:2	CYAN	CONT	1.2	MONO	YES
S_STEEL5	PLAN/SECT/ELEV	RED	CONT	0.18	MONO	YES
S_STEEL6	PLAN/SECT/ELEV	RED	DASHED	0.18	MONO	YES
S_STEEL7	PLAN/SECT/ELEV	RED	CENTRE	0.18	MONO	YES
S_STEEL8	DETAILS	YELLOW	DASHED	0.25	MONO	YES
S_STEEL9	EXISTING	RED	DASH/DOT	0.18	MONO	YES
S_STEEL10	EXISTING	YELLOW	DASH/DOT	0.25	MONO	YES
S_STEEL11	PLAN/SECT/ELEV	YELLOW	CONT	0.25	MONO	YES
S_STEEL12	PLAN/SECT/ELEV	YELLOW	CENTRE	0.18	MONO	YES
S_STEEL13	DETAILS	WHITE	DASHED	0.05	MONO	YES
S_CONC1	FOUND/PLAN	GREEN	CONT	0.7	MONO	YES
S_CONC2	REBAR DETAIL	GREEN	CONT	0.7	MONO	YES
S_CONC3	REBAR FOUND	YELLOW	CONT	0.25	MONO	YES
S_CONC4	REBAR FOUND	YELLOW	DASHED	0.25	MONO	YES
S_CONC5	REBAR FOUND	WHITE	CONT	0.5	MONO	YES
S_CONC6	REBAR FOUND	WHITE	DASHED	0.5	MONO	YES
S_CONC7	REBAR FOUND	RED	CENTRE	0.18	MONO	YES
S_CONC8	REBAR FOUND	BLUE	CONT	1.0	MONO	YES
S_WALLS	WALLS	RED	CONT	0.18	MONO	YES
S_HATCH	PROPOSED HATCH	8	CONT	0.01	MONO	YES
S_HATCH EX	EXISTING HATCH	15	Cont	0.065	MONO	YES
S_SLABLINE	SLAB LINE	MAGENTA	Cont	0.18	MOMO	YES
S_REBAR	REBAR	CYAN	CONT	0.50	MONO	YES

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STRUCTURES						
NAME	DESCRIPTION	COLOUR	LINE TYPE	LINE WEIGHT	PLOT STYLE	PLOT
S_COLUMN	COLUMN PLAN	GREEN	CONT	0.35	MONO	YES
S_CONC SECT	CONCRETE SECTION	CYAN	CONT	0.5	MONO	YES
S_CONC SECT	CONCRETE SECTION HATCH	8	CONT	0.01	MONO	YES
S_REBAR	REBAR SECTION	RED	CONT	0.18	MONO	YES
S_DIMENSIO	DIMENSION	RED	CONT	0.18	MONO	YES
S_BEAM_DS	BEAM DS	BLUE	CONT	0.7	MONO	YES
S_BEAM_US	BEAM US	BLUE	CONT	0.7	MONO	YES

ELECTRICAL, LIGHT AND POWER						
NAME	DESCRIPTION	COLOUR	LINE TYPE	LINE WEIGHT	PLOT STYLE	PLOT
E_CABLE	ELECTRICAL CABLES BELOW SURFACE	222	ELEC-1	0.35	MONO	YES
E_CDUCT	DOWN CONDUCTORS	BLUE	CONT	0.70	MONO	YES
E_COND	CONDUITS	WHITE	DASH	0.25	MONO	YES
E_DBOARD	DISTRIBUTION BOARDS	YELLOW	CONT	0.35	MONO	YES
E_EARTH	EARTH SPIKE	RED	CONT	0.50	MONO	YES
E_EX	EXISTING ELECTRICAL	9	CONT	0.18	SCREEN60	YES
E_LUM	LUMINAIRES	RED	CONT	0.50	MONO	YES
E_PSKIRT	POWER SKIRTING	245	DASH	2.00	MONO	YES
E_REM	REMOVED/OBSELETE ELEC ITEMS	CYAN	DASH	0.25	MONO	YES
E_SW-SOC	LIGHT SWITCHES, SOCKET OUTLETS	WHITE	CONT	0.25	MONO	YES
E_WIRE	ELECTRICAL WIRING	YELLOW	CONT	0.35	MONO	YES
E_ELP	ELECTRICAL LIGHT POLE	RED	CONT	0.25	MONO	YES
E_HLM	HIGH LIGHT MAST	RED	CONT	0.25	MONO	YES

MECHANICAL						
NAME	DESCRIPTION	COLOUR	LINE TYPE	LINE WEIGHT	PLOT STYLE	PLOT
M_AIRCON	AIRCONDITIONERS	MAGENTA	CONT	0.25	MONO	YES
M_DUCT	AIRCON DUCTING	WHITE	CONT	0.25	MONO	YES
M_FANS	EXTRACTOR & CEILING FANS	CYAN	CONT	0.25	MONO	YES

OVERHEAD TRACK EQUIPMENT						
NAME	DESCRIPTION	COLOUR	LINE TYPE	LINE WEIGHT	PLOT STYLE	PLOT
O_STRC-X	EXISTING STRUCTURES	WHITE	CONT	0.25	MONO	YES
O_STRC-N	PROP. STRUCTURES	RED	CONT	0.50	MONO	YES
O_MOFF-X	EXISTING MAKE OFF WIRES	WHITE	CONT	0.70	MONO	YES

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OVERHEAD TRACK EQUIPMENT						
NAME	DESCRIPTION	COLOUR	LINE TYPE	LINE WEIGHT	PLOT STYLE	PLOT
O_MOFF-N	PROP MAKE OFF WIRES	RED	CONT	0.50	MONO	YES
O-EARTH-X	EXISTING EARTH WIRE	WHITE	CONT	0.18	MONO	YES
O-EARTH-N	PROP EARTH WIRE	BLUE	DASH	0.30	MONO	YES
O-TLINE-X	EXISTING TRANS -MISSION LINE	WHITE	CONT	0.50	MONO	YES
O-TLINE-N	PROP TRANS -MISSION LINE	GREEN	CONT	0.35	MONO	YES
O_NEG RET-X	EXISTING NEG. RETURN	WHITE	C-DOT	0.35	MONO	YES
O_NEG RET-N	PROP NEG. RETURN	BLUE	C-DOT	0.50	MONO	YES

SIGNALS						
NAME	DESCRIPTION	COLOUR	LINE TYPE	LINE WEIGHT	PLOT STYLE	PLOT
N_EQ-N	PROPOSED SIGNAL EQUIPMENT	232	CONT	0.50	MONO	YES
N_EQ-X	EXISTING SIGNAL EQUIPMENT	231	CONT	0.25	MONO	YES
N_CAB-X	SIGNAL CABLES EXISTING	201	PHANTOM	0.25	MONO	YES
N_CAB-N	SIGNAL CABLES NEW	201	DIVIDE	0.25	MONO	YES

TELECOMMUNICATIONS						
NAME	DESCRIPTION	COLOUR	LINE TYPE	LINE WEIGHT	PLOT STYLE	PLOT
V_CBL-N	PROPOSED COMMS CABLES	202	PHANTOM	0.70	MONO	YES
V_CBL-X	EXISTING COMMS CABLES	201	PHANTOM	0.25	MONO	YES
V_NAV	NAVIGATION EQUIPMENT	214	CONT	0.25	MONO	YES
V_OPTIC-N	PROPOSED FIBER OPTIC CABLE	192	PHANT2	0.70	MONO	YES
V_OPTIC-X	EXISTING FIBRE OPTIC CABLE	191	PHANT2	0.25	MONO	YES
V_PNT-N	PROPOSED VOICE/DATA POINT	YELLOW	CONT	0.35	MONO	YES
V_PNT-X	EXISTING VOICE/DATA POINT	9	CONT	0.18	MONO	YES
V_REM	REMOVED/OBSOLETE COMMS ITEMS	CYAN	DASH	0.25	MONO	YES

BRIDGE/MARINE						
NAME	DESCRIPTION	COLOUR	LINE TYPE	LINE WEIGHT	PLOT STYLE	PLOT
B_ABUT	ABUTMENT	GREEN	CONT	0.5	MONO	YES
B_BOL	BOLLARD	GREEN	CONT	0.5	MONO	YES
B_BORE	BOREHOLES	YELLOW	CONT	0.25	MONO	YES
B_CENT	CENTRE LINE	RED	CENTRE	0.18	MONO	YES
B_CONC	CONCRETE	GREEN	CONT	0.5	MONO	YES
B_CONTH	CONCRETE THIN	RED	CONT	0.18	MONO	YES
B_CONTHK	CONCRETE THIC	GREEN	CONT	0.5	MONO	YES



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BRIDGE/MARINE						
NAME	DESCRIPTION	COLOUR	LINE TYPE	LINE WEIGHT	PLOT STYLE	PLOT
B_CONMED	CONCRETE MED	YELLOW	CONT	0.25	MONO	YES
B_CONHIDTH	CONC HIDE THIN	RED	DASHED	0.18	MONO	YES
B_CONHIDTH	CONC HIDE THIC	YELLOW	DASHED	0.25	MONO	YES
B_CONCHIDM	CONC HIDE MED	WHITE	DASHED	0.35	MONO	YES
B_CONCHAT	CONC HATCH	RED	CONT	0.18	MONO	YES
B_CONCSHAD	CONC SHADE	11	GREYSCA		GREY	YES
B_CONCSHAD	CONC SHADE	12	GREYSCA		GREY	YES
B_CONCSHAD	CONC SHADE	13	GREYSCA		GREY	YES
B_CONCPIPE	CONC PIPES	WHITE	CONT	0.35	MONO	YES
B_CONTT	CONTOUR INTER	RED	CONT	0.18	MONO	YES
B_CONTMN	CONTOUR MAIN	YELLOW	CONT	0.25	MONO	YES
B_CADAS	CADASTRALS	RED	CONT	0.18	MONO	YES
B_CAISS	CAISSONS	WHITE	CONT	0.35	MONO	YES
B_COORD	COORDINATES	YELLOW	CONT	0.25	MONO	YES
B_DECK	DECK SLAB	WHITE	CONT	0.35	MONO	YES
B_EXIST	EXISTING	RED	CONT	0.18	MONO	YES
B-FEND	FENDERS	WHITE	CONT	0.35	MONO	YES
B_FIREHYD	FIRE HYDRANT	WHITE	CONT	0.35	MONO	YES
B_GRID	GRID LINES	RED	CENTRE	0.18	MONO	YES
B_HAND	HANDRAILING	WHITE	CONT	0.35	MONO	YES
B_KEYPL	KEY PLAN	YELLOW	CONT	0.25	MONO	YES
B_LOGRID	LO GRIDLINES	RED	CONT	0.18	MONO	YES
B_MANH	MANHOLES	WHITE	CONT	0.35	MONO	YES
B_MASCAP	MASS CAPPING	WHITE	CONT	0.35	MONO	YES
B_PAVE	PAVING	WHITE	CONT	0.35	MONO	YES
B_PARA	PARAPETS	WHITE	CONT	0.35	MONO	YES
B_PCBEAM	PC BEAMS	WHITE	CONT	0.35	MONO	YES
B_PIER	PIERS	WHITE	CONT	0.35	MONO	YES
B_REINFTHN	REBAR THIN	RED	CONT	0.18	MONO	YES
B_REINFTHC	REBAR THICK	GREEN	CONT	0.5	MONO	YES
B_REINFMED	REBAR MEDIUM	WHITE	CONT	0.35	MONO	YES
B_REINFHIDT	REBAR HIDE THN	RED	DASHED	0.18	MONO	YES
B_REINFHIDM	REBAR HIDE MED	YELLOW	DASHED	0.25	MONO	YES
B_REINFDIM	REBAR DIMENS	RED	CONT	0.18	MONO	YES
B_STEEL	STEEL WORKS	WHITE	CONT	0.35	MONO	YES
B_SLTDRAIN	SLOT DRAIN	WHITE	CONT	0.35	MONO	YES
B_WGS	WGS84 GRID	RED	CONT	0.18	MONO	YES
B_WWALL	WING WALLS	WHITE	CONT	0.35	MONO	YES
B_RETWALL	RETAIN WALL	WHITE	CONT	0.35	MONO	YES
B_GEN1	GENERAL 0.18	RED	CONT	0.18	MONO	YES
B_GEN2	GENERAL 0.25	YELLOW	CONT	0.25	MONO	YES

*Note: If hardcopy, check electronic system for latest revision*

BRIDGE/MARINE						
NAME	DESCRIPTION	COLOUR	LINE TYPE	LINE WEIGHT	PLOT STYLE	PLOT
B_GEN3	GENERAL 0.35	WHITE	CONT	0.35	MONO	YES
B_GEN4	GENERAL 0.5	GREEN	CONT	0.5	MONO	YES
B_GEN5	GENERAL 0.7	CYAN	CONT	0.7	MONO	YES

WATER (CIVIL)						
NAME	DESCRIPTION	COLOUR	LINE TYPE	LINE WEIGHT	PLOT STYLE	PLOT
W_PROP1	OIL SEP/BLDGS	GREEN	CONT	0.5	MONO	YES
W_PROP2	STRUCTURES	GREEN	DASHED	0.5	MONO	YES
W_PROP3	PIPES	WHITE	CENTRE	0.5	MONO	YES
W_REBAR1	LAYOUT	WHITE	CONT	0.7	MONO	YES
W_REBAR2	REINFORCING	BLUE	CONT	0.7	MONO	YES
W_REBAR3	REINFORCING	BLUE	DASHED	0.7	MONO	YES
W_REBAR4	LAYOUT	WHITE	DASHED	0.7	MONO	YES

PERWAY LAYERS						
NAME	DESCRIPTION	COLOUR	LINE TYPE	LINE WEIGHT	PLOT STYLE	PLOT
P_CAT-G	CATTLE GRID	GREEN	CONT	0.25	MONO	YES
P_GEOT	GEOTECHNICAL DATA	WHITE	CONT	0.25	MONO	YES
P_GR-LAY	LAYERWORKS	35	CONT	0.25	MONO	YES
P_TACHY-T	TACHY TEXT	WHITE	CONT	0.25	MONO	YES
P_TACHY-L	TACHY LEVEL	WHITE	CONT	0.25	MONO	YES
P_TACHY-L	TACHY POINTS	WHITE	CONT	0.25	MONO	YES
P_RD-G	ROAD GRAVEL	41	DASHED	0.25	MONO	YES
P_RD-M	ROAD MAIN	WHITE	CONT	0.25	MONO	YES
P_RD-S	ROAD SIGNS	WHITE	CONT	0.25	MONO	YES
P_TR-DES	TRACK DESIGN	RED	CONT	0.25	MONO	YES
P_TR-CO	TRACK CO-ORDS	WHITE	CONT	0.25	MONO	YES
P_TR-F	TRACK FUTURE	ORANGE	CONT	0.25	MONO	YES
P_TR-C	TRACK CENTRE LINE	WHITE	CENTER	0.25	MONO	YES
P_TR-TO	TRACK TURNOUTS	WHITE	CONT	0.25	MONO	YES
P_TR-UP	TRACK UPLIFT	252	HIDDEN	0.25	MONO	YES
P_TR-S	TRACK SLEEPERS	WHITE	CONT	0.25	MONO	YES
P_TR-R	TRACK RAILS	WHITE	CONT	0.25	MONO	YES
P_TR-EQ	TRACK EQUIPMENT	WHITE	CONT	0.25	MONO	YES
P_TR-SUR	TRACK SURVEYED	WHITE	CONT	0.25	MONO	YES



*Note: If hardcopy, check electronic system for latest revision*

PERWAY LAYERS						
NAME	DESCRIPTION	COLOUR	LINE TYPE	LINE WEIGHT	PLOT STYLE	PLOT
P_TEL-T	CABLE ROUTE TELCOM	201	PHANTOM	0.25	MONO	YES
P_TEL-N	CABLE ROUTE NEOTEL	201	DIVIDE	0.25	MONO	YES
P_TEL-TR	CABLE ROUTE TRANSNET	201	DASHDOT	0.25	MONO	YES
P_SUBS-D	SUBSOIL DRAIN, GEOFABRIC, FINDRAIN	111	CONT	0.25	MONO	YES

## 6.12 Section Lines



Section lines are to be as above. They are to be inserted as a block from the symbols library.

## 6.13 North Point



The North Point above is to be used. It is to be inserted as a block from the symbols library.

