Transnet National Ports Authority

an Operating Division **TRANSNET SOC LTD**

[Registration Number 1990/000900/30]

REQUEST FOR PROPOSAL (RFP)

DESIGN, MANUFACTURE, SUPPLY, DELIVERING, INSTALLATION, TESTING AND COMMISSIONING OF TWO (2) DOCK-SIDE RAIL-MOUNTED PORTAL JIB CRANES AT THE PORT OF EAST LONDON FOR A PERIOD OF SIXTEEN (16) MONTHS.

RFP NUMBER	:	**TNPA/2023/10/0004/44109/RFP**
ISSUE DATE	:	**02 FEBRUARY 2024**
COMPULSORY CLARIFICATION SESSION	:	**13 FEBRUARY 2024**
CLOSING DATE	:	**08 MARCH 2024**
CLOSING TIME	:	**16H00**
TENDER VALIDITY PERIOD	:	**12 WEEKS FROM CLOSING DATE**

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SECTION 1: SBD1 FORM

PART A
INVITATION TO BID

YOU ARE HEREBY INVITED TO BID FOR TRANSNET NATIONAL PORTS AUTHORITY REQUIREMENTS, A DIVISION TRANSNET SOC LTD							
BID NUMBER:	**TNPA/2023/10/0004/ 44109/RFP**	ISSUE DATE:	**02 FEBRUARY 2024**	CLOSING DATE:	**08 MARCH 2024**	CLOSING TIME:	**16H00**
DESCRIPTION	**DESIGN, MANUFACTURE, SUPPLY, DELIVERING, INSTALLATION, TESTING AND COMMISSIONING OF TWO (2) DOCK SIDE-RAIL MOUNTED PORTAL JIB CRANES AT THE PORT OF EAST LONDON FOR A PERIOD OF SIXTEEN (16) MONTHS**						

BID RESPONSE DOCUMENTS SUBMISSION

RESPONDENTS ARE TO UPLOAD THEIR BID RESPONSE PROPOSALS ONTO THE TRANSNET SYSTEM AGAINST EACH TENDER SELECTED (*please refer to section 2, paragraph 3 for a detailed process on how to upload submissions*):
https://transnetetenders.azurewebsites.net

BIDDING PROCEDURE ENQUIRIES MAY BE DIRECTED TO		**TECHNICAL ENQUIRIES MAY BE DIRECTED TO:**	
CONTACT PERSON	**Lundi Landu**	CONTACT PERSON	**Snr Procurement Specialist**
TELEPHONE NUMBER	**None**	TELEPHONE NUMBER	**None**
FACSIMILE NUMBER	**None**	FACSIMILE NUMBER	**None**
E-MAIL ADDRESS	TNPATenderenquiries3@transnet.net	E-MAIL ADDRESS	TNPATenderenquiries3@transnet.net

SUPPLIER INFORMATION

NAME OF BIDDER					
POSTAL ADDRESS					
STREET ADDRESS					
TELEPHONE NUMBER	CODE		NUMBER		
CELLPHONE NUMBER					
FACSIMILE NUMBER	CODE		NUMBER		
E-MAIL ADDRESS					
VAT REGISTRATION NUMBER					
SUPPLIER COMPLIANCE STATUS	TAX COMPLIANCE SYSTEM PIN:		**OR**	CENTRAL SUPPLIER DATABASE	UNIQUE REGISTRATION REFERENCE NUMBER:

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					MAAA
B-BBEE STATUS LEVEL VERIFICATION CERTIFICATE	TICK APPLICABLE BOX] ☐ Yes ☐ No		B-BBEE STATUS LEVEL SWORN AFFIDAVIT		[TICK APPLICABLE BOX] ☐ Yes ☐ No
[A B-BBEE STATUS LEVEL VERIFICATION CERTIFICATE/ SWORN AFFIDAVIT (FOR EMES & QSEs) MUST BE SUBMITTED FOR PURPOSES OF COMPLIANCE WITH THE B-BBEE ACT]					
1 ARE YOU THE ACCREDITED REPRESENTATIVE IN SOUTH AFRICA FOR THE GOODS /SERVICES /WORKS OFFERED?	☐Yes ☐No [IF YES ENCLOSE PROOF]		**2** ARE YOU A FOREIGN BASED SUPPLIER FOR **THE GOODS /SERVICES /WORKS OFFERED?**		☐Yes ☐No [IF YES, ANSWER QUESTIONAIRE BELOW]