*Note: If hardcopy, check electronic system for latest revision*

## 6.14 The Title Block

The Title Block must reflect the following:


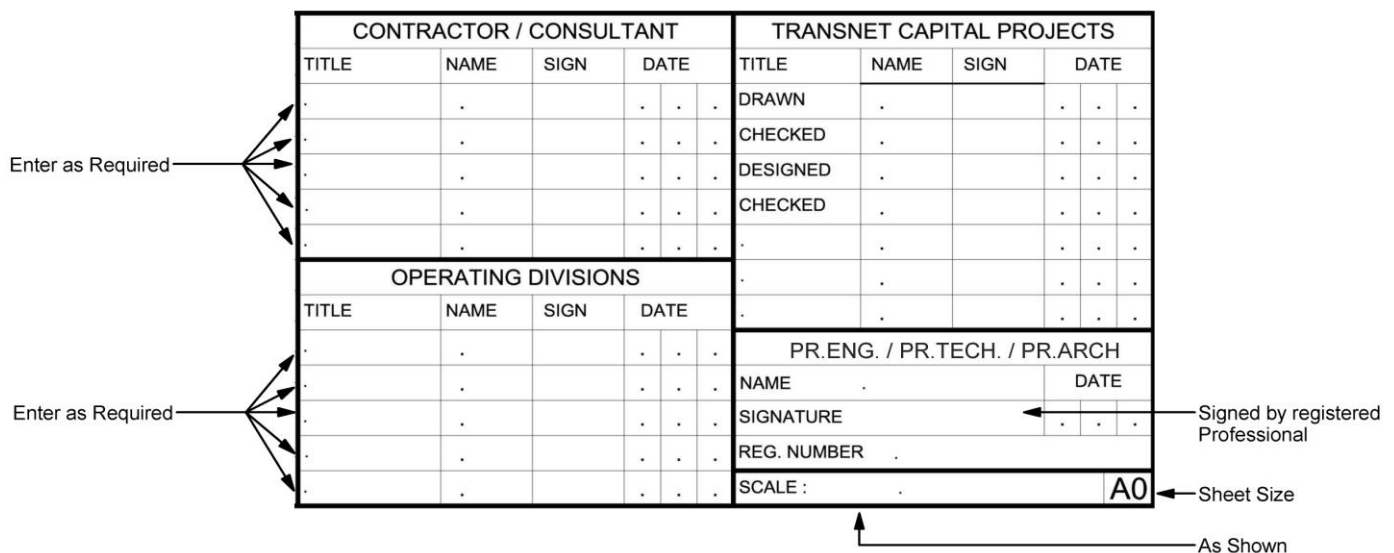
Transnet Capital Projects										
TRANSNET LTD (TRADING AS TRANSNET CAPITAL PROJECTS) : REG. NO. 1990/000900/06										
237 MAHATMA GANDHI ROAD DURBAN										
P.O. BOX 1073, DURBAN										
TEL: 031 361 1696										Relevant Address
FAX: 0866 770815										Relevant telephone and fax numbers
PORT OF DURBAN										Area Title
PIER 2: PORT OF DURBAN										First Line: Project description
CONTAINER TERMINAL										Second Line: Item description
CVR WORKSHOP										Third Line: Item description (Optional)
GROUND FLOOR PLAN										Fourth Line: General drawing description, type of drawing e.g.: Plan, Section, Elevation, General Arrangement etc.
PROJECT NUMBER	OD	FBS	DIS	TYPE	DRAWING NO.	SHEET	REV	ID		
. . . . .	.	. . . . .	.	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	TD	
7 digit sequential number	Operating Division	Facility Breakdown Structure: sometimes referred to as WBS (Work Breakdown Structure)	Discipline	Document Type	Sequential Drawing number	Sheet Number	Revision Number	Originator of the Drawing		
These will be supplied by Document Control										

Figure 6.14.1 The Title Block

*Note: If hardcopy, check electronic system for latest revision*

## 6.15 Fields in the Signature Block

The Fields in the title block must reflect the following:



CONTRACTOR / CONSULTANT				TRANSNET CAPITAL PROJECTS			
TITLE	NAME	SIGN	DATE	TITLE	NAME	SIGN	DATE
.	.	.	.	DRAWN	.	.	.
.	.	.	.	CHECKED	.	.	.
.	.	.	.	DESIGNED	.	.	.
.	.	.	.	CHECKED	.	.	.
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
OPERATING DIVISIONS				PR.ENG. / PR.TECH. / PR.ARCH			
TITLE	NAME	SIGN	DATE	NAME	DATE		
.	.	.	.	SIGNATURE	.		
.	.	.	.	REG. NUMBER	.		
.	.	.	.	SCALE :	A0		

Enter as Required

Enter as Required

Signed by registered Professional

Sheet Size

As Shown

Figure 6.15.1 Fields in the Signature Block

## 6.16 Revised Drawings

All amendments to drawings must be clearly referenced and indicated on the original drawing together with the draughtperson's name and date. The amendment block has provision for a checker's signature, an approval signature and a date.

Drawings and amendments to drawings shall be indexed as follows:

- Internal TCP issue to have No. as ` 1, 2, 3 etc. Description to always read ` Issued internal review'.
- Tender drawings: No. to be alphabetical ie.: OA, OB, OC etc.
- Construction drawings : No. to be alpha-numerical ie.: 01, 02, 03 etc.
- As built drawings: ZZ
- All drawings shall have the revision raised to the next applicable revision reference (as stated above) which shall be inserted in the revision box of the drawing title block before any drafting is started.
- Previously revised drawings to be saved as and re-named to reflect the current revision number. Revisions to be noted from bottom to top and previous revision clouds to be removed from drawings.

[illegible]

## Revision & Hold Clouds

- 

17

*Note: If hardcopy, check electronic system for latest revision*

## 6.17 Reference Drawings

Drawing number as reflected in drawing title.

Drawing description as per general drawing description in title block.

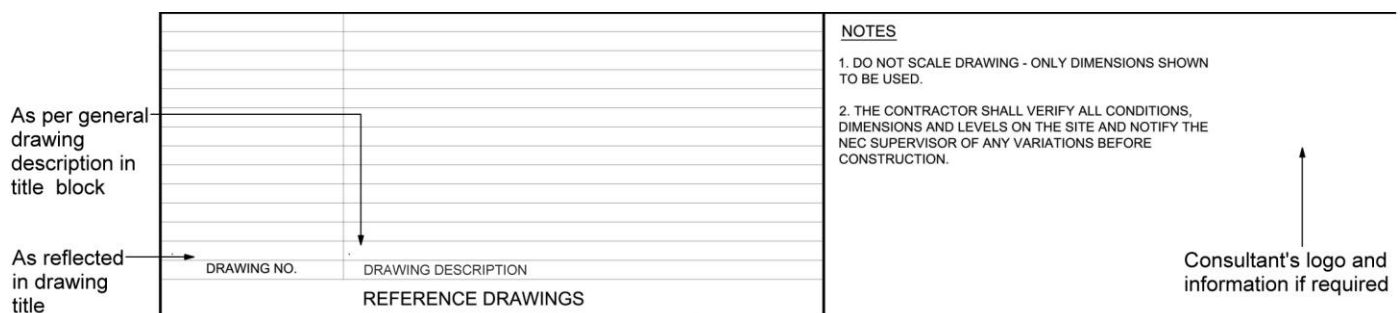


Figure 6.17.1 Reference Drawings

## 6.18 Key Plan usage

Key plans for different areas in the project are provided and should be referenced in. This approach allows any changes to the key plan to appear immediately on all drawings plotted from that point on.

*Note:* The drawing subject area is to be hatched on the current drawing.

## 6.19 Symbols and abbreviations

For Standard symbols Refer to:

- SANS 10143: Building drawing practice
- BBB0041: Preparation of drawings for Transnet Freight Rail
- SANS 1044: Welding Part II: Symbols
- BS 3939: Graphical symbols for electrical power, telecommunications and electronic diagrams
- Z148: Symbols for Signalling

If it is necessary to use symbols which are not standard national symbols, or located on the Transnet template, a new symbol may be created with its description tabled on the applicable drawing.

*Note: If hardcopy, check electronic system for latest revision*

## 6.20 Identification of Views

All views shall be identified in the following format:

- The two main forms of projection shall be used namely third and first angle projection.
- Indicate scale only if scale varies from title block scale
- Reference to a drawing where a section or a detail was taken is required if the view is shown on another drawing.
- Letters shall be used for details. Numbers shall be used for elevations and sections. Do not use letters "I" and "O"

Type	Format	Example
Details	Alpha	DETAIL A
Section	Numeric	SECTION 1
View	Alpha	VIEW X
Items	Alpha	ITEM A – TROLLEY FRAME

# STANDARD OPERATING PROCEDURE

## CONSTRUCTION ENVIRONMENTAL MANAGEMENT

Document number	009-TCC-CLO-SUS-11386
Version number	1.0
Classification	Unclassified
Effective date	01 April 2023
Review date	30 March 2028

[illegible]



## DOCUMENTATION SIGN-OFF SHEET

I, the undersigned hereby approve this procedure.

ROLE	CAPACITY/ FUNCTION	SIGNATURE	DATE
<b>Process Owner:</b>	<b>Senior Specialist: Environmental Compliance and Permitting</b>		
Accepts document for adequacy and practicability. Comments:			
<b>Sponsor:</b>	<b>General Manager: Corporate Sustainability</b>		
Approves document for use. Comments:			

## Table of Contents

1. PURPOSE .....	5
2. APPLICABILITY .....	5
3. REFERENCE DOCUMENTS .....	6
4. DEFINITIONS AND ABBREVIATIONS .....	8
4.1 DEFINITIONS.....	8
4.2 ABBREVIATIONS .....	11
5. ACCOUNTABILITY, RESPONSIBILITY AND AUTHORITY .....	13
5.1 Transnet Procurement Department .....	13
5.2 Transnet Project Manager (PM).....	13
5.3 Transnet Project Environmental Manager (PEM).....	13
5.4 Transnet Construction Manager (CM).....	14
5.5 Transnet Environmental Officer.....	14
5.6 Environmental Control Officer .....	16
5.7 Contractor's Environmental Officer .....	16
5.8 The Contractor .....	19
5.9 Reporting Lines .....	19
6. STANDARD OPERATING PROCEDURE .....	20
6.1 Tender Stage (prior to Contract Award) .....	20
6.2 Construction Stage (prior to Site Access).....	21
6.3 Construction Stage (post Site Access).....	22
6.4 Post Construction.....	25
7. RECORDS .....	25
8. ANNEXURES.....	28
Annexure 8.1 List of Construction Environmental Management Templates, Forms and Guidelines .....	29
Annexure 8.2 Construction Environmental Management File Index .....	31
Annexure 8.3 Construction Environmental Management Process Flow .....	34

## **1. PURPOSE**

- 1.1** The purpose of this Standard Operating Procedure (SOP) is to define how environmental management will be practiced on any construction site under the management of Transnet to ensure that the environment is considered, negative impacts avoided or minimized, and positive impacts are optimized and/or enhanced.
- 1.2** It further defines environmental management responsibilities for key stakeholders involved in the construction management process.
- 1.3** It must be read in conjunction with the Minimum Environmental Management Requirements for Construction and the Project Environmental Specification (PES) relevant to the project.
- 1.4** In this document, unless the context clearly indicates otherwise:
- Words importing any one gender shall include the other gender.
  - The singular shall include the plural and vice versa; and
  - Any reference in this document to legislation or subordinate legislation is to such legislation or subordinate legislation at the date of promulgation thereof and as amended and/or re-enacted from time to time.

## **2. APPLICABILITY**

- 2.1** The SOP applies to any construction site under the management of Transnet SOC Ltd or its Construction Agent.

### 3. REFERENCE DOCUMENTS

Name	Applicable Section
<b>Constitution of South Africa, Act 108 of 1996</b>	Section 24 (a) right to an environment that is not harmful to health or wellbeing Section 24(b) (i) right to have environment protected for current and future generations through legislation and measures that prevents pollution and ecological degradation.
<b>Capital Governance and Assurance Policy</b>	Entire document
<b>Capital Governance and Assurance Framework</b>	Entire document
<b>Capital governance and Assurance Manual</b>	Entire document.
<b>PLP Manual – Execution</b>	Entire document
<b>National Environmental Management Act, 107 of 1998</b>	Section 2 National Environmental Management Principles (4) (viii), (e), (h), (j) and (p).
<b>National Water Act, 36 of 1998</b>	Section 164, Permissible Water Use Section 19
<b>National Environmental Management: Waste Act, 58 of 2008</b>	Part 1 15 (1) (i) and (2) Part 6 26 (10) (a) and (b) Scheduled 3, Defined Wastes Category B: Hazardous Wastes Part 8: Contaminated Land
<b>Environment Conservation Act, 73 of 1989</b>	Section 20
<b>Occupational Health and Safety Act, 85 of 1993</b>	Asbestos Regulations, 2001 Government Notice R155 in Government Gazette 23108 of February 2002

Name	Applicable Section
	General Safety Regulations-Reg. 2 (2) PPE
<b>GNR 326, 7 April 2017 as amended, EIA Regulations</b>	Chapter 15
<b>Integrated Management System – Policy Statement Procedure (TRN-IMS-GRP-PROC-002)</b>	Whole document
<b>Integrated Management System – Competency, Awareness and Training Procedure</b>	Whole document
<b>Integrated Management System<sup>1</sup> – Document, Data and Record Management Procedure (TRN-IMS-GRP-PROC-010)</b>	Whole document
<b>Integrated Management System – Occurrence and Non-Conformance Management Procedure (TRN-IMS-GRP-PROC-013)</b>	Whole document
<b>Transnet Environmental Risk Management Strategy and Framework</b>	2015:42
<b>Environmental Management Systems ISO 14001: 2015</b>	Clause 5, 6, 7, 8, 9 and 10

<sup>1</sup> Management of certain documents, data and records will be in accordance with NEC3 – Engineering and Construction Contract prescripts

## 4. DEFINITIONS AND ABBREVIATIONS

### 4.1 DEFINITIONS

<b>Compliance</b>	The action or fact of complying with legislation or regulations.
<b>Conformance</b>	The action or fact of conforming to this standard and other internal Transnet policies, procedures, guidelines and best practice.
<b>Contractor</b>	The <b>Principal Contractor</b> as engaged by Transnet for infrastructure construction operations, including all sub-contractors appointed by the main contractor of his own volition for the execution of parts of the construction operations; and any other contractor from time to time engaged by Transnet directly in connection with any part of the construction operations which is not a nominated sub-contractor to the Principal Contractor.
<b>Corrective Action</b>	It is generally a reactive process used to address problems after they have occurred. Corrective action may be triggered by a variety of events, e.g. Non-conformance to documented procedures and work instructions, non-conformances raised through internal audits, unacceptable monitoring and measurement results, internal & external SHEQ complaints, etc.
<b>Emergency</b>	Sudden unforeseen event needing immediate or prompt action.
<b>Environment</b>	Surroundings in which the Contractor operates, including air, water, land, natural resources, flora, fauna, humans and their interrelations.



<b>Environmental Aspect</b>	Element of an organization's activities or products or services that interacts or can interact with the environment
<b>Environmental Authorisation (EA)</b>	Environmental Authorisation is the authorisation granted by a competent authority of a listed activity or specified activity in terms of National Environmental Management Act 107 of 1998 (as amended).
<b>Environmental Impact</b>	Change to the environment whether adverse or beneficial, wholly or partially resulting from an organization's environmental aspects
<b>Environmental Management Plan (EMP)</b>	A plan generated by the Contractor describing the relevant roles and responsibilities and how potential environmental risks will be assessed and managed including the monitoring and recording thereof.
<b>Environmental Management Programme (EMPr)</b>	A programme that has been approved by the Competent Authority in terms of NEMA, 107 of 1998 stipulating information on any proposed management, mitigation, protection or remedial measures that will be undertaken to address the environmental impacts that have been identified
<b>Environmental Risk</b>	The product of the likelihood and severity of an unforeseen occurrence/incident/aspect and the impact it would have, if realised, on the environment
<b>Incident/Occurrence</b>	An undesired event occurring at work that results in physical harm to a person or death, or damage to the environment, plant and/or equipment, and/or loss of production.
<b>Method Statement</b>	A document that describes how the Contractor will apply environmental management measures associated with a particular activity during construction.

<b>Standard Environmental Specifications for Construction (SESC)</b>	A set of minimum environmental standards for all Transnet SOC Ltd-managed construction sites.
<b>Non-conformance</b>	An action or situation that does not conform to Transnet's SHEQ standards, procedures or legislative requirement(s) and that can be, or lead to, an unacceptable SHEQ incident.
<b>Non-compliance</b>	Contravention to environmental legislative requirements.
<b>Project Environmental Specification (PES)</b>	Describes standards specific to a particular project. Variations and additions to the MESC are set out in this PES. These would include the EA issued to the project or elements generally drawn from the EA or permits for that project or from specific requirements set by the Transnet Operating Divisions. The PES may also require a more stringent standard to that described in the MESC if required by the EA or a particular industry code to which Transnet subscribes including any environmental constraints at a construction site.
<b>Sub -Contractor</b>	<p>A person or organisation who has a contract with the contractor to</p> <ul style="list-style-type: none"> <li>- Construct or install part of the contractors work.</li> <li>- Provide a service necessary to provide the works; or</li> <li>- Supply plant and materials which the person or organisation has wholly or partly designed specifically for the works.</li> </ul>



## 4.2 ABBREVIATIONS

Acronym	Meaning in Full
<b>CM</b>	Construction Manager
<b>CV</b>	Curriculum Vitae
<b>CEM</b>	Construction Environmental Management
<b>DFFE</b>	Department of Forestry, Fisheries and the Environment
<b>DWS</b>	Department of Water and Sanitation
<b>EA</b>	Environmental Authorisation
<b>ECO</b>	Environmental Control Officer
<b>EO</b>	Environmental Officer
<b>EMPr</b>	Environmental Management Programme
<b>MESC</b>	Minimum Environmental Standards for Construction
<b>EMI</b>	Environmental Management Inspectorate
<b>NCR</b>	Non-conformance Report
<b>NEMA</b>	National Environmental Management Act 107 of 1998 (as amended)
<b>PEM</b>	Project Environmental Manager
<b>PES</b>	Project Environmental Specification
<b>PLP</b>	Project Life-cycle Process

Acronym	Meaning in Full
<b>PM</b>	Project Manager
<b>SAHRA</b>	South African Heritage Resources Agency
<b>SOP</b>	Standard Operating Procedure
<b>SHEQ</b>	Safety, Health, Environment and Quality
<b>Transnet</b>	Transnet SOC Ltd

## **5. ACCOUNTABILITY, RESPONSIBILITY AND AUTHORITY**

### **5.1 Transnet Procurement Department**

5.1.1 Ensures that this SOP (and relevant associated environmental specifications) is included in any construction-related request whether open market, quotation or confinement process.

5.1.2 The Procurement Department shall further ensure that the relevant environmental personnel are consulted during tender review, tender evaluation and contract award.

### **5. Transnet Project Manager (PM)**

5.2.1 Takes overall accountability for the project including ensuring that this SOP is implemented by all relevant stakeholders.

5.2.2 The specific tasks during construction will include:

- Appointment of the Transnet PEM;
- Certifying site access to the Contractor;
- Giving instructions to the Contractor on recommendation from the Transnet PEM/EO (e.g. defects, non-conformances etc.); and
- Certifying site closure to the Contractor.

### **5.3 Transnet Project Environmental Manager (PEM)**

5.3.1 The Transnet PEM will be responsible for ensuring that this SOP and associated specifications or requirements are complied with during construction. The Transnet PEM will report functionally to the relevant PM.

5.3.2 The specific tasks during the construction stage will include:

- Appointment of Transnet EO;
- Liaison with the relevant environmental competent authorities;
- Preparation of the PES;

- Tender evaluation, development of environmental criteria and adjudication thereof;
- Approve environmental monitoring protocols/checklists to be used by the Transnet EO;
- Review all reports from the Transnet EO, including sign-off on Monthly Inspection Reports;
- Conduct any environmental incident investigations; and
- Coordinate and/or facilitate any environmental monitoring programmes e.g. EMI Inspections, ECO Audits, Transnet Environmental Assurance Audits etc.

5.3.3 The Transnet PEM may delegate part or all of these responsibilities to the Transnet EO, based on the merits of the particular project at hand.

#### **5.4 Transnet Construction Manager (CM)**

5.4.1 The Transnet Construction Manager (CM) has overall responsibility for environmental management on site and reports to the Transnet PM. The Transnet CM is supported by the Transnet EO.

5.4.2 The specific tasks during the construction stage will include:

- Reviewing the monthly reports compiled by the Transnet EO;
- Approving method statements prepared by the Contractor;
- Communicating directly with the Contractor on environmental issues observed on-site; and
- Escalating any relevant environmental matters to the Transnet PM.

#### **5.5 Transnet Environmental Officer**

5.5.1 The Transnet EO reports functionally to the Transnet CM and Transnet PEM and is responsible for conducting the tasks required to ensure that this SOP is implemented on the construction site.

5.5.2 The Transnet EO will conduct the following tasks:

- Environmental Induction of Contractor's staff;
- Generate an inspection checklist prior to the project commencement for sign off by the Transnet PEM;
- Review and approve site layout plan including any subsequent revisions thereof;
- Conduct monthly observation & inspections of all work places based on the approved inspection checklist;
- Monitor the Contractor's compliance with this SOP and any other environmental requirements relevant to the site;
- Develop an Audit Finding and Close out Register that documents all audit findings, close out actions and the time frame allowed for in order to close the finding/s;
- Ensure that all environmental monitoring programmes (sampling, measuring, recording etc. when specified) are carried out according to protocols and schedules;
- Measurement of completed work (e.g. areas top soiled, re-vegetated, stabilised etc.);
- Attendance at scheduled SHE meetings, as and when required, and project coordination meetings;
- Ensure that site documentation (permits, licenses, EA, EMPr, SOP-CEM, method statements, audit reports, waste disposal slips etc.) related to environmental management is maintained on the relevant Document Control System;
- Inspect and report on environmental incidents and check corrective action;
- Keep a photographic record of all environmental incidents;
- Environmental incident management as required by Transnet policies and procedures;
- Implementation of environmental-related actions arising out of the minutes from scheduled meetings;
- Management of complaints register;
- Review and Sign off Method Statements prepared by Contractor;

- Audit conformance to Method Statements;
- Collate information received, including monitoring results into a monthly report that is supported with photographic records to the Transnet CM and Transnet PEM showing progress against targets; and
- Report environmental performance of the project on a monthly basis through relevant governance channels.

## **5.6 Environmental Control Officer**

5.6.1 The Environmental Control Officer is an independent person legally appointed to monitor compliance of construction related activities with the conditions of the Environmental Authorisation. The ECO fulfils an autonomous role and submits reports to the Competent Authority at timeframes specified in the Environmental Authorisation.

5.6.2 The Environmental Control Officer will conduct the following tasks:

- Monitors compliance to the conditions of the EA, Environmental Management Programme (EMPr) and can include permits and licences applicable to a project;
- Attends project meetings as and when required;
- Conducts audits at a frequency stipulated on the EA/EMPr; and
- Compiles audit reports and submits them to relevant authorities.

## **5.7 Contractor's Environmental Officer**

5.7.1 The Contractor's Environmental Officer (EO) must ensure implementation of the requirements of this SOP on site.

5.7.2 The Contractor's EO will liaise with the Transnet EO on site. It will be the responsibility of the Contractor's EO to ensure that all work is conducted according to the approved Method Statements and that the Contractor team's roles and responsibilities as set out in this document are fulfilled.

5.7.3 The Contractor EO's tasks will include:

- Developing an appropriate environmental file for approval by the Transnet EO prior to site access, including but not necessarily limited to (the environmental file must always be available and up to date on the construction site):
  - All environmental documents provided by Transnet in the tender e.g. policies, SOPs, standards, environmental approvals;
  - Contractors commitments to comply with this SOP and associated documents as signed during tender;
  - The Contractor's EMP;
  - His/her CV;
  - An organogram indicating reporting lines of all Contractor's staff (with names included);
  - Contact Information for: the overall responsible person acting on behalf of the Contractor to execute the construction works; Contractor's CM; Contractor's EO; all relevant emergency personnel;
  - A list of the Contractor's plant and equipment indicating a description of the plant/equipment, its fuel capacity, any hazardous components (oils, greases etc.), individual service/maintenance cycles and noise levels;
  - A list of hazardous substances to be used during construction indicating: official substance name from Material Safety Data Sheet (MSDS); quantity on site; storage method; transport method to site; period to be used on site (all substances listed must have an MSDS on site in the environmental file);
  - Site Layout Plan indicating but not necessarily limited to, access roads, site offices, material laydown areas, stockpile areas and parking areas, waste and effluent storage and handling facilities, entire construction footprint, no-go-areas, sewage and sanitary facilities. The plan must be appropriately drawn on a computer and must be clearly visible and properly scaled;
  - A site establishment method statement (for more details on what method statements should entail the Contractor must refer to the Minimum Requirements for Construction Environmental Management)

- Conducting an activity-based environmental risk assessment based on the Contractor's scope of work;
- Agreeing on an appropriate inspection schedule with the Transnet EO (either daily or weekly);
- Ensuring that all required Contractor staff attends the environmental induction to be given by the Transnet EO (any Contractor's staff, sub-contractors or visitors to site must subsequently be inducted by the Contractor's EO);
- Inspection of the work area(s) as per schedule or authorised through written instruction by Transnet EO;
- Preparing activity-based Method Statements that indicate how environmental risks will be managed on site OR ensuring that the necessary environmental information is included in the Contractor's method statements (all method statements must be maintained in the Contractor's Environmental File);
- Identify local, provincial and national environmental legislation that applies to the Contractor's activities;
- Conduct ongoing Environmental Awareness Training of the Contractor's site personnel;
- Reporting, investigating and recording of any environmental incidents caused by the Contractor or due to the Contractor's activities, including their sub-contractors and visitors;
- Close out of environmental incidents;
- Attendance at all SHE meetings and induction programmes, and toolbox talks where required
- Monitor Waste Management;
- Monitor Water Management;
- Monitor Energy Management;
- Ensure that environmental signage and barriers are correctly placed;
- Taking required corrective action within specified time frame and close out of non-conformances; and
- Maintain site documentation related to environmental management on site.



5.7.4 The Contractor's EO will be expected to submit reports to the Transnet EO on a daily/weekly basis.

## **5.8 The Contractor**

5.8.1 The Contractor shall comply with the requirements of this SOP and abide by the Transnet PM's instructions regarding the implementation of this SOP.

5.8.2 The Contractor must confirm that he will conform to the requirements of this SOP and any other documents provided to him by Transnet during tender.

5.8.3 The Contractor must recommend a suitably qualified, competent person to fulfill the role of the Contractor's EO at tender and if accepted by Transnet this person must be appointed when the Contract is awarded for the duration of construction. Should this person be replaced for whatever reason, the Contractor shall ensure that a person of similar qualification and competency is appointed in his/her place before the previous incumbent vacates his/her position.

5.8.4 The Contractor must obtain any relevant environmental approvals required by his activities that have not been obtained by Transnet e.g. permits for the destruction of protected plant species; grave relocation permits etc.

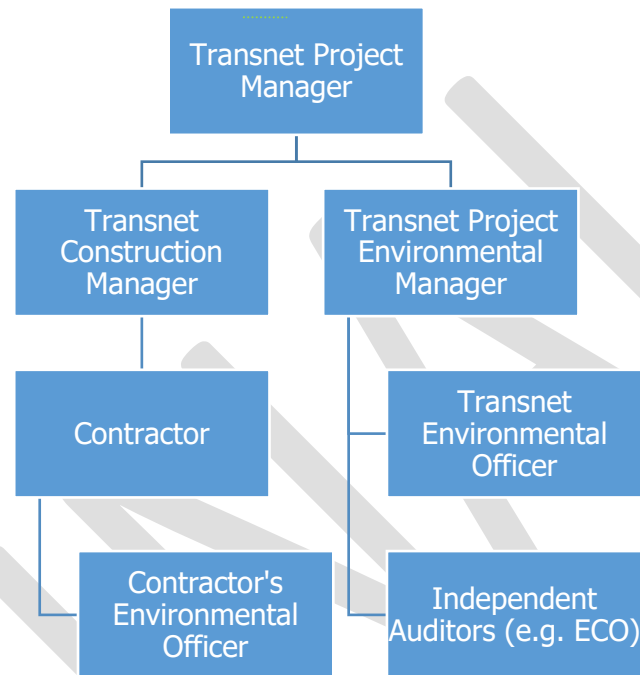
5.8.5 The Contractor shall have overall accountability for environmental compliance on site and will be held liable for any non-compliance with environmental statutes or non-conformances with this SOP due to his negligence.

## **5.9 Reporting Lines**

5.9.1 The organisational structure identifies and defines the responsibilities and authority of the various entities involved in the project. All instructions and official communications regarding environmental matters will follow the organisational structure shown in Figure 1.

5.9.2 All instructions that relate to the SOP will still be given to the Contractor via the Transnet PM. In an emergency situation, however, the Transnet EO may give an

instruction directly to the Contractor. Environmental Management of the site will be an item on the agenda of the monthly site meetings, and the Transnet EO will attend these meetings on request by the contractor. If at any time the Transnet PM is uncertain in any way with respect to an environmentally related issue or specification in the SOP, he will consult with the Transnet PEM and EO.



**Figure 1: Typical Transnet Organogram for Construction Environmental Management<sup>2</sup>**

## 6. STANDARD OPERATING PROCEDURE

### 6.1 Tender Stage (prior to Contract Award)

- The Transnet PM appoints or assign a Project Environmental Manager<sup>3</sup>.
- The Transnet PEM appoints or assign an EO.
- The Transnet EO requests the draft tender from the Transnet Procurement Department

<sup>2</sup> Structure dependent on OD own structure and organizational operating model

<sup>3</sup> Project complexity will determine the final environmental management structure on the project.

- Transnet Procurement routes the draft tender to the Transnet EO
- The Transnet EO ensures the tender includes all relevant environmental documents and signs the routing slip.
- The Transnet Procurement Department issues the tender to prospective Contractor(s).
- The Contractor submits his bid which MUST include: a commitment to conform to this SOP signed by the duly delegated person; recommendation of a suitably qualified, competent person to fulfill the role of the Contractor's EO; Environmental Policy; and EMP
- After submission the Transnet Procurement Department will invite the Transnet EO to evaluate tender submissions (environmental section);
- The Transnet EO evaluates the prospective Contractor's environmental submission.
- The Contract is awarded to the successful bidder.

## **6.2 Construction Stage (prior to Site Access)**

- The Contractor appoints the Contractor's Environmental Officer (EO) accepted by Transnet SOC Ltd.
- The Contractor provides his EO with all documents submitted during tender, including but not necessarily limited to:
  - All environmental documents provided by Transnet in the tender e.g. policies, SOPs, standards, environmental approvals etc;
  - commitment to conform to this SOP; and
  - The EMP.
- The Contractor's EO conducts an activity-based environmental risk assessment;
- The Contractor's EO develops an appropriate environmental file for approval by the Transnet EO, including but not necessarily limited to all the documents specified in Section 5.7 above (the environmental file must always be available and up to date on the construction site);

- The Contractor's EO submits the environmental file for acceptance to the Transnet EO;
- Once accepted, the Transnet EO recommends that site access be granted to the Transnet PM; and
- The Transnet PM issues the Contractor with a Site Access Certificate

### 6.3 Construction Stage (post Site Access)

- The Transnet EO inducts all Contractor's staff on the environmental requirements of the site;
- The Transnet EO has an inception meeting with the Contractor's EO on site where the following is agreed:
  - The contents of the contractor's environmental file (in addition to what was approved prior to granting site access). This will include but not necessarily be limited to: a list of interested and affected parties that may be impacted by construction e.g. surrounding landowners, nearby communities etc.; energy consumption information; water use information; environmental induction and awareness information; activity-based environmental method statements; complaints records; record of external communications; environmental incident reports; minutes of contractors environmental meetings.
  - The composition of the Project Environmental Specification (PES) and how it will be implemented. This will include but may not necessarily be limited to: Environmental Approvals (e.g. Environmental Authorisations, Water Use Licences, Waste Management Licences, Atmospheric Emissions Licences etc.); Environmental Management Programmes/Plans approved by external parties/authorities; and any third party auditors/monitoring specialists (e.g. Environmental Control Officers; Independent Auditors; Transnet Environmental Assurance Specialists; Water Quality Monitoring experts etc.) that have a bearing on the contractor's scope of work.
  - The frequency of inspections to be conducted by the Contractor's EO (e.g. daily, weekly etc.)

- The frequency of inspections to be conducted by the Transnet EO (e.g. daily, weekly and/or monthly). Notwithstanding that the frequency of Transnet EO inspections will be agreed, the Contractor may never refuse the Transnet EO or Transnet PEM access to site
  - The format used and elements to be checked during Contractor's inspections
  - Reporting frequency and requirements
  - The process to be followed in handling Environmental Occurrences and – Non-conformances
- **Note:** All the aforementioned agreements will be formalized in the form of minutes which the Transnet - and Contractor's EO must sign and must subsequently be approved by the Transnet Project Environmental Manager.
  - The Transnet EO reviews the Contractor's activity-based environmental risk assessment and instructs the Contractor's EO to submit activity-based method statements for construction activities that may pose an environmental risk (for more details on what method statements should entail the Contractor must refer to the Minimum Environmental Requirements for Construction). Only once a method statement has been approved by the Transnet EO and Transnet CM and ECO (where relevant) may the Contractor execute the relevant activity.
  - The Contractor's EO submits the method statements to the Transnet EO for approval (these must also be approved by the Transnet CM);
  - The Transnet EO compiles a site audit checklist (covering all environmental compliance and conformance requirements) for approval by the Transnet Project Environmental Manager
  - Whilst the Contractor executes the work in terms of the requirements of the Contract, the Contractor's EO and Transnet EO execute their monitoring functions as per this SOP and other monitoring stakeholders/auditors as per the PES.
  - The Transnet EO shall submit monthly reports to the Transnet PEM and PM indicating the following:

- Date of the inspection(s);
- Details and expertise of the Transnet EO;
- Scope and purpose for which the report was prepared;
- Description of the methodology used during the inspection and report compilation;
- Compliance and/or conformance status of all relevant/individual elements as per the inspection checklist approved by the Project Environmental Manager culminating in an overall compliance/conformance percentage for the project;
- Assumptions;
- Description of consultation processes undertaken during the inspection(s) with a summary and associated records of such consultations;
- Environmental incidents and non-conformances;
- Photos of pertinent construction and environmental matters that occurred on site;
- Water abstracted/withdrawn during the month (in kiloliters) as well as an indication of the source;
- Water recycled and/or reused during the month (in kiloliters);
- Waste water discharged (in kiloliters);
- Waste (both general and hazardous) disposed (in tonnages) with an indication of waste type;
- Waste recycled (in tonnages);
- Alien invasive species eradicated (in hectares);
- Number of listed species safely relocated;
- Environmental Fines, Non-Compliances or Directives issues by authorities;
- Any NEMA Section 30 or NWA Section 19 incidents;
- Environmental Grievances;
- Rehabilitated Land (in hectares);
- Number of graves and/or heritage artifacts moved;
- Energy consumption for the project [Electricity(kWh); Gas (GJ); Oil(l); Diesel(l); Petrol(l); LPG(GJ)];

- Status of previous findings and/or observations; and
- Recommendations for improvement.