QUESTIONNAIRE TO BIDDING FOREIGN SUPPLIERS

IS THE ENTITY A RESIDENT OF THE REPUBLIC OF SOUTH AFRICA (RSA)?	☐ YES ☐ NO
DOES THE ENTITY HAVE A BRANCH IN THE RSA?	☐ YES ☐ NO
DOES THE ENTITY HAVE A PERMANENT ESTABLISHMENT IN THE RSA?	☐ YES ☐ NO
DOES THE ENTITY HAVE ANY SOURCE OF INCOME IN THE RSA?	☐ YES ☐ NO
IS THE ENTITY LIABLE IN THE RSA FOR ANY FORM OF TAXATION?	☐ YES ☐ NO

IF THE ANSWER IS "NO" TO ALL OF THE ABOVE, THEN IT IS NOT A REQUIREMENT TO REGISTER FOR A TAX COMPLIANCE STATUS SYSTEM PIN CODE FROM THE SOUTH AFRICAN REVENUE SERVICE (SARS) AND IF NOT REGISTER AS PER 1.3 BELOW.

PART B

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TERMS AND CONDITIONS FOR BIDDING

1.	TAX COMPLIANCE REQUIREMENTS
1.1	BIDDERS MUST ENSURE COMPLIANCE WITH THEIR TAX OBLIGATIONS.
1.2	BIDDERS ARE REQUIRED TO SUBMIT THEIR UNIQUE PERSONAL IDENTIFICATION NUMBER (PIN) ISSUED BY SARS TO ENABLE THE ORGAN OF STATE TO VERIFY THE TAXPAYER'S PROFILE AND TAX STATUS.
1.3	APPLICATION FOR TAX COMPLIANCE STATUS (TCS) PIN MAY BE MADE VIA E-FILING THROUGH THE SARS WEBSITE WWW.SARS.GOV.ZA.
1.4	BIDDERS MAY ALSO SUBMIT A PRINTED TCS CERTIFICATE TOGETHER WITH THE BID.
1.5	IN BIDS WHERE UNINCORPORATED CONSORTIA / JOINT VENTURES / SUB-CONTRACTORS ARE INVOLVED; EACH PARTY MUST SUBMIT A SEPARATE TCS CERTIFICATE / PIN / CSD NUMBER.
1.6	WHERE NO TCS IS AVAILABLE BUT THE BIDDER IS REGISTERED ON THE CENTRAL SUPPLIER DATABASE (CSD), A CSD NUMBER MUST BE PROVIDED.

NB: FAILURE TO PROVIDE / OR COMPLY WITH ANY OF THE ABOVE PARTICULARS MAY RENDER THE BID INVALID.

SIGNATURE OF BIDDER: ……

CAPACITY UNDER WHICH THIS BID IS SIGNED: ……

(Proof of authority must be submitted e.g., company resolution)

DATE:_____

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Part T1: Tendering Procedures

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].

DESCRIPTION	**Design, Manufacture, Supply, Delivery, Installation, Testing and Commissioning of Two (2) Dock- Side Rail -Mounted Portal Jib Cranes at the Port of East London for a period of sixteen(16) months.**
TENDER DOWNLOADING	**This Tender may be downloaded directly from these websites:** **ALL FREE OF CHARGE** **1. National Treasury e-Tender Publication Portal at www.etenders.gov.za,** **2. Transnet e-Tender Publication Portal website at https://transnetetenders.azurewebsites.net (please use Google Chrome to access Transnet link), and** **3. CIDB website https://www.cidb.org.za/cidb-tenders/current-tenders/**
COMPULSORY TENDER CLARIFICATION MEETING	A Compulsory Tender Clarification Meeting will be conducted at EMD Building, Corner Dr. Zahn & Nuffield Road, West bank, East London on the **13 February 2024,** at **11h00am [11 O'clock in the morning]** for a period of ± 2 (two) hours. Thereafter, a non-compulsory site-walk will take place.

	A Site visit/walk will take place, tenderers are to note: • Tenderers to provide own transportation and accommodation (if required). • Tenderers are required to wear safety shoes/boots, reflective visibility vests. • Tenderers without the recommended Personal Protective Equipment (PPE) will not be allowed on the site walk. • Tenderers and their employees, visitors, clients, and customers entering Transnet Offices, Depots, Workshops and Stores will have to undergo breathalyser testing. • All forms of firearms are prohibited on Transnet properties and premises. The relevant persons attending the meeting must ensure that their identity documents, passports, or drivers' licenses are on their possession for inspection at the access control gates. Certificate of Attendance in the form set out in the **Returnable Schedule T2.2-01** hereto must be completed and submitted with your Tender as proof of attendance is required for a **compulsory** clarification meeting. **Tenderers are required to bring this Returnable Schedule T2.2-01 to the Compulsory Tender Clarification Meeting to be signed by the *Employer's* Representative.** **Tenderers failing to attend the compulsory tender briefing will be disqualified.**
CLOSING DATE	**16h00 on 08 MARCH 2024** Tenderers must ensure that tenders are uploaded timeously onto the system. **If a tender is late, it will not be accepted for consideration**.

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.

2.1. The Transnet e-Tender Submission Portal can be accessed as follows:

Log on to the Transnet e-Tenders management platform website (https://transnetetenders.azurewebsites.net);

2.1.1. Click on "ADVERTISED TENDERS" to view advertised tenders;

2.1.2. Click on "SIGN IN/REGISTER – for bidder to register their information (must fill in all mandatory information);

2.1.3. Click on "SIGN IN/REGISTER" - to sign in if already registered;

2.1.4. Toggle (click to switch) the "Log an Intent" button to submit a bid;

2.1.5. Submit bid documents by uploading them into the system against each tender selected.

2.1.6. 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.

2.2. 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.

2.3. 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.

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 five (5) years including but not limited to breaches of the Competition Act 89 of 1998, as amended. Tenderers are required to indicate in tender returnable on T2.2-21, [**Breach of Law**] whether or not they have been found guilty of a serious breach of law during the past five (5) 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*:*
4.12.1. unduly high or unduly low tendered rates or amounts in the tender offer;
4.12.2. contract data of contract provided by the tenderer; or
4.12.3. 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 following:

- CSD Registration Number:
- Supplier Number/Unique registration reference number:
- RFP Reference Number:

7. TRANSNET GUIDE ON HOW TO UPLOAD RFP DOCUMENT

A detailed guide is herewith attached for all prospective bidders to familiarize themselves with the process of uploading and RFP into Transnet website.

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

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 423 of 2019 in Government Gazette No 42622 of 8 August 2019.(see 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 *Employer* is	**Transnet SOC Ltd** **(Reg No. 1990/000900/30)**
C.1.2	The tender documents issued by the *Employer* comprise:	
	Part T: 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 documents T2.2 Returnable schedules
	Part C: The contract	
	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
	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:	Senior Procurement Specialist

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Address:	1 Hely Hutchinson Road, Quiqney, East London
E – mail	TNPATenderenquiries3@transnet.net

C.2.1 Stage 1 and Stage 2 are part of the Administrative and Substantive Response. Only those tenderers who have submitted and satisfy the following eligibility criteria would be evaluated further:

1. STAGE ONE:

a) Eligibility with regards to attendance at the compulsory clarification meeting:

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.

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 clarification meeting and have their returnable document **T2.2-01 certificate of attendance** signed off by the Employer's authorised representative.

b) **Eligibility in terms of the Valid Construction Industry Development Board (T2.02-02):**

2.1. 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 **8ME** class of construction work, are eligible to have their tenders evaluated.