## 6.4 Post Construction

- The Contractor's EO submits a rehabilitation and site closure method statement for approval by the Transnet EO and Transnet CM.
- Once approved, the Contractor implements the rehabilitation method statement accordingly.
- The Contractor's EO submits a site close-out report for acceptance by the Transnet EO and CM.
- Post rehabilitation, the Transnet EO conducts a site closure inspection to ensure all requirements of the rehabilitation method statement have been met.
- Once rehabilitation has been accepted by the Transnet EO, the Contractor's EO sends the Transnet EO a copy of the entire environmental file (original to be handed over to Transnet as per document handover requirements of the Contract).
- On receipt of the environmental file, the Transnet EO recommends that a site closure certificate can be issued to the Transnet PM.
- The Transnet PM issues the Contractor with a Site Closure Certificate.

## 7. RECORDS

7.1 The responsibility for maintaining all records required by this SOP shall rest with the Contractor's EO; Transnet EO and Transnet PEM as specified below:

Record	Maintained By
1. PEM Appointment Letter	PEM
2. Transnet EO Appointment Letter	PEM; Transnet EO
3. Signed Tender Routing Slip	PEM; Transnet EO

Record	Maintained By
4. Contractor's Confirmation to conform to this CEM SOP	Transnet EO; Contractor's EO
5. Recommendation of Contractor's EO	Transnet EO
6. Contractor's Environmental Policy	Transnet EO; Contractor's EO
7. Contractor's Environmental Management Plan	Transnet EO; Contractor's EO
8. Tender Evaluation Records from Transnet EO	PEM; Transnet EO
9. Contract	PEM; Transnet EO
10. Contractor EO's Appointment Letter and CV	Transnet EO
11. Activity-Based Environmental Risk Assessment	Transnet EO; Contractor's EO
12. Contractor's Organogram	Transnet EO; Contractor's EO
13. Contractor's Contact Information	Transnet EO; Contractor's EO
14. List of Contractor's Plant and Equipment	Contractor's EO
15. List of Hazardous Substances used by Contractor	Contractor's EO
16. Material Safety Data Sheets	Contractor's EO
17. Site Layout Plan	Transnet EO; Contractor's EO
18. Site Establishment Method Statement	Transnet EO; Contractor's EO
19. Minutes of Transnet EO – Contractor's EO Inception Meeting	PEM; Transnet EO; Contractor's EO



Record	Maintained By
20. Environmental Induction Attendance Register (including material used during induction)	Transnet EO; Contractor's EO
21. Activity-based Method Statements	Transnet EO; Contractor's EO
22. Contractor's Inspection Reports	Transnet EO; Contractor's EO
23. Transnet EO Inspection Reports	PEM; Transnet EO
24. List of Local, Provincial and National Environmental legislation applicable to the site	Contractor's EO
25. Environmental Awareness Attendance Registers (including material used)	Contractor's EO
26. Environmental Incident Reports	Transnet EO; Contractor's EO
27. Minutes of SHE Meetings	Transnet EO; Contractor's EO
28. Waste Records	Transnet EO; Contractor's EO
29. Water Records	Transnet EO; Contractor's EO
30. Energy Records	Transnet EO; Contractor's EO
31. Non-Conformance Records	Transnet EO; Contractor's EO
32. Approval of Contractor's Environmental File	Transnet EO
33. Site Access Certificate	Transnet EO
34. Approved Transnet EO Checklist	PEM
35. Transnet Monthly EO Reports	PEM; Transnet EO
36. Rehabilitation Method Statement	Transnet EO; Contractor's EO
37. Contractor's Site Close-Out Report	Transnet EO; Contractor's EO

Record	Maintained By
38. Transnet EO Site Closure Report	Transnet EO
39. Contractor's Environmental File Handover Transmittal	Transnet EO; Contractor's EO
40. Site Closure Certificate	Transnet EO

## 8. ANNEXURES

### ***8.1 List of Construction Environmental Management Templates, Forms and Guidelines***

### ***8.2 009-TCC-CLO-SUS-TMP-11386.22 - Construction Environmental Management File Index***

### ***8.3 009-TCC-CLO-SUS-TMP-11386.23 - Construction Environmental Management Process Flow***

## Annexure 8.1 List of Construction Environmental Management Templates, Forms and Guidelines

No	Item Description	Document No
1.	Construction Environmental Management File Index	009-TCC-CLO-SUS-TMP-11386.1
2.	Project Environmental Specification (PES)	009-TCC-CLO-SUS-TMP-11386.2
3.	Declaration of Understanding (Signed)	009-TCC-CLO-SUS-TMP-11386.3
4.	Contractor's Information	009-TCC-CLO-SUS-TMP-11386.4
5.	Appointment of Contractors EO and Declaration of Understanding (Including CV and Job Profile)	009-TCC-CLO-SUS-TMP-11386.5
6.	Schedule of Contractor's Construction Plant and Equipment	009-TCC-CLO-SUS-TMP-11386.6
7.	Hazardous Substances Register	009-TCC-CLO-SUS-TMP-11386.7
8.	Emergency Contacts Register	009-TCC-CLO-SUS-TMP-11386.8
9.	Energy Consumption Register	009-TCC-CLO-SUS-TMP-11386.9
10.	Water Usage Register	009-TCC-CLO-SUS-TMP-11386.10
11.	Project Start-Up Checklist	009-TCC-CLO-SUS-TMP-11386.11
12.	Site Access Certificate	009-TCC-CLO-SUS-TMP-11386.12
13.	Method Statement Register	009-TCC-CLO-SUS-TMP-11386.13
14.	Method Statements	009-TCC-CLO-SUS-TMP-11386.14
15.	Waste Disposal Register	009-TCC-CLO-SUS-TMP-11386.15
16.	Daily Inspection Checklist	009-TCC-CLO-SUS-TMP-11386.16
17.	Weekly Inspection Checklist	009-TCC-CLO-SUS-TMP-11386.17
18.	Monthly Inspection Checklist	009-TCC-CLO-SUS-TMP-11386.18

No	Item Description	Document No
19.	Public Complaints Register	009-TCC-CLO-SUS-TMP-11386.19
20.	Application for Exemption	009-TCC-CLO-SUS-TMP-11386.20
21.	Site Closure Certificate	009-TCC-CLO-SUS-TMP-11386.21
22.	Contractor's Environmental Management File Handover	009-TCC-CLO-SUS-TMP-11386.22
23.	Basic Environmental Rules for Visitors	009-TCC-CLO-SUS-GDL-11386.23
24.	Basic Environmental Rules for Contractors	009-TCC-CLO-SUS-GDL-11386.24
25.	Basic Site Procedure	009-TCC-CLO-SUS-GDL-11386.25

## Annexure 8.2 Construction Environmental Management File Index

No	Item Description	Document No
<b>1</b>	Transnet Integrated management System (TIMS) Policy Statement	-
<b>2.1</b>	Standard Operating Procedure (SOP) - Construction Environmental Management (CEM)	009-TCC-CLO-SUS-11386
<b>2.2</b>	Standard Operating Procedure (SOP) - Minimum Environmental Management Specifications (MEMS)	009-TCC-CLO_SUS-11385
<b>3</b>	Project Environmental Specification (PES)	009-TCC-CLO-SUS-TMP-11386.2
<b>4</b>	Declaration of Understanding (Signed)	009-TCC-CLO-SUS-TMP-11386.3
<b>5.1</b>	Contractor's Information	009-TCC-CLO-SUS-TMP-11386.4
<b>5.2</b>	Contractor's Environmental Policy	-
<b>5.3</b>	Contractor's Organogram	-
<b>5.4</b>	Contractor's Environmental Management Plan	-
<b>5.5</b>	Appointment of Contractors EO and Declaration of Understanding (Including CV and Job Profile)	009-TCC-CLO-SUS-TMP-11386.5
<b>6</b>	Schedule of Contractor's Construction Plant and Equipment	009-TCC-CLO-SUS-TMP-11386.6
<b>7</b>	Hazardous Substances Register	009-TCC-CLO-SUS-TMP-11386.7
<b>8</b>	Emergency Contacts Register	009-TCC-CLO-SUS-TMP-11386.8
<b>9</b>	Energy Consumption Register	009-TCC-CLO-SUS-TMP-11386.9
<b>10</b>	Water Usage Register	009-TCC-CLO-SUS-TMP-11386.10
<b>11</b>	Training Attendance Register	TIMS Procedure
<b>12</b>	Project Start-Up Checklist	009-TCC-CLO-SUS-TMP-11386.11
<b>13</b>	Site Access Certificate	009-TCC-CLO-SUS-TMP-11386.12
<b>14</b>	Method Statement Register	009-TCC-CLO-SUS-TMP-11386.13

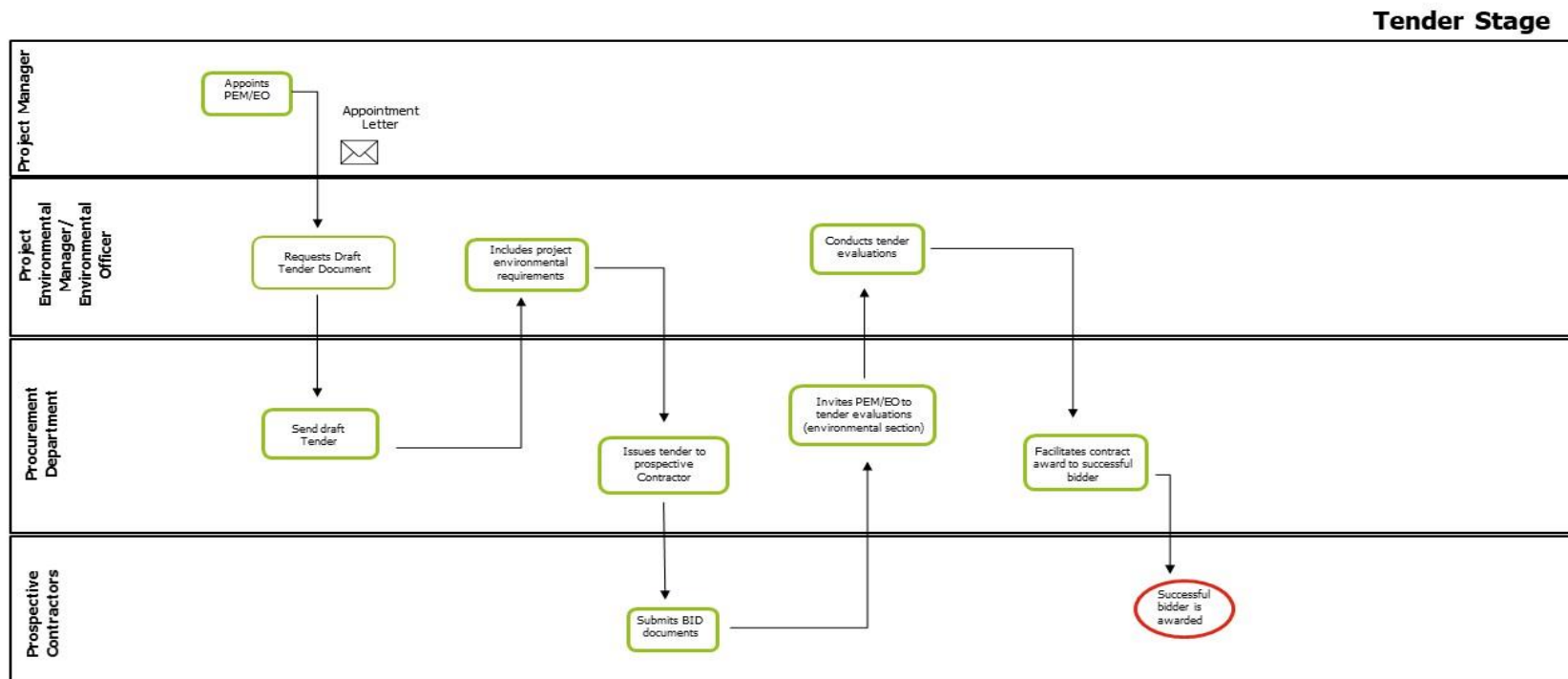
No	Item Description	Document No
15	Method Statements	009-TCC-CLO-SUS-TMP-11386.14
16	Waste Disposal Register	009-TCC-CLO-SUS-TMP-11386.15
17.1	Daily Inspection Checklist	009-TCC-CLO-SUS-TMP-11386.16
17.2	Weekly Inspection Checklist	009-TCC-CLO-SUS-TMP-11386.17
17.3	Monthly Inspection Checklist	009-TCC-CLO-SUS-TMP-11386.18
17.4	Environmental Inspection Findings Close-out Register	TIMS Procedure
18	Public Complaints Register	009-TCC-CLO-SUS-TMP-11386.19
19	Occurrence Register	TIMS Procedure
20	Transnet Occurrence Notification Report	TIMS Procedure
21.1	Environmental Occurrence Technical Form	TIMS Procedure
21.2	On-site Investigation Form – Incident Commander Report	TIMS Procedure
21.3	Investigation Form Report for Level 3 & 4 Occurrences	TIMS Procedure
21.4	Incident Commander Appointment Letter	TIMS Procedure
22	Non-Conformance Register	TIMS Procedure
23	Non-Conformance Report Form	TIMS Procedure
24	Non-Compliance Stop Certificate	TIMS Procedure
25	Application for Exemption	009-TCC-CLO-SUS-TMP-11386.20
26.1	Site Closure Inspection Form	TIMS Procedure
26.2	Site Closure Certificate	009-TCC-CLO-SUS-TMP-11386.21
26	Contractor's Environmental Management File Handover	009-TCC-CLO-SUS-TMP-11386.22



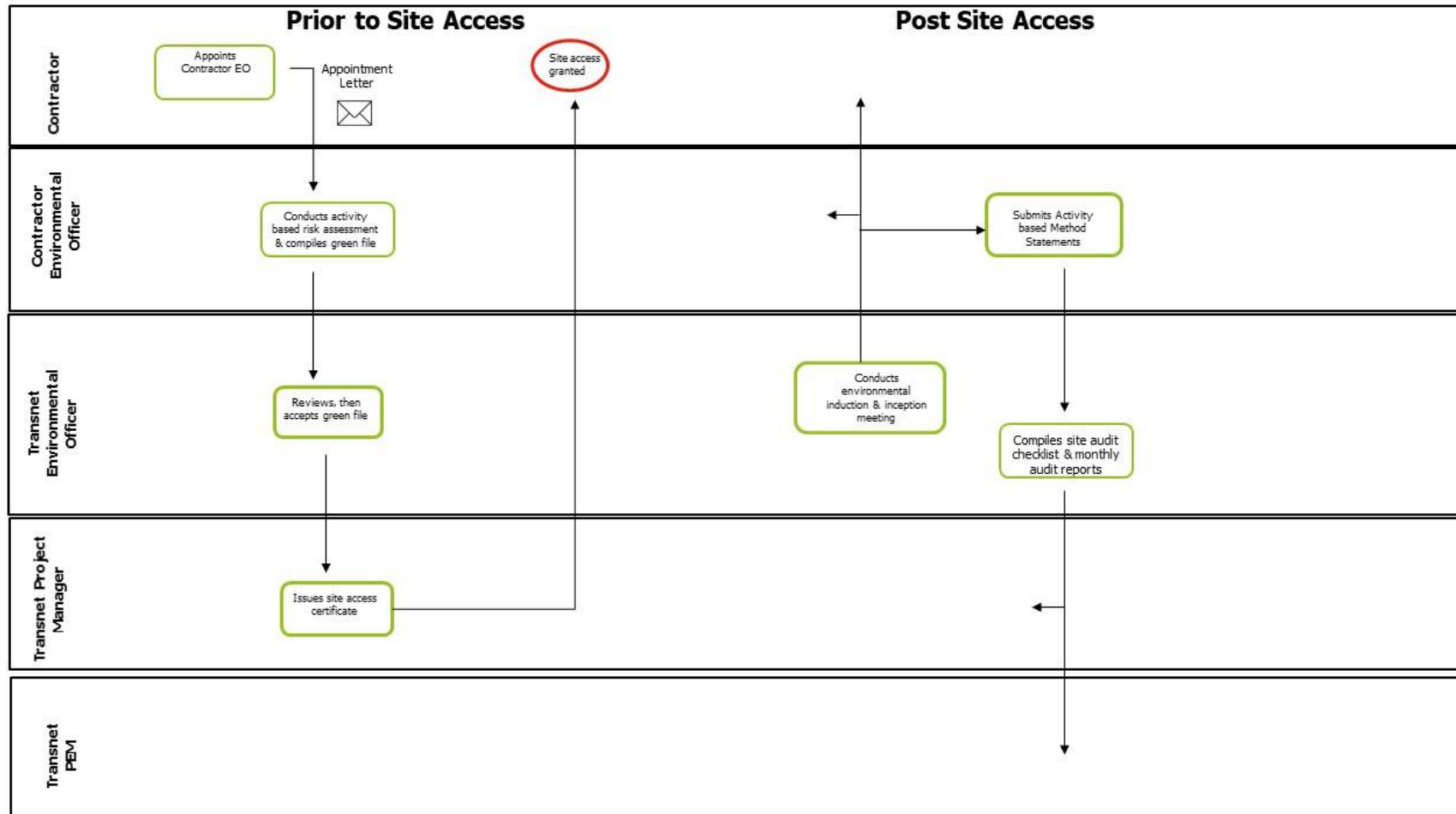
No	Item Description	Document No
27.1	Basic Environmental Rules for Visitors	009-TCC-CLO-SUS-GDL-11386.23
27.2	Basic Environmental Rules for Contractors	009-TCC-CLO-SUS-GDL-11386.24
27.3	Basic Site Procedure	009-TCC-CLO-SUS-GDL-11386.25