2.2. Joint Venture (JV)

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

2.2.1. every member of the joint venture is registered with the CIDB;

2.2.2. 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

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2.2.3. 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 **8ME** class of construction work or a value determined in accordance with Regulation 25(1B) or 25(7A) of the Construction Industry Development Regulations

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

2. STAGE TWO:

Technical Pre-Qualification for the key personnel that would be responsible of the execution of this project.

NB: Any tenderer that fail to submit any of the registered proposed key personnel as listed below will be regarded as unacceptable.

No	Evaluation Criteria	Proof of registration with registration number (MUST be submitted)- T2.2-03
1	**Project Manager** – must be registered in the category Pr.CPM with the South African Council for the Project and Construction Management Professions((SACPCMP) or Pr.PM from an *international recognised body.*	
2	**Construction Manager** – must be registered in the category Pr.CM with the South African Council for the Project and Construction Management Professions((SACPCMP).	
3	**Mechanical Engineer**- must be registered with the Engineering Council of South Africa (ECSA) (Pr Eng / Pr Tech Eng/Pr Cert Eng) *or from an international recognised body.*	
4	**Electrical Engineer** -must be registered with the Engineering Council of South Africa (ECSA) (Pr Eng / Pr Tech Eng/Pr Cert Eng) or *from an international recognised body.*	
5	**Structural Engineer-** must be registered with the Engineering Council of South Africa (ECSA) (Pr Eng / Pr Tech Eng) *or from an international recognised body.*	
6	**Safety Officer**-must be registered with South African Council for the Project and Construction Management Professions (SACPCMP).	

3. STAGE THREE - 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 criterion and, if any, each sub-criterion is as stated below.

NB: 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.

Functionality shall be scored independently by not less than 3 (three) evaluators and averaged in accordance with the following schedules:

3.1. T2.2-04. Experience of Key Personnel

3.2. T2.2-05. Tenderer's/Company* Previous Experience

3.3. T2.2-06. Method Statement

3.4. T2.2-07. Programme

3.5. T2.2-08. Health and Safety Requirements

3.6. T2.2-09.Environmental Management

3.7. T2.2-10.Quality Management

Each evaluation criteria will be assessed in terms of scores of 0, 20, 40, 60, 80 or 100 The scores of each of the evaluators will be averaged, weighted, and then totalled to obtain the final score for functionality, unless scored collectively. (See CIDB Inform Practice Note #9)

Functionality Criteria(Technical Evaluation)

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

Functionality criteria	Sub-criteria	Sub-criteria points	Maximum number of points
T2.2-04 Experience of Key Personnel	Project Manager	2.5	**15**
	Construction Manager	2.5	
	Mechanical Engineer	2.5	

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	Electrical engineer	2.5	
	Structural Engineer-	2.5	
	Safety Officer	2.5	
T2.2-05 Tenderer's/ Company* Previous Experience.	**One or more similar project to the scope with the following components:** a) Proven industrial Crane design capability. b) Proven Industrial manufacturing of Port Harbour cranes and equivalent machinery. c) Proven installation of Port Harbour cranes and equivalent machinery. d) Proven Industrial Electrical Installation Design & Installation. e) Proven industrial crane decommissioning & dismantling.	**30**	**30**
T2.2-06 Method Statement	**The Method statement should cover:** a) Design and Manufacture of Portal Jib Cranes. b) Delivering and Installation of Portal Jib Cranes c) Upgrade of Electrical Installations d) Commissioning Plan for Portal Jib Cranes e) Maintenance Plan for Portal Jib Cranes f) Decommissioning Plan for the existing Two Portal Jib Cranes. g) Project method statement proposal follows logical and sequential order in accordance with submitted project schedule/programme.	**25**	**25**
T2.2-07 Programme	The Tenderer must provide the proposed programme complying with, but not limited to, the minimum format requirements, as follows:		**10**
	level 3 Programme aligned to the scope of works	**1**	
	Programme software	**1**	
	Project Timeframe	**2**	
	Key Milestones	**1**	
	Columns Required	**1**	
	Critical Path	**2**	
	Project Activities	**1**	
	Basis of Schedule	**1**	