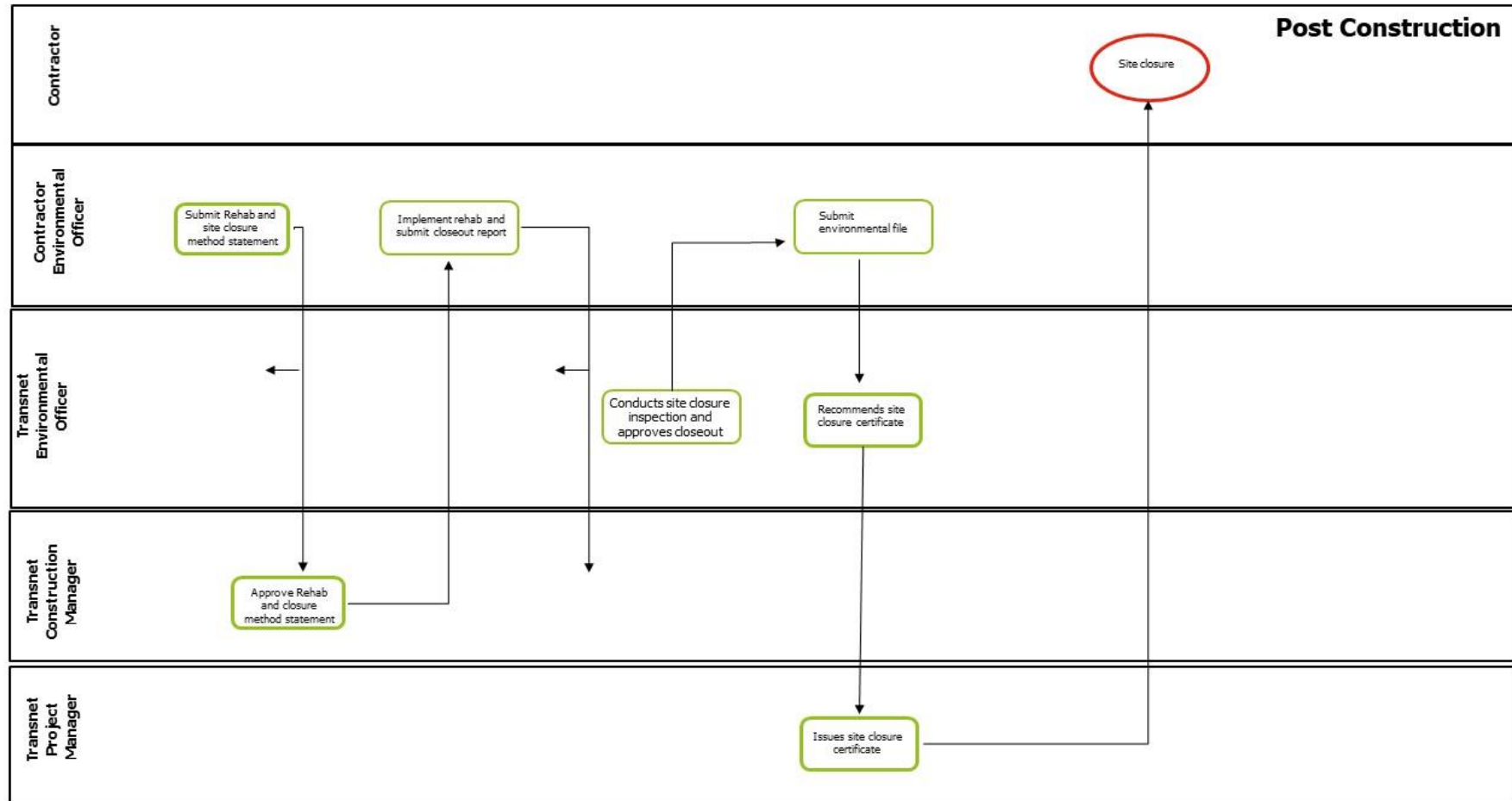
FINAL

## Annexure 8.3 Construction Environmental Management Process Flow









# **MINIMUM ENVIRONMENTAL STANDARDS FOR CONSTRUCTION**

Document number	009-TCC-CLO-SUS-11385
Version number	1.0
Classification	Unclassified
Effective date	01 April2023
Review date	31 March 2025

## SUMMARY VERSION CONTROL

VERSION NO.	NATURE OF AMENDMENT	PAGE NO.	DATE REVISED
1.0	New Document		

Note: Only latest amendments and/or additions are reflected in italics in the body of the document.

## DOCUMENTATION SIGN-OFF SHEET

I, the undersigned hereby approve this procedure.

ROLE	CAPACITY/ FUNCTION	SIGNATURE	DATE
<b>Process Owner:</b>	<b>Senior Specialist: Environmental Risk and Compliance</b>		
Accepts document for adequacy and practicability. Comments:			
<b>Approval Committee:</b>	<b>GM: Corporate Sustainability</b>		
Approves document for use. Comments:			

## **TABLE OF CONTENTS**

1. PURPOSE .....	6
2. APPLICABILITY .....	6
3. REFERENCE DOCUMENTS .....	6
4. DEFINITIONS AND ABBREVIATIONS .....	7
4.1 Definitions .....	7
4.2 Abbreviations.....	11
5. MINIMUM ENVIRONMENTAL REQUIREMENTS FOR CONSTRUCTION.....	14
5.1 Tender Documents .....	14
5.2 Project Environmental Specification (PES) .....	14
5.3 Contractor's Environmental Policy .....	14
5.4 Contractor's Environmental Management Plan (EMP) .....	15
5.5 Contractor's Environmental Officer (EO) .....	17
5.6 Management of Sub-Contractors.....	17
5.7 Pre Site Access Environmental Governance.....	17
5.8 Safety Data Sheets.....	19
5.9 Environmental Induction.....	19
5.10 Environmental Method Statements.....	20
5.11 Environmental Occurrences (Incidents).....	21
5.12 Environmental Non-Conformances (Defects) .....	22
5.13 Community Grievances (Public Complaints) .....	23
5.14 Environmental Inspections and Audits.....	23
5.15 Contractor's Environmental Performance .....	25
5.16 Site Planning and Establishment .....	25
5.16.1 Site Layout Plan.....	25
5.16.2 Identification and Establishment of Suitable Access Routes/Roads.....	26
5.16.3 Demarcation of Site Limits.....	26
5.16.4 Eating Areas .....	26
5.16.5 Liquid Waste Management.....	26
5.17 Sewage and Sanitation .....	27
5.18 Waste Management.....	27
5.19 Workshops, equipment maintenance and storage .....	32
5.20 Vehicle and Equipment Refueling .....	32
5.20.1 Stationary/Designated Refueling.....	32

5.20.2	Mobile Refueling .....	32
5.21	Spill Response .....	33
5.22	Spray Painting and Sandblasting .....	34
5.23	Dust Management .....	35
5.24	Storm Water and Dewatering Management .....	36
5.25	Erosion Control .....	37
5.26	Noise Management .....	37
5.27	Protection of Heritage Resources .....	38
5.27.1	Archaeological Sites .....	38
5.27.2	Graves .....	38
5.28	Fire Prevention .....	38
5.29	Water Protection and Management .....	39
5.30	Protection of Fauna and the collection of firewood .....	39
5.31	Environmental Awareness Training .....	40
5.32	Handling and Batching of Concrete and Cement .....	41
5.33	Stockpiling, Soil Management and Protection of Flora .....	42
5.34	Traffic Management .....	43
5.35	Transportation of Materials .....	43
5.36	Borrow Pits and Quarries .....	44
5.37	Social and Labour Issues .....	44
5.38	Energy Management .....	45
5.39	Handling, Storage and Management of Hazardous Substances .....	45
5.40	Housekeeping .....	46
5.41	Rehabilitation .....	46
5.42	Documentation and Records Management .....	46
6.	RECORDS .....	47
7.	ANNEXURES .....	47

## 1. PURPOSE

This document describes the minimum requirements for environmental management to which Contractors must comply. This document must be read in conjunction with the Transnet Construction Environmental Management Standard Operating Procedure (CEM SOP).

In this document, unless the context clearly indicates otherwise:

- Words importing any one gender shall include the other gender;
- The singular shall include the plural and vice versa; and
- Any reference in this document to legislation or subordinate legislation is to such legislation or subordinate legislation at the date of promulgation thereof and as amended and/or re-enacted from time to time.

## 2. APPLICABILITY

This standard applies to Contractors that work on site under the authority of Transnet SOC Ltd.

## 3. REFERENCE DOCUMENTS

Name	Applicable Section
Constitution of South Africa, Act 108 of 1996	Section 24
National Environmental Management Act, 107 of 1998	Section 2 National Environmental Management Principles
National Water Act, 36 of 1998	Section 164, Permissible Water Use
National Environmental Management: Waste Act, 58 of 2008	Part 1 15 (1) (i) and (2) Part 6 26 (10) (a) and (b) Schedule 3, Defined Wastes Category A: Hazardous Wastes Part 8: Contaminated Land
Environment Conservation Act, 73 of 1989	Section 20
Occupational Health and Safety Act, 85 of 1993	Asbestos Regulations, 2001



Name	Applicable Section
	Government Notice R155 in Government Gazette 23108 of February 2002 General Safety Regulations-Reg. 2 (2) PPE
GNR 326, 7 April 2017 as amended, EIA Regulations	Chapter 15, Appendix 4
Transnet Environmental Risk Management strategy and Framework	2015:42
Environmental Management Systems ISO 14001: 2015	Clause 5, 6, 7, 8, 9 and 10

## 4. DEFINITIONS AND ABBREVIATIONS

### 4.1 Definitions

#### **Contractor**

The Principal Contractor as engaged by Transnet for infrastructure construction operations, including all sub-contractors appointed by the main contractor of his own volition for the execution of parts of the construction operations; and any other contractor from time to time engaged by Transnet directly in connection with any part of the construction operations which is not a nominated sub-contractor to the Principal Contractor

#### **Compliance**

Meeting of all the organization's regulatory requirements

#### **Conformance**

The action or fact of conforming to this standard and other internal Transnet policies, procedures, guidelines and best practice.

#### **Construction Environmental Management Standard Operating Procedure**

Is a document which is used to define how environmental management will be practiced on any construction site under the management of Transnet to ensure that the environment is considered, negative impacts avoided or minimized, and positive impacts are enhanced

<b>Environmental Aspect</b>	Element of an organization's activities or products or services that interacts or can interact with the environment
<b>Environmental Impact</b>	Change to the environment whether adverse or beneficial, wholly or partially resulting from an organization's environmental aspects
<b>Environmental Risk</b>	The product of the likelihood and severity of an unforeseen occurrence/incident/aspect and the impact it would have, if realised, on the environment
<b>Fauna</b>	A group of animals specific to a certain region or time period.
<b>Flora</b>	A group of plants specific to a certain region or time period.
<b>General waste</b>	Waste that does not pose an immediate hazard or threat to health or to the environment; and includes:- <ul style="list-style-type: none"> <li>(a) domestic waste;</li> <li>(b) building and demolition waste;</li> <li>(c) business waste;</li> <li>(d) inert waste;</li> </ul>
<b>Hazardous waste</b>	Any waste that contains organic or inorganic elements or compounds that may, owing to the inherent physical, chemical or toxicological characteristics of that waste, have a detrimental impact on health and the environment.
<b>Incidence/Occurrence</b>	An undesired event occurring at work that results in physical harm to a person or death, or damage to the environment, plant and/or equipment and/or loss of production.

<b>Indigenous vegetation</b>	Plants that naturally occur in an area.
<b>Liquid waste</b>	Waste that appear in liquid form such as used oil, grease and/or contaminated water or waste water.
<b>Method statement</b>	A document that describes how the Contractor will apply environmental management measures associated with a particular activity during construction.
<b>Monitoring</b>	Determining the status of a system, a process or an activity
<b>Natural Vegetation</b>	All existing species, indigenous or otherwise, of trees, shrubs, groundcover, grasses and all other plants found growing on the site.
<b>Responsible Authority</b>	A Responsible Authority, according to the National Water Act 36 of 1998, relates to specific power or authority in respect of water uses that is assigned by the Minister to a Catchment Management Agency or to a Regional Office.
<b>Rehabilitation</b>	Refers to measures that must be put in place to restore the site to its pre-construction or enhanced state, subsequent to construction taking place.
<b>Scope of Work</b>	The construction work for which the Contractor has been appointed in terms of the Contract with Transnet.
<b>Sensitive area</b>	Any area that is denoted as sensitive by this Specification due to its particular attributes, which could include the presence of rare or endangered vegetation, the presence of heritage resources (e.g. archaeological artefact or graves), the presence of a unique natural feature, the presence of a watercourse or water body, the presence of sensitive social receptors etc. As a minimum, habitats that fall under this definition include:

mountain catchments, Ramsar wetland sites, coastal shores, estuaries and endangered ecosystems.

**Solid waste**

All solid waste, including construction debris, chemical waste, excess cement/ concrete, wrapping materials, timber, tins and cans, drums, wire, nails, food and domestic waste (e.g. plastic packets and wrappers).

**Spoil**

Excavated material which is unsuitable for re-use as material in the Works or any other use; or is material which is surplus to the requirements of the Works.

**Sub -Contractor**

is a person or organisation who has a contract with the contractor to:

Construct or install part of the contractors work.

Provide a service necessary to provide the works; or

Supply plant and materials which the person or organisation has wholly or partly designed specifically for the works.

**Temporary Storage**

A once-off storage of waste for a period not exceeding 90 days.

**Topsoil**

Means a varying depth (up to 300 mm) of the soil profile irrespective of the fertility appearance, structure, agricultural potential, fertility and composition of the soil.

**Waste**

Any substance, material or object, that is unwanted, rejected, abandoned, discarded or disposed of, or that is intended or required to be discarded or disposed of, by the holder of that substance, material or object, whether or not such substance, material or object can be re-used, recycled or recovered and includes all wastes. Waste or a portion of waste ceases to be a waste only once the waste is, or has been re-used, recycled or recovered.

**Wastewater** means water containing waste, or water that has been in contact with waste material

**Watercourse** Refers to -

- a river or spring;
- a natural channel in which water flows regularly or intermittently;
- a wetland, lake or dam into which, or from which, water flows; and
- any collection of water gazetted by the National Water Act, 36 of 1998 as a watercourse, and a reference to a watercourse includes, where relevant, its bed and banks.

**Wetland** Land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil.

## 4.2 Abbreviations

Acronym	Meaning In Full
CEM SOP	Construction Environmental Management Standard Operating Procedure
CM	Construction Manager
CV	Curriculum Vitae

<b>Acronym</b>	<b>Meaning In Full</b>
<b>DEFF</b>	Department of Environment, Forestry and Fisheries
<b>EA</b>	Environmental Authorisation
<b>ECO</b>	Environmental Control Officer
<b>EIA</b>	Environmental Impact Assessment
<b>EO</b>	Environmental Officer
<b>EMP</b>	Environmental Management Plan
<b>EMPr</b>	Environmental Management Programme
<b>EGF</b>	Environmental Governance Framework
<b>MERC</b>	Minimum Environmental Requirements for Construction
<b>NEMA</b>	National Environmental Management Act 107 of 1998
<b>NEM:BA</b>	National Environmental Management: Biodiversity Act 10 of 2004
<b>NWA</b>	National Water Act 36 of 1998
<b>PEM</b>	Project Environmental Manager
<b>PES</b>	Project Environmental Specification
<b>PM</b>	Project Manager
<b>SAHRA</b>	South African Heritage Resource Agency

Acronym	Meaning In Full
<b>SDS</b>	Safety Data Sheet
<b>SHEQ</b>	Safety, Health, Environment and Quality
<b>TRANSNET</b>	Transnet SOC Ltd

FINAL

## **5. MINIMUM ENVIRONMENTAL REQUIREMENTS FOR CONSTRUCTION**

### **5.1 Tender Documents**

Any construction-related tender issued to the market must include:

- Transnet Integrated Management SystemS Policy Statement;
- The Transnet Construction Environmental Management Standard Operating Procedure (CEM SOP);
- The Transnet Minimum Environmental Requirements for Construction (MERC); and
- The Project Environmental Specification (PES).

Any construction-related tender must be recommended for issue by the Transnet Project Environmental Manager/Transnet Environmental Officer before it is released to the market.

### **5.2 Project Environmental Specification (PES)**

Must incorporate all relevant recommendations of the Environmental Impact Assessment (EIA) and other environmental studies for the project and the relevant conditions of the EA and/or other applicable environmental permit(s) and licence(s), and the Transnet Operating Division's Environmental Management requirements (where applicable) into an environmental performance specification for implementation during the construction phase of the project.

The PES need not be a separate document; however it can be in a format of an appendix/addendum making reference to environmental authorisation(s), permit(s) or licence(s) applicable to the project. In cases where the project does not trigger any of the NEMA listed activities or any permit(s)/licence(s); the PES may be compiled to prescribe additional environmental management measures over and above the measures stipulated in the MERC.

### **5.3 Contractor's Environmental Policy**

The Contractor's Environmental Policy must be signed and dated by Top Management.

The content of the Contractor's Environmental Policy must:



- be appropriate to the purpose and context of the Contractor's organization, including the nature, scale and environmental impacts of its activities, products and services;
- provide a framework for setting environmental objectives;
- include a commitment to the protection of the environment, including prevention of pollution and other specific commitment(s) relevant to the context of the Contractor's organization;
- include a commitment to fulfil compliance obligations; and
- include a commitment to continual improvement of the Contractor's environmental management system to enhance environmental performance

#### **5.4 Contractor's Environmental Management Plan (EMP)**

The Contractor's EMP must include:

- the name of the person who compiled the EMP;
- the expertise of the person who compiled the EMP, including a CV;
- a description of the Contractor's scope of work;
- a detailed description of the environmental aspects related to the Contractor's scope of work;
- a map at an appropriate scale which depicts all construction activities including associated structures, and infrastructure and environmental sensitivities affected by the construction footprint , as well as no go-areas and associated buffers;
  - The map must include the following:
    - an accurate indication of the project site position as well as the positions of the alternative sites, if any;
    - road names or numbers of all the major roads as well as the roads that provide access to the site(s)
    - a north arrow;
    - a legend;
    - the prevailing wind direction;
    - site sensitivities, including but not limited to vegetation, wetlands, watercourses, heritage sites, critical biodiversity area/s, World Heritage Site, etc. and it must be overlaid by the study area; and

- GPS co-ordinates (Indicate the position of the proposed activity with the latitude and longitude at the centre point for each alternative site. The co-ordinates should be in degrees and decimal minutes. The minutes should be to at least three decimal places. The projection that must be used in all cases is the WGS-84 spheroid in a national or local projection).
- a description of the impacts and risks that need to be avoided, managed and mitigated during the execution of the Contractor's scope of work including (as relevant);
  - planning and design;
  - pre-construction activities;
  - construction activities;
  - rehabilitation; and
  - operation of Transnet assets.
- a description and identification of impact management outcomes required for the identified aspects;
- a description of proposed impact management actions, identifying the manner in which the impact management objectives and outcomes contemplated above will be achieved, and must, where applicable, include actions to:
  - avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation;
  - comply with any prescribed environmental management standards or practices; and
  - comply with any applicable local, provincial and national legislation.
- the method of monitoring the implementation of the impact management actions contemplated above;
- the frequency of monitoring the implementation of the impact management actions contemplated above;
- an indication of the persons who will be responsible for the implementation of the impact management actions;
- the timeframe within which the impact management actions contemplated above must be implemented;
- the mechanism for monitoring compliance with the impact management actions contemplated above;

- a program for reporting on compliance, taking into account the requirements of this document;
- an environmental awareness plan describing the manner in which:
  - the Contractor intends to inform his employees of any environmental risk which may result from his scope of work; and
  - risks must be dealt with in order to avoid pollution or the degradation of the environment.
- any specific information that may be required by Transnet.

### **5.5 Contractor's Environmental Officer (EO)**

The Contractor's EO should have relevant environmental qualifications and experience required for the project. The level of qualifications and experience must be in line with the complexity of the Contractor's scope of work coupled with the sensitivity of the site. The level of competency will be determined by Transnet during tender.

### **5.6 Management of Sub-Contractors**

The Contractor must ensure that all his sub-contractors comply with this document in so far as it relates to their specific scope of work or services.

### **5.7 Pre-Site Access Environmental Governance**

The Contractor must appoint the EO recommended in his tender proposal. Should the EO no longer be available, the Contractor must submit a CV of an alternative EO with similar or better qualifications and experience for approval by the Transnet PM and PEM. The same principle will apply if the Contractor's EO is replaced for whatever reason at any stage. No construction may take place without a duly appointed Contractor's EO.

The Contractor must provide his EO with all environmental documents provided by Transnet during tender and submitted as a part of the Contractor's proposal.

The Contractor must obtain the contact details of the responsible Transnet PEM and Transnet EO and provide these details to his EO.

The Contractor's EO must develop an appropriate environmental file for approval by the Transnet EO, including but not necessarily limited to (the environmental file must always be available and up to date on the construction site):

- Documents from the tender as described above.
- His CV.
- An organogram indicating reporting lines of all Contractor's staff (with names included).
- Contact Information for: the overall responsible person acting on behalf of the Contractor to execute the construction works; Contractor's Construction Manager (CM); Contractor's EO; and all relevant emergency personnel.
- A list of the Contractor's plant and equipment indicating a description of the plant/equipment, its fuel capacity, any hazardous components (oils, greases etc.), individual service/maintenance cycles and noise levels.
- A list of hazardous substances to be used during construction indicating: official substance name from Material Safety Data Sheets (MSDS)/ Safety Data Sheet (SDS); quantity on site; storage method; transport method to site; and period to be used on site. All substances listed must have MSDS/ SDS on site in the environmental file.

The MSDS/ SDS should contain the following minimum requirements:

- Section 1: Product and company name
- Section 2: Hazard identification
- Section 3: Composition/information on ingredients
- Section 4: First aid measures
- Section 5: Fire fighting measures
- Section 6: Accidental release measure
- Section 7: Handling storage
- Section 8: Exposure controls/personal protection
- Section 9: Physical and chemical properties
- Section 10: Stability and reactivity
- Section 11: Toxicological Information
- Section 12: Ecological Information
- Section 13: Disposal Consideration

- Section 14: Transportation
- Section 15: Regulatory Information
- Section 16: Other Information
- Photographic pre-construction report that details the site before any activities commence.
- Site Layout Plan indicating but not necessarily limited to,: access roads, site offices, material laydown areas, stockpile areas and parking areas, waste and effluent storage and handling facilities, entire construction footprint, no-go-areas, sewage and sanitary facilities. The plan must be appropriately drawn on a computer and must be clearly visible and properly scaled.
- A site establishment method statement (minimum requirements for method statements are described below in this document).
- Environmental Induction Material to be used to educate site staff and visitors (minimum requirements for environmental induction are described below in this document).
- An activity-based environmental risk assessment.

The Contractor's EO must submit the environmental file for acceptance to the Transnet EO.

The Contractor must obtain a Site Access Certificate from the Transnet PM before accessing the site.

## **5.8 Safety Data Sheets**

Each hazardous substance used on site must have a valid SDS. The SDS must comply with the requirements of the Occupational Health and Safety Act, 85 of 1993.

## **5.9 Environmental Induction**

The Contractor will ensure that all management, foremen and the general workforce, as well as all sub-contractors, suppliers and visitors to site have attended the Transnet Environmental Induction Programme prior to commencing any work on site. Where new personnel commence work on site during the construction period, the Contractor will ensure that these personnel also undergo the Transnet Environmental Induction Programme and are made aware of the environmental specifications on site.

The Contractor must ensure that all of his personnel understand the requirements of the CEM SOP; MERC; EA, EMPr, relevant permits and licences and PES as relevant to their scope of work.

#### **5.10 Environmental Method Statements**

- Environmental Method Statements as identified by the Transnet EO based on the Contractor's activity-based environmental risk assessment will be written submissions by the Contractor to the Transnet CM and EO describing:
- The proposed activity, setting out the plant, equipment, materials, labour and method the Contractor proposes using to carry out an activity;
- The environmental management of site conditions – waste management, housekeeping, site establishment etc;
- Transportation of the equipment to and from site;
- How the equipment/ material will be moved while on site;
- How and where material will be stored;
- The containment (or action to be taken if containment is not possible) of leaks or spills of any liquid or material that may occur;
- Timing and location of activities;
- Description of potential positive and negative environmental impacts and how they will be managed;
- Conformance/ non-conformance with this document and any other statutory and best practice standards;
- Monitoring and reporting requirements;
- Records Management; and
- Any other information deemed necessary by the Transnet CM and Transnet EO as well as ECO where applicable.

The Environmental Method Statements will enable the potential positive and negative environmental impacts associated with the proposed construction activity to be identified and mitigation measures put in place. All method statements must be signed by the Contractor, Transnet CM and EO, with the addition of the ECO on authorized projects, thereby indicating that the works will be carried out according to the methodology described therein.

Activities may only commence once the Environmental Method Statements have been approved by the Transnet CM, Transnet EO and ECO (where relevant). In some instances, local authorities may also need to approve the method statements. This will be highlighted in the Project Environmental Specification, where applicable.

All changes to the original Environmental Method Statements must be approved by the Transnet EO and Transnet CM prior to implementation.

To enable timely approvals, the environmental method statements will be submitted to the Transnet CM and Transnet EO for review two (2) weeks prior to the intended date of commencement of the activity, or as directed by the Transnet Project Manager/CM.

Emergency construction activity Environmental Method Statements may also be required. The activities requiring Environmental Method Statements cannot commence if they have not been approved by the CM and PEM, ECO or EO.

**NOTE:** No advice, approval of method statements or any other form of communication from Transnet will be construed as an acceptance by Transnet of any obligation that indemnifies the Contractor from achieving any required level of performance. Further, there is no acceptance of liability by Transnet which may result from the Contractor failing to comply with the specifications, i.e. the Contractor remains responsible for achieving the required performance levels.

### **5.11 Environmental Occurrences (Incidents)**

The Transnet EO shall provide the Contractor with the procedure to follow in managing environmental occurrences during pre-site access governance.

The Contractor shall follow the procedure provided to him by the Transnet EO and maintain required records thereof.

In the event of an environmental occurrence, the Contractor must, as soon as is reasonably practicable:

- classify an environmental occurrence in line with the Transnet Environmental Management Occurrence process flow;

- take all reasonable measures to contain and minimise the effects of the occurrence, including its effects on the environment and any risks posed by the occurrence to the health, safety and property of persons;
- undertake cleanup procedures;
- remedy the effects of the occurrence; and
- assess the immediate and long-term effects of the occurrence on the environment and public health

### **5.12 Environmental Non-Conformances (Defects)**

Environmental Non-Conformances shall be handled as per the terms and conditions of the Contract.

The Transnet EO shall provide the Contractor with the procedure to follow in managing environmental non-conformances during pre-site access governance.

The Contractor shall follow the procedure provided to him by the Transnet EO and maintain required records thereof.

The Transnet Project Manager shall ensure that all Non-conformances are appropriately closed out within the timeframe specified in the Non-Conformance Report.

Any environmental non-conformance will be dealt with similarly to a Defect as defined in the Contract. A defect is due to non-compliance with the Works Information and it is the responsibility of the Contractor to correct the defect in order to ensure that the work takes place in accordance with the Works Information. Similarly, non-conformance/non-compliance with any other permit or licence will be regarded as a non-conformance with the Works Information. The Contractor is responsible for rectifying any defect (non-conformance) as defined above promptly.

The Contractor's EO shall be responsible to search for and identify non-conformances with the environmental specifications at inspection intervals agreed to with the Transnet EO. The Transnet EO shall also undertake such inspections on a monthly basis. If such monthly inspections indicate that any part of the Contractor's work is non-conformant with the environmental requirements, the Transnet EO shall advise the Transnet PM to issue a Defects Notification to the Contractor accordingly. The Contractor shall correct the non-



conformance (defect) within the timeframes specified in the report and notification and submit proof of such correction to the Transnet EO.

The Transnet EO shall not recommend that a Site Closure Certificate be issued to the Contractor if any non-conformances have not been properly closed out. In such an event, the Transnet Project Manager may also make use of any reasonable contractual means to rectify the non-conformance(s) as allowed by the Contract (retention moneys etc.).

### **5.13 Community Grievances (Public Complaints)**

The Transnet EO shall provide the Contractor with the procedure to follow in managing community grievances during pre-site access governance.

The Contractor shall follow the procedure provided to him by the Transnet EO and maintain required records thereof.

### **5.14 Environmental Inspections and Audits**

Environmental inspections and audits may be conducted using five basic techniques:

- Interviews with Contractor's staff including Sub-contractors and suppliers;
- Document review;
- Observations;
- Monitoring; and
- Measurement and verification.

Table 1 sets out the areas and aspects of the construction site that will be inspected or audited, the frequency of such inspections/audits, the inspector/auditor and the inspected party/auditee. It should be noted that the list is not exhaustive and that each site will have specific issues that will need to be inspected/audited.

Table 1: Details on Environmental Inspections/Audits (where Transnet is the Inspected Party/Auditee, respective Contractors must give full cooperation).

<b>Place</b>	<b>Inspector/Auditor</b>	<b>Inspected Party/ Auditee</b>	<b>Inspection/audit frequency</b>
Construction Site	Contractor's Environmental Officer	Contractor	Daily/Weekly Inspection
Project (including all construction sites).	Transnet Environmental Officer/Project Environmental Manager	Contractor	Monthly Inspection
Project (including all construction sites)	Transnet Environmental Specialist: Assurance	Transnet Project Environmental Manager	As stipulated on the annual audit plan
Project (as defined in Environmental Authorisation)	Environmental Control Officer	Transnet (represented by Transnet Environmental Officer)	As stipulated in the Environmental Authorisation
Project (as defined in Water Use Authorisation)	Independent Auditor	Transnet (represented by Transnet Environmental Officer)	As stipulated in the Water Use Authorisation

The Contractor's EO will be required to conduct inspections of all work areas for which the Contractor is responsible, at intervals agreed to with the Transnet EO. Monitoring shall be

conducted as per the Contractor's approved EMP and all required records shall be maintained by the Contractor.

The Transnet EO will be required to conduct inspections of all work areas for which the Contractor is responsible on a monthly basis or at intervals agreed to with the Transnet Project Environmental Manager. Monitoring shall be conducted as per the Project Environmental Specification. The Inspection Checklist to be used shall be approved by the Transnet PEM prior to each inspection.

### **5.15 Contractor's Environmental Performance**

The Transnet EO will explain how the Contractor's performance will be scored during pre-site access governance to the Contractor's EO. The standard/minimum requirement for all environmental inspections will be 90%.

### **5.16 Site Planning and Establishment**

The Contractor shall establish his construction camps, offices, workshops, eating areas and any other facilities on the site in a manner that does not adversely affect the environment. These facilities must not be sited in close proximity to sensitive areas; the buffer to be determined by the ecological requirements of the fauna/flora found on-site.

The site offices should not be sited in close proximity to steep areas. It is recommended that the offices, and in particular the ablution facilities, aggregate stockpiles, spoil areas and hazardous material stockpiles be located as far away as possible from any watercourse.

#### **5.16.1 Site Layout Plan**

The Site Layout Plan must as a minimum include but not limited to:

- Detailed layout of the construction works areas including access roads, site offices, material laydown areas, temporary stockpile areas and parking areas;
- Detailed locality and layout of all waste storage and handling facilities for litter, kitchen refuse and workshop-derived effluent;
- Proposed areas for the stockpiling of topsoil and excavated spoil material;
- Demarcation of the construction footprint including areas not to be disturbed by the development;

- Location of sewage and sanitary facilities at the site offices and staff accommodation at all localities where there will be a concentration of labour.

Any changes to the location of the facilities and site activities as per the approved site layout plan shall be re-submitted to the Transnet CM and Transnet EO for approval prior to implementation.

The Contractor may be required to submit a separate layout plan dealing only with his site camp. If so this will be specified in the PES.

#### **5.16.2 Identification and Establishment of Suitable Access Routes/Roads**

Existing access routes to the construction/works areas must be used as far as possible. The building of access roads must be restricted to prevent unnecessary disturbance of the surrounding environment. Access tracks must be maintained in a good condition at all times during construction to minimize erosion and dust generation.

#### **5.16.3 Demarcation of Site Limits**

Prior to the commencement of construction, the site must be clearly demarcated by means of visible barriers. Vegetation within the demarcated zone may be cleared only upon obtaining approval from the Transnet EO. No activities are allowed outside of the approved footprint on the Site Layout Plan.

#### **5.16.4 Eating Areas**

The Contractor is responsible for providing adequate eating facilities within the works area to ensure that workers do not leave the site to eat during working hours. Refuse bags/bins must be provided at all established eating areas and when full it should be disposed of appropriately.

#### **5.16.5 Liquid Waste Management**

Liquid waste water from site shall be stored on-site in a properly designed and constructed system, situated so as not to adversely affect water courses. Only domestic type wastewater, i.e. toilet, shower, basin, kitchen water shall be allowed to enter the designated system.

## **5.17 Sewage and Sanitation**

The Contractor is responsible for providing adequate sanitary facilities including toilets, toilet paper, wash basins etc. to all workers on site and for enforcing the proper use of these facilities.

Toilet facilities shall be serviced regularly and the waste material generated from these facilities shall be disposed of at a registered waste water treatment works/macerator and relevant permits for transportation of waste and proof of servicing and disposal shall be maintained.

Toilets and latrines shall be easily accessible and shall be positioned within walking distance from wherever employees are employed on site, and away from sensitive areas. Use of open areas (i.e. the veld) is not allowed. For projects of high mobility a mobile toilet facility shall be made available by the Contractor.

Outside toilets shall be provided with locks and doors and shall be secured to prevent them from blowing over. Toilets must not be placed in areas susceptible to flooding and high winds. The Contractor shall arrange for regular emptying of toilets and shall be entirely responsible for enforcing their use and for maintaining such facilities in a clean, orderly and hygienic condition to the satisfaction of the Transnet CM.

## **5.18 Waste Management**

Waste shall be grouped into "**general**" or "**hazardous**", depending on its characteristics. The classification shall determine handling methods and the ultimate disposal of material.

General waste which is likely to be generated on site during construction include but not limited to the following:

- Trash (waste paper, plastics, cardboard, etc.) and food waste from offices, warehouses and construction personnel;
- Uncontaminated construction debris such as used wood and scrap metal; and
- Uncontaminated soil and non-hazardous rubble from excavation or demolition.