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T2.2-08 Health and Safety Requirements	Safety, Health & Environmental Policy	**1**	**7**
	Roles & Responsibilities	**1**	
	Overview of the Baseline risk Assessment	**2**	
	Contractor Safety Questionnaire	**2**	
	Cost of Health & Safety	**1**	
T2.2-09 Environmental Management	Environmental Management Plan	**1**	**5**
	Environmental Policy	**1**	
	Organogram with CV of key people with previous experience	**1**	
	Organogram with CV of key people with qualifications	**1**	
	List of projects where environmental duties of a similar nature	**1**	
T2.2-10 Quality Management	Quality Manual aligned to ISO 9001:2015	**1**	**8**
	Project Quality Plan	**1**	
	CV of Quality Officer(Qualification)	**1**	
	CV of the Quality Officer(Experience)	**1**	
	Quality Control Plan	**4**	
Maximum possible score for Functionality			**100**
**Note: In the event the bidder augments or supplements his or her experience by another company's experience (to meet one or more set criteria), a signed Partnership/Joint Venture/ Consortium agreement must be attached. The bidder MUST package that proof of experience accordingly for purpose of evaluation.*			

4. STAGE FOUR: PRICE AND SPECIFIC GOALS

Only tenders that achieve the minimum qualifying score for functionality will be evalu
Procurement Regulations.

Evaluation Criteria	Final Weighted Scores
Price	90
Specific Goals - Scorecard	10
TOTAL SCORE:	**100**

Up to 10 points of tender evaluation will be allocated for the specific goals. **Should the evidence required for any of the Specific Goals applicable in this tender not be provided, a tenderer will score zero preference points for that particular "Specific Goal".**

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

Specific Goals	Number of points (90/10 system)
B-BBEE Status Level of Contributor 1 or 2	2.00
The promotion of supplier development through subcontracting a minimum of 30% of the value of portions of the contract to /with EMEs and/or QSEs 51% owned by black people, youth, women or disabled people: • Manufacturing of the Dock side Rail Mounted Portal Jib cranes = 30% • Installation of Dock Side Rail Mounted Portal Jib cranes with and testing including commissioning = 30% • Decommissioning and Dismantling of Dock Side Rail Mounted Portal Jib Cranes = 30%	8.00
Non-compliant and/or B-BBEE Level 3-8 contributors	0.00

The following table represents the evidence to be submitted for claiming preference points for applicable specific goals in a particular tender:

Specific Goals	Number of points (90/10 system)
B-BBEE Status Level of Contributor 1 or 2	• B-BBEE Certificate / Sworn - Affidavit / CIPC B-BBEE Certificate (in case of JV, a consolidated scorecard will be accepted) as per DTIC guidelines
The promotion of supplier development through subcontracting a minimum of 30% of the value of portions of the contract to /with EMEs and/or QSEs 51% owned by black people, youth, women or disabled people: • Manufacturing of the Dock sided Rail Mounted Portal Jib cranes = 30% • Installation of Dock Sided Rail Mounted Portal Jib cranes and testing including commissioning = 30% • Decommissioning and Dismantling of Dock Side Rail Mounted Portal Jib Cranes = 30%	• Sub-contracting agreement/s and declaration • Sub-Contractors CIPC registration documents • Sub-Contractors B-BBEE Certificate / Sworn Affidavit / CIPC B-BBEE Certificate as per DTIC guidelines. • Certified copy of ID Documents of the Owners which are 51% owned by black women, youth and disabled people. • Doctor's note confirming the disability and/or Employment Equity Act 1(EEA1) form

Note: *Transnet reserves the right to carry out an independent audit of the tenderer's scorecard contract.*

5. **STAGE FIVE:** Post Tender negotiations

6. **STAGE SIX : SELECTION OF PREFFERED BIDDER** (Objective Criteria)

7. **STAGE SEVEN:** Award of a bid and conclusion of a contract.