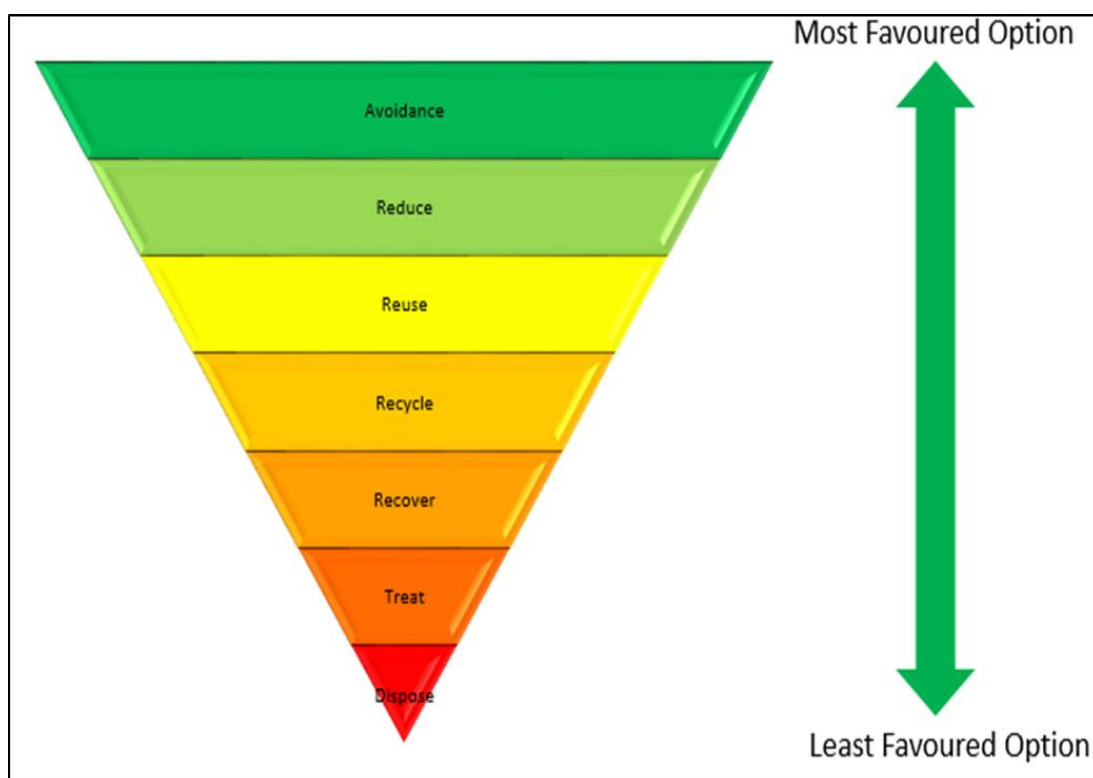
The Contractor shall classify all waste expected to be generated during the construction period. Examples of typical construction waste which could be expected on the site and how they should be classified are indicated in the following table:

**TABLE 2: EXAMPLE OF CONSTRUCTION WASTE CLASSIFICATION**

Waste	Classification	
	Hazardous	General
Aerosol containers	X	
Batteries, light bulbs, circuit boards, etc.	X	X
Clean soil		X
Construction debris contaminated by oil or organic compounds	X	
Domestic waste		X
Empty drums (depends on prior use)	X	X
Empty paint and coating containers		X
Explosive waste	X	
PCB waste	X	
Rubble (not contaminated by oil or organic compounds)		X
Waste Cable		X
Waste plastic		X
Waste paint and/or solvent	X	
Waste oil	X	
Waste concrete		X
Waste cement powder	x	
Waste empty cement bags (must be thoroughly decanted)		x
Waste containing fibrous asbestos	X	
Waste timber		X
Sewerage sludge	X	
Scrap metal		X

Waste	Classification	
	Hazardous	General
Chemically-derived sanitary waste	X	

Waste will be managed in accordance with the Waste Management Hierarchy depicted in Figure 1 below:



**FIGURE 1: THE WASTE MANAGEMENT HIERARCHY**

(Transnet Environmental Risk Management strategy and Framework, 2015:42)

- 1. Avoidance/Prevention:** using goods in a manner that minimises their waste components
- 2. Reduction/Minimisation:** reduction of the quantity and toxicity of waste generated during construction
- 3. Re-use:** removing an article from a waste stream for use in a similar or different purpose without changing its form or properties

- 4. Recycling:** separating articles from a waste stream and processing them as products or raw materials
- 5. Recovery:** reclaiming particular components or materials, or using the waste as a fuel
- 6. Treatment:** processing of waste by changing its form or properties in order to reduce toxicity and quantity
- 7. Disposal:** burial, deposit, discharge, abandoning or release of waste

The Contractor is responsible for the removal of all waste generated from site. The Contractor shall ensure that all waste is removed to appropriate licensed waste management facilities. (For the identification of an appropriate facility, the following source may be utilized: <http://sawic.environment.gov.za/>).

The Contractor shall manage **GENERAL WASTE** that is anticipated to be generated by operations as follows:

- Notify waste hauler when container is full so that it can be removed and replaced with an empty container/skip;
- No littering is allowed on site. In the event where staff mobility is high, refuse bags will be made available by the Contractor;
- Provide documented evidence of proper disposal of waste (Waste Disposal Certificate)

The Contractor shall recycle **GENERAL WASTE** (as far as practically possible) that is anticipated to be generated by its operations as follows:

- Obtain and label recycling containers for the following (whichever relevant) and locate them at secure designated locations on site:
  - Office Waste;
  - Aluminium;
  - Steel;
  - Glass;
  - Ferrous Metals;



- Non Ferrous Metals; and
- Waste Timber
- Establish recycled material collection schedule;
- Arrange for full bins to be hauled away;
- Spent batteries, circuit boards, and bulbs, while non-hazardous, require separate storage, special collection and handling; and
- No burning, burying or dumping of waste of any kind will be permitted.

The Contractor shall manage **HAZARDOUS WASTE** anticipated to be generated by his operations as follows:

- Obtain and provide an acceptable container with correct and visible classification label;
- Place hazardous waste material in allocated container;
- Inspect the container on a regular basis as per the Contractor's EMP;
- Track the accumulation time for the waste, haul the full container to the registered hazardous disposal site;
- Notify the waste hauler when container is full so that it can be removed and replaced with an empty container/skip; and
- Provide documented evidence of proper waste disposal of the waste (Waste Disposal Certificate).

The Contractor shall maintain the following waste records for submission to the Transnet EO on request:

- Date of waste management activity;
- Activity Type (reuse, recycle, recover, treat, dispose);
- Description (e.g. contaminated soil, medical waste, tyres, plastic, domestic waste etc.)
- Classification (General/Hazardous);
- Estimated Quantity in kilograms
- Disposal Site Name and Reference Number (where relevant);
- Method of Transport; and
- Signed Collection or Disposal Records

## **5.19 Workshops, equipment maintenance and storage**

All vehicles and equipment must be kept in good working order to maximise efficiency and minimise pollution. Maintenance, including washing and refueling of plant on site must be done at designated locations approved on the Site Layout Plan. The Contractor must ensure that no contamination of soil or vegetation occurs around workshops and plant maintenance facilities.

All machinery servicing areas must be bunded. Stationary plant that leak harmful substances shall not be permitted on site. Washing of equipment should be restricted to urgent maintenance requirements only. Adequate wastewater collection facilities must be provided and the wastewater should be disposed of appropriately in accordance with its waste classification.

## **5.20 Vehicle and Equipment Refueling**

### **5.20.1 Stationary/Designated Refuelling**

No vehicles or machines shall be serviced or refueled on site except at designated servicing or refueling locations included on the approved Site Layout Plan.

The Contractor shall provide details of his refueling activities in his EMP or Refueling Method Statement. Facility design shall comply with the regulations of the National Water Act, (Act 36 of 1998), the Hazardous Substances Act, (Act 15 of 1973), the Environmental Conservation Act, (Act 73 of 1989), National Environmental Management Act, (Act 107 of 1998), and the Occupational Health and Safety Act, (Act 85 of 1993), mainly the Construction - and Hazardous Chemical Substances Regulations.

### **5.20.2 Mobile Refuelling**

In certain circumstances, the refueling of vehicles or equipment in a designated area is not a viable/practicable option and refueling has to be done from a tank, truck, bowser or container moved around on site. In such circumstances, the Contractor may request approval from the Transnet CM to conduct mobile refueling subject to the following control measures:

- Secondary containment equipment shall be in place. This equipment shall be sized to contain the most likely volume of fuel that could be spilt during transfer.

- Absorbent pads or drip trays are to be placed around the fuel inlet prior to dispensing.
- Mobile refueling units are to be operated by a designated competent person.
- The transfer of fuel must be stopped prior to overflowing. Fuel tanks or refueling equipment on vehicles may only be filled to 90% carrying capacity.
- Mobile fuelling equipment must be stored in areas where they are not susceptible to collisions.
- Mobile refueling operations shall not take place within 30 meters of any watercourses or 7.5 meter from other structures, property lines, public ways or combustible storage.

All mobile refueling tanks are to be properly labelled and fire extinguishers with valid service dates shall be located near the fuel storage areas. These extinguishers must be of a suitable type and size.

## **5.21 Spill Response**

The Contractor shall have adequate spill response materials/equipment on site which must be aligned with the volumes of hazardous substances used on site and the risk of pollution to sensitive environmental features.

The Contractor shall have an approved Spill Response Plan, either in his EMP or in the form of a method statement approved by the Transnet CM and Transnet EO.

The Contractor shall instruct construction personnel on the following spill prevention and containment responsibilities:

- All plants to be inspected daily to ensure that they are in good condition;
- Immediately repair all leaks of hydrocarbons or chemicals;
- Take all reasonable measures to prevent spills or leaks;
- Do not allow sumps receiving oil or oily water to overflow;
- Prevent storm water runoff from contamination by leaking or spilled drums of oil or chemicals; and
- Do not discharge oil or contaminants into storm water or sewer systems.

If a spill occurs on land, the Contractor must:

- Immediately stop or reduce the spill;
- 009-TCC-CLO-SUS-11385  
Minimum Requirements for Construction Environmental  
Management  
©Transnet SOC Ltd

- Contain the spill;
- Recover the spilled product;
- Remediate the site;
- Implement actions necessary to prevent the spill from contaminating groundwater or off-site surface water; and
- Manage the contaminated material in accordance with Waste Management requirements in this document.

Any spill to water has the potential to disperse quickly, therefore, the spill must be contained immediately using appropriate containment equipment.

If a spill to water occurs, the Contractor must:

- Take immediate action to stop or reduce the spill and contain it;
- Notify the appropriate on-site authorities;
- Implement actions necessary to prevent the spread of the contamination by deploying appropriate absorbent material;
- Recover the spilled product; and
- Manage the contaminated material in accordance with Waste Management requirements in this document. Water samples to be taken downstream from where the spill took place to trace the extent of pollution.

All spills must be recorded as occurrences and managed in accordance with the requirements for Occurrences in this document.

## **5.22 Spray Painting and Sandblasting**

Spray painting and sandblasting must be kept to a minimum. All painting must, as far as practicable, be done before equipment and material is brought on site. Touch-up painting is to be done by hand painting or as per the approved EMP or Method Statement.

The relevant Contractor will inform his EO when and where spray painting or sandblasting will be carried out prior to commencement of work. The Contractor's EO will monitor these activities to ensure that adequate measures are taken to prevent contamination.

Sand may only be acquired from approved commercial sources and in instances where sand is collected from the natural surrounds, such collection must be approved by the Transnet EO.

If the area is in confined or high (elevated) areas, a protection plan must be issued for approval by the Transnet EO.

### **5.23 Dust Management**

The usage of water for dust management will be minimized as far as practically possible. Discretion must be applied in this regard especially relating to drought conditions. Only water from approved sources may be used. Dust control measures must be approved by the Transnet EO prior to commencement of the Works.

The following minimum dust management practices must be implemented on site:

- Vehicles must be operated within speed limits, where no speed limit has been specified, the limit shall be 40km/h;
- Haulage distances must be minimized as far as reasonable practicable;
- Where water suppression is insufficient or impractical, environmentally friendly soil stabilizers must be used;
- Stockpiles and open areas that may cause dust must be stabilized and vegetated where required;
- Dust suppression measures must be implemented on inactive construction areas. (An inactive construction site is one on which construction will not occur for a month or more);
- Disturbance of natural vegetation must be minimized to reduce potential erosion, runoff, and air-borne dust;
- Material in transit must be loaded and contained within the load bin of the vehicle in such a way as to prevent any spillage or creation of dust clouds. If necessary, the load bin of the vehicle shall be covered with a tarpaulin;

## **5.24 Storm Water and Dewatering Management**

Apart from runoff from overburden emplacements and stock piles, storm water can also be contaminated from batch plants, workshops, vehicle wash-down pads, etc., and contaminants during construction may include hydrocarbons from fuels and lubricants, sewerage from employee ablutions and excess fertilizer from rehabilitated areas, etc.

Discharges to controlled waters such as the sea, rivers, and groundwater or to sewerage systems are controlled under South African Water Legislation. The following specific measures are required:

- Temporary drainage must be established and maintained on site during the construction period until permanent drainage is in place. Secondary drainage that prevents erosion must be provided, where necessary.
- Contractors must employ good housekeeping in their areas to prevent contamination of drainage water.
- Stagnant water shall be cleared at a frequency approved by the Transnet EO.
- Any surface water flows off-site must be approved by the Transnet EO. Where necessary, silt traps shall be constructed to ensure retention of silt on site and cut-off ditches shall be constructed to ensure no runoff from the site except at points where silt traps are provided. The Contractor shall be responsible for checking and maintaining all silt traps for the duration of the project.
- The removal from groundwater is defined as a water-use under the National Water Act 36 of 1998. Therefore, it must be ensured that the project has been authorised by the Responsible Authority to remove and discharge groundwater prior to dewatering taking place. If applicable, the Contractor shall be responsible for collection, management, and containment within the site boundaries of all dewatering from all general site preparation activities.
- On-site drainage shall be accomplished in accordance with a plan approved by a suitably qualified civil engineer.

## **5.25 Erosion Control**

Erosion control measures will be designed, implemented, and properly maintained in accordance with best management practices which will include, but not limited to the following:

- Activities must be scheduled to minimise the extent of disturbance of an area at any one time;
- Re-vegetation must be implemented as early as feasible;
- Construction traffic must be properly managed and controlled;
- Areas must be graded to the extent feasible at drainage ditches;
- Loose soil will be compacted as soon as possible after excavation, grading, or filling;
- Silt fences, geo-textiles, temporary rip-rap, soil stabilisation with gravel, diversionary berms or swales, small sedimentation basins must be used;
- The transport of sediment must be minimised;
- An erosion and sedimentation control plan must be developed, approved by the Transnet EO and communicated to staff; and
- The Contractor shall be responsible for checking and maintaining all erosion and sedimentation controls.

## **5.26 Noise Management**

- The following specific measures are required:
- Keep all equipment in good working order;
- Operate equipment within its specification and capacity and don't overload machines;
- Apply regular maintenance, particularly with regards to lubrication;
- Operate equipment with appropriate noise abatement accessories, such as sound hoods;
- Relevant stakeholders shall be notified of any excessive noise-generating activities that could affect them;
- Ensure that the potential noise source will conform to the South African Bureau of Standards recommended code of practice, SANS 10103:2004 or the latest at the time, so that it will not produce excessive or undesirable noise when released;

- All the Contractor's equipment shall be fitted with effective exhaust silencers and shall comply with the South African Bureau of Standards recommended code of practice, SANS 10103:2004 or the latest at the time, for construction plant noise generation
- Contractor's vehicles shall comply with the Road Traffic Act, (Act 29 of 1989) when any such vehicle is operated on a public road.
- If on-site noise control is not effective, protect the victims of noise by ensuring that all noise-related occupational health provisions are met. (Occupational Health and Safety Act, (Act 85 of 1993).

## **5.27 Protection of Heritage Resources**

### **5.27.1 Archaeological Sites**

If an artefact on site is uncovered, work in the immediate vicinity shall be stopped immediately. The Contractor shall take reasonable precautions to prevent any person from removing or damaging any such article and shall immediately upon discovery thereof inform the Transnet CM and Transnet EO of such a discovery. The South African Heritage Resources Agency (SAHRA) or relevant Authority is to be contacted and will appoint an Archaeologist to investigate the find. Work may only resume once clearance is given in writing by the Archaeologist.

### **5.27.2 Graves**

If a grave is uncovered on site, or discovered before the commencement of work, all work in the immediate vicinity of the grave shall be stopped and the Transnet CM and EO informed of the discovery. The South African Heritage Resources Agency (SAHRA) or relevant Authority should be contacted and in the case of graves, arrangements made for an undertaker to carry out exhumation and reburial. The undertaker will, together with the SAHRA, be responsible for attempts to contact family of the deceased and for the site where the exhumed remains can be re-interred.

## **5.28 Fire Prevention**

Fires shall only be allowed in facilities or equipment specially constructed for this purpose.



A firebreak shall be cleared and maintained around the perimeter of the camp and office sites where and when necessary. In cases where construction is taking place in a Critical Biodiversity Area as listed under NEM:BA; it must be ensured that the requirement of a firebreak is screened against the NEMA Listing Notice 3 to confirm legislative requirements.

All conditions incorporated in the requirements of the Occupational Health and Safety Act shall be implemented.

## **5.29 Water Protection and Management**

No water shall be abstracted from any water course (stream, river, or dam) without the expressed permission of the Transnet CM and Transnet EO. Such permission shall only be granted once it can be shown that the water is safe for use, that there is sufficient water in the resource to meet the demand, and once permission has been obtained from the Department of Water and Sanitation in accordance with the requirements of the National Water Act (Act 36 of 1998).

Water for human consumption shall be available at the site offices and at other convenient locations on site. The generally acceptable standard is that a supply of drinking water shall be available within 200m of any point on the construction site.

Method Statement(s) must be prepared by the Contractor for the various water uses. The Contractor shall keep a record of the quantities of water used on-site during construction (including use by sub-contractors), irrespective of the purpose of use.

## **5.30 Protection of Fauna and the collection of firewood**

On no account shall any hunting or fishing activity of any kind be allowed. This includes the setting of traps, or the killing of any animal caught in construction works.

On no account shall any animal, reptile or bird of any sort be killed. This specifically includes snakes or other creatures considered potentially dangerous discovered on site. If such an animal is discovered on site, an appropriately skilled person should be summoned to remove the creature from the site. Consideration should be given to selection and nomination of such a person prior to site establishment. If no-one is available, training should be provided to at least two site staff members.

The Contractor shall provide adequate facilities for all his staff so that they are not encouraged to supplement their comforts on site by accessing what can be taken from the natural surroundings. The Contractor shall ensure that energy sources are available at all times for construction and supervision personnel for heating and cooking purposes.

### **5.31 Environmental Awareness Training**

An Environmental Awareness Program is considered a necessary part of the Construction Environmental Management Plan for the Project. Training of the appropriate construction personnel will help ensure that all environmental regulations and requirements are followed which must be defined in the relevant Method Statement to be prepared by the Contractor.

Objectives of environmental awareness training are:

- Environmental Management – protecting the environment from the effects of construction by making personnel aware of sensitive environmental resources.
- Regulatory compliance – complying with requirements contained in project – specific permit conditions, also complying with requirements in regional and local regulations.
- Problem recognition and communication – training personnel to recognise potential environmental problems, i.e. spills, and communicate the problem to the Contractor's EO for a solution.
- Liability control - non-compliance with regulatory requirements can lead to personal and corporate liability.

All individuals on the Project construction site will need to have a minimum awareness of environmental requirements and responsibilities. However, not all need to have the same degree of awareness. The required degree of knowledge is greatest for personnel in the Safety, Health, and Environmental Sections and the least for the manual personnel.

The Contractor shall present environmental awareness programmes on a weekly/bi-monthly basis (depending on project requirements) and keep record of all the environmental related training of the personnel.

### **5.32 Handling and Batching of Concrete and Cement**

Concrete batching shall only be conducted in demarcated areas which have been approved by the Transnet CM and Transnet EO.

Such areas shall be fitted with a containment facility for the collection of cement-laden water. This facility shall be bunded and have an impermeable surface protection so as to prevent soil and groundwater contamination. Drainage of the collection facility will be separated from any infrastructure that contains clean surface runoff.

The batching facility will not be placed in areas prone to floods or the generation of stagnant water. Access to the facility will be controlled so as to minimise potential environmental impacts. Hand mixing of cement and concrete shall be done on mortarboards and/or within the bunded area with impermeable surface or concrete slab. Bulk and bagged cement and concrete additives will be stored in an appropriate facility at least 10m away from any watercourses, gullies and drains.

Waste water collected in the containment facility shall be left to evaporate. The Contractor shall monitor water levels to prevent overflows from the facility. It is acknowledged that all waste water will evaporate; it must be ensured that the remaining water can be pumped into sealed drums for temporary storage and must be disposed of as liquid hazardous waste at an authorised hazardous waste management facility.

All concrete washing equipment, such as shovels, mixer drums, concrete chutes, etc. shall be done within the approved washout facility. Water used for washing shall be restricted as far as practically possible.

Ready-mix concrete trucks are not allowed to wash out anywhere other than in an area designated and approved by the Transnet CM and EO for this purpose.

The Contractor shall periodically clean out hardened concrete from the wash-out facility or concrete mixer, which can either be reused or disposed of as per accepted waste management procedures.

Empty cement and bags, if temporarily stored on site, must be collected and stored in weatherproof containers. Used cement bags may not be used for any other purpose and

must be disposed of on a regular basis in accordance with the Contractor's solid waste management system.

Sand and aggregates containing cement will be kept damp to prevent the generation of dust.

Concrete and cement or any solid waste materials containing concrete and cement will be disposed of at a relevant registered disposal facility and SDCs kept on the file. Where disposal facilities for general waste are utilised, written consent from the relevant municipality must be obtained by the Contractor and filed in the Green file.

### **5.33 Stockpiling, Soil Management and Protection of Flora**

The Contractor shall measure the extent of all areas cleared for construction purposes and keep this figure updated. Sensitive areas shall be cordoned off and avoided in this regard.

Stockpiling may only take place in designated areas indicated on the approved site layout plan. Any area to be used for stockpiling or material laydown shall be stripped of all topsoil.

Clearance of vegetation shall be restricted to that which is required to facilitate the execution of the works. Vegetation clearance shall occur in a planned manner, and cleared areas shall be stabilised as soon as possible when and where necessary. The detail of vegetation clearing shall be subject to the Transnet CM's approval and shall occur in consultation with the Transnet EO.

Stockpiles must be positioned in areas sheltered from the wind and rain to prevent erosion and dispersion of loose materials. Stockpiled soil shall be protected by adequate erosion-control measures. Soil stockpiles shall be located away from drainage lines, watercourses and areas of temporary inundation. Stockpiles containing topsoil shall not exceed 2m in height unless otherwise permitted by Transnet.

Topsoil shall be stockpiled separately from other materials and prevented from movement. Excavated subsoil, where not contaminated, must be used for backfilling, if possible, and topsoil for landscaping and rehabilitation of disturbed areas. Where topsoil

has become mixed with subsoil or is not up to the original standard, fertiliser or new topsoil shall be provided by the Contractor.

No vegetation located outside the construction site shall be destroyed or damaged. As far as is reasonably practicable, existing roads must be used for access to the site. Before site clearance takes place, vegetation surveys must be conducted and protected species identified.

No protected plant species shall be removed without written consent from the relevant authorities. The development of new embankments or fill areas must be undertaken in consultation with the Transnet EO.

No dumping of solid waste or refuse shall be allowed within or adjacent to areas of natural vegetation.

The Contractor shall identify and eradicate all declared alien and invasive plant species occurring on site.

#### **5.34 Traffic Management**

Vehicles usage is permitted only on access roads. Vehicles should only be parked within designated parking areas as demarcated on the site layout plan.

Turning of vehicles should only take place within a clearly demarcated "turn area" located within the approved construction footprint.

The Contractor must co-ordinate the loading and offloading of material during the construction phase so as to ensure that vehicular movement is in one direction only at any one time and that side-tracks are not created on the site.

#### **5.35 Transportation of Materials**

The Contractor is responsible for ensuring that all suppliers and delivery drivers are aware of procedures and restrictions (e.g. no-go areas) in terms of the SOP CM and this Specification. Material must be appropriately secured to ensure safe passage between destinations during transportation. Loads must have appropriate cover, where ADTs are not utilised, to prevent spillage from the vehicles. The Contractor will be held responsible for any clean-up resulting from the failure to properly secure transported materials.

### **5.36 Borrow Pits and Quarries**

The Contractor shall ensure that suppliers of rock and sand raw materials are in possession of the required permit/license and keep record of the quantity of material supplied.

The Contractor will not make direct use of any borrow pits and quarries unless the borrow pit has a valid permit, he has obtained written approval from the Transnet CM and Method Statement has been submitted and approved. The Method Statement will provide the detailed description of the location of the borrow pits and/or quarries and the procedures that will be followed to adhere to any pertinent national or local legislation (e.g. mineral extraction, rehabilitation, safety and noise levels).

### **5.37 Social and Labour Issues**

The criteria for and selection of labourers, sub-contractors and suppliers for the project shall demonstrate preference for the local community and shall be aligned with the criteria set by Transnet SOC Ltd in appointing the Contractor. The Contractor shall keep records of the identity of all staff.

Under no circumstances shall the Contractors engage in formal discussions with landowners without prior consent by the Transnet CM.

No activity on private property shall be allowed without written consent by the relevant landowner and Transnet CM/Transnet EO.

Any damage to private property caused by the Contractor during the construction period, shall be repaired to the satisfaction of the Transnet CM, the Transnet EO and the landowner.

The Contractor shall keep record of any complaint raised during the construction period relating to the Contractor's activities.

No job-seekers shall be allowed on site and signs reflecting such shall be displayed on the notice boards.

### **5.38 Energy Management**

The Contractor shall measure and keep updated records of the following:

- Electricity consumption (to be measured in Kilowatt Hours)
- Fuel consumption (to be measured in liters)

### **5.39 Handling, Storage and Management of Hazardous Substances**

All hazardous materials/substances shall be stored in a secured, designated area that is fenced, bunded and has restricted entry.

All storage shall take place using suitable containers to the approval of the Transnet CM and EO.

All hazardous liquids shall be located in a secure, demarcated area and an adequate bund wall (110% of the total volume stored) shall be provided. The floor and wall of the bund area shall be impervious to prevent infiltration of any spilled/leaked liquids into the soil.

No spillages or accumulated stormwater within this bunded area will be allowed to be flushed from the bund into the surrounding area.

Hazard signs indicating the nature and volume of the stored materials shall be displayed on the storage facility or containment structure.

Weigh bills of hazardous substances shall be sourced from suppliers and kept on site for inspection by the Transnet EO.

The Contractor must provide a method statement detailing the hazardous substances that are to be used during construction, as well as the storage, handling and disposal procedures for each substance. Emergency procedures in the event of misuse or spillage that might negatively affect the environment must be specified.

Information on each hazardous substance will be available to all persons on site in the form of MSDS/SDS. Training and education about the proper use, handling, and disposal of the material will be provided to all workers handling the material.

The Contractor's EO must be informed of all activities that involve the use of hazardous substances to facilitate prompt response in the event of a spill or release.

#### **5.40 Housekeeping**

The Contractor must ensure proper housekeeping of the site for the duration of the project. If practical the contractor shall amongst construction personnel, assign one to be responsible for good housekeeping

Materials shall be stored in a neat and tidy manner in designated areas as per the approved site layout plan.

#### **5.41 Rehabilitation**

Contractors shall rehabilitate the entire site upon completion of work. Where applicable, rehabilitation must be in line with the measures outlined in the Project Environmental Specification. A rehabilitation plan will be submitted to the Transnet CM and EO for approval at least six weeks before project completion. The following, but not limited are critical issues to be included in the rehabilitation plan:

- Details of soil preparation procedures including proposed fertilisers or other chemicals being considered for use;
- A list of the plant species that will be used in the rehabilitation process. Note that these should all be indigenous species, and preferably species that are endemic to the area. The assistance of an appropriately qualified Botanist/Horticulturist should be sought in developing this list;
- Procedures for watering the planted areas (frequency of watering, methodology proposed etc.);
- An indication of the monitoring procedures that will be put in place to ensure the successful establishment of the plants (duration and frequency of monitoring, proposed criteria for declaring rehabilitation as being successful); and
- Procedures for the prevention of the establishment and spread of alien invasive species.

#### **5.42 Documentation and Records Management**

The Contractor's EO will complete and maintain copies of all documents and records and ensure that these documents and records are kept up to date.



The Contractor's EO will submit these documents to the Transnet EO on a frequency as agreed to with the Transnet EO, except where documents have remained unchanged in which case written notification to this effect must be provided to the Transnet EO. The Contractor's EO must ensure that electronic copies of these documents are saved on the Transnet system.

Once the construction activities have been completed and the Transnet EO has conducted a site closure inspection and notified the Contractor that site closure will be granted, all documents described above must be handed over to Transnet after which a Site Closure Certificate will be issued by the Transnet Project Manager.

**NOTE:** All documents/records are to be retained, within the Transnet Document Control System, for a period of 10 years. In the event of environmental documentation/record being lost before receiving a Site Closure Certificate, the Contractor will be penalised according to the specifications laid down in the Contract.

## **6. RECORDS**

Refer to CEM SOP.

## **7. ANNEXURES**

None.

Transnet Port Terminals

Tender Number: ?????

Description of the Works: **UPGRADE OF EMPTY STACK (AREA 100) AT PIER 1, DURBAN CONTAINER TERMINAL FOR TRANSNET SOC LTD (REG. NO 1990/000900/30) OPERATING AS TRANSNET PORT TERMINALS (HEREINAFTER REFERRED TO AS "TPT")**

## T2.2-XX Health and Safety Cost Breakdown

Tenderer (Company)	Responsible Person	Designation	Date
Project/Tender Title	Project/Tender No.	Project Location / Description	

#	Cost element	Unit Cost (R)	# of Units	Total Cost (R)
1.	Human Resources			
2.	Systems Documentation			
3.	Meetings & Administration			
4.	H&S Training			
5.	PPE & Safety Equipment			
6.	Signage & Barricading			
7.	Workplace Facilities			
8.	Emergency & Rescue Measures			
9.	Hygiene Surveys & Monitoring			
10.	Medical Surveillance			
11.	Safe Transport of Workers			
12.	HazMat Management (e.g. asbestos /silica)			
13.	Substance Abuse Testing (3 kits @R500 pm)			
14.	H&S Reward & Recognition			

<b>Total Health and Safety Estimate (R)</b>	
<b>Total Estimate Value (R)</b>	
<b>H&amp;S Cost as % of Tender value</b>	

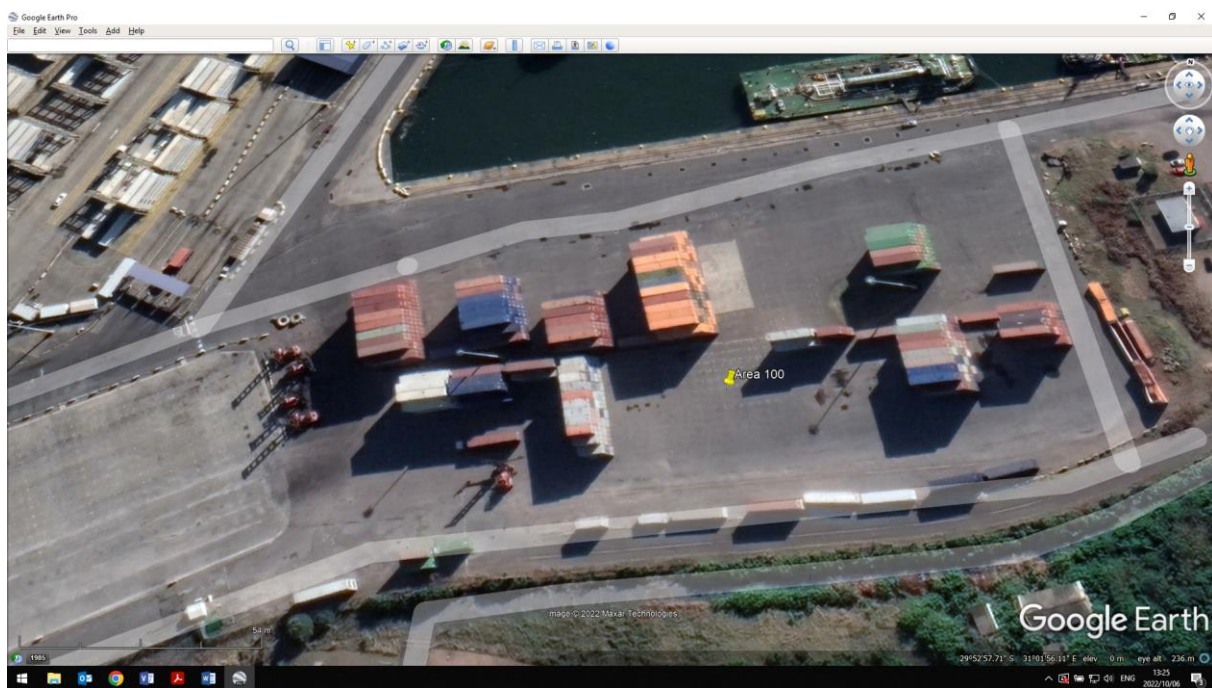
## **Part C4: Site Information**

## **PART 4: SITE INFORMATION**

### **1. Description of the Site and its surroundings**

#### **1.1. General description**

The Site is located in the Port of Durban and can be accessed by Bayhead Road.



**29°52'56.62"S 31° 1'55.40"E**

#### **Area 100, Pier 1 – Port of Durban**

#### **1.2. Existing buildings, structures, and plant & machinery on the Site**

The Site has adjacent properties, buildings, structures, public/private roads including pavements and rail sidings, rail yards, heavy vehicle traffic on port roads, etc.

Maydon Road, Bayhead Road and Langeberg Road experiences high volumes of container trucks and other vehicular traffic that causes major traffic delays in and around the Port of Durban, the Contractor is to take cognisance of the traffic congestion.

#### **1.3. Subsoil information**

No detailed sub-soil information is available for this Contract.



TRANSNET PORT TERMINALS

TENDER NUMBER: **ICLM HQ 728/TPT**

DESCRIPTION OF THE *WORKS*: **UPGRADE OF EMPTY STACK (AREA 100) AT PIER 1, DURBAN CONTAINER TERMINAL FOR TRANSNET SOC LTD (REG. NO 1990/000900/30) OPERATING AS TRANSNET PORT TERMINALS (HEREINAFTER REFERRED TO AS "TPT")**

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#### **1.4. Hidden services**

No detailed information on hidden services is available for this Contract.

#### **1.5. Other reports and publicly available information**

No information available for this Contract.

#### **1.6. Access limitations**

The Site has no access limitations but the Contractor will be required to adhere to all access limitations imposed by Transnet when accessing the Site.