C.2.7 **A compulsory clarification meeting as stated in the Tender Notice and Invitation to Tender** will be conducted at EMD Building, Corner Dr. Zahn & Nuffield Road, West bank, East London on the **13 February 2024,** at **11h00am [11 O'clock in the morning]** for a period of ± 2 (two) hours. Thereafter, a site walk will take place. **Immediately, after the compulsory clarification session. Prospective bidders would be given an opportunity to do site inspection for further demonstration of what was presented.**

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 C2.15.1	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: ▪ CONTACT PERSON AND DETAILS: ▪ THE TENDER NUMBER:TNPA/2023/10/0004/44109/RFP THE TENDER ▪ DESCRIPTION: DESIGN, MANUFACTURE, SUPPLY, DELIVERY, INSTALLATION, TESTING AND COMMISSIONING OF TWO (2) DOCK-SIDE RAIL-MOUNTED PORTAL JIB CRANES AT THE PORT OF EAST LONDON FOR A PERIOD OF SIXTEEN (16) MONTHS. Documents must be marked for the attention of: ***Employer*'s Agent: Senior Procurement Specialist**
C.2.13.9	Telephonic, telegraphic, facsimile or e-mailed tender offers will not be accepted.
C.2.15	The closing time for submission of tender offers is: Time: **16h00** on the **08 MARCH 2024** Location: The Transnet e-Tender Submission Portal: (https://transnetetenders.azurewebsites.net); **NO LATE TENDERS WILL BE ACCEPTED**
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.
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 an **affidavit** confirming annual turnover and level of black ownership, in line with the code of good practice, 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

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. The objective criteria Transnet may apply in this bid process include:

   a) Bidder is not in good standing with Transnet National Ports Authority due to a poor track record of past performance with Transnet SOC Ltd and or Transnet National Ports Authority;

   b) There is clear, uncontrived and/or overwhelming evidence and/or facts that the bidder has or continues to be in breach of any of the provisions contained in the Integrity Pact;

   c) The Probity check undertaken by Transnet National Ports Authority establishes the existence of any unmitigated risks which would have a negative impact on the project;

   d) Unless the appointment of the bidder would result in a negative impact on Transnet's Return on Investment;

   e) It is necessary to rotate Suppliers to promote opportunities for other suppliers, in circumstances where the bidder has been awarded business previously and the award of the tender will result in inequitable allocation of business;

f) The tenderer or its members, directors, partners:

- Is under restrictions as contemplated in the Integrity Pact,
- Is a subject of a process of restriction by Transnet or other state institution that Transnet may be aware of and there is a clear, uncontrived and/or overwhelming evidence and/or facts in relation to the alleged wrongdoing on the basis of which the restriction process has been initiated;
- cannot, as necessary and in relation to the proposed contract, demonstrate that it 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;
- has no legal capacity to enter into the contract;
- is insolvent, in receivership, under Business Rescue as provided for in chapter 6 of the Companies Act, 2008, being wound up, has its affairs administered pursuant to a court order, has ceased or suspended their business activities, or is subject to legal proceedings in respect of any of the foregoing;
- does not comply with the legal requirements, if any, stated in the tender data; and
- is not able 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).

Signed ..... Date .....

Name ..... Position .....

Tenderer .....

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Part T2: Returnable Documents

T2.1 LIST OF RETURNABLE DOCUMENTS

2.1.1 These schedules are required for pre-qualification and eligibility purpose:

STAGE ONE:

T2.2-01 As per Compulsory attendance of Clarification meeting: **Eligibility Criteria Schedule** – Certificate of attendance at Compulsory Tender Clarification Meeting

T2.2.02 Construction Industry Development Board: **Eligibility Criteria Schedule – Valid** CIDB Registration or Application

STAGE TWO:

T2.2-03 **Technical Pre-Qualification** Professional Registration

2.1.2 STAGE THREE: Functionality

T2.2-04 **Evaluation Schedule:** Experience of Key Personnel
T2.2-05 **Evaluation Schedule:** Tenderer's(Company-Previous Experience)
T2.2-06 **Evaluation Schedule:** Method Statement
T2.2-07 **Evaluation Schedule:** Programme
T2.2-08 **Evaluation Schedule:** Health and Safety Management
T2.2-09 **Evaluation Schedule:** Environmental Management
T2.2-10 **Evaluation Schedule:** Quality Management

2.1.3 Returnable Schedules: General

T2.2-11 Authority to submit tender
T2.2-12 Record of addenda to tender documents
T2.2-13 Letter of Good Standing for Occupational Injuries and Diseases Act (COIDA)
T2.2-14 Risk Elements
T2.2-15 Availability of equipment and other resources
T2.2-16 Schedule of proposed Subcontractors
T2.2-17 Site Establishment requirements
T2.2-18 Capacity and capability to meet delivery schedule
T2.2-19 CIDB SFU ANNEX G Compulsory Enterprise Questionnaire

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2.1.4. Agreement and Commitment by Tenderer:

T2.2-20 Non-Disclosure Agreement

T2.2-21 RFP Declaration Form

T2.2-22 RFP – Breach of Law

T2.2-23 Certificate of Acquaintance with Tender Document

T2.2-24 Service Provider Integrity Pact

T2.2-25 Supplier Code of Conduct

T2.2-26 Certified copy of signed joint venture agreement (where applicable)

T2.2-27 DPIP or FPPO

2.1.5. Bonds/Guarantees/Financial/Insurance:

T2.2-28 Insurance provided by the Contractor

T2.2-29 Form of Intent to provide a Performance Guarantee

T2.2-30 Forecast Rate of Invoicing

T2.2-31 Three (3) years latest audited financial statements

T2.2-32 POPIA

2.1.6. These schedules will be utilised for evaluation purposes:

T2.2-33 B-BBEE Certificate or Sworn Affidavit or CIPC B-BBEE Certificate or Consolidated B-BBEE scorecard in case of JV, will be accepted as per DTIC guidelines.

T2.2-34 For promotion of enterprises located in a specific province (Eastern Cape) for work to be done or services to be rendered in that province they must submit:

- CIPC registration documents
- B-BBEE Certificate or Sworn Affidavit or CIPC B-BBEE Certificate as per DTIC guidelines
- Proof of registered address of the entity (e.g., Municipality or Eskom Letter, Levy Statement, etc)

T2.2-35 The promotion of supplier development through subcontracting a minimum of 30% of the value of portions of the contract to /with EMEs and/or QSEs 51% owned by black people, youth, women or disabled people:

- Sub-contracting agreement/s and declaration
- Subcontractors CIPC registration documents

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- Subcontractors B-BBEE Certificate or Sworn Affidavit or CIPC B-BBEE Certificate as per DTIC guidelines
- Certified copy of ID Documents of the Owners which are 51% or more owned by black women, youth and disabled people
- Doctor's note confirming the disability and/or Employment Equity Act 1(EEA1) form

T2.2-36 Supplier Declaration Form

T2.2-37 Foreign Exchange Requirements

2.2 C1.1 Offer portion of Form of Offer & Acceptance

2.3 C1.2 Contract Data

2.4 C1.3 Form of Guarantee

2.5 C2.1 Pricing Instructions

2.6 C2.2 Activity Schedule

Signed	.....	Date	.....
Name	.....	Position	.....
Tenderer	.....		

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T2.2-01: Eligibility Criteria Schedule:

Certificate of Attendance at Compulsory Tender Clarification Meeting

This is to certify that

.....

(Company Name)

Represented by: .....

(Name and Surname)

Was represented at the compulsory tender clarification meeting

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 .....

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T2.2-02: 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 valid CIDB Grading Designation or evidence of being capable of being so registered.**

CRS Number	Status	Grading	Expiry Date

1. 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 **8ME** 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:

2.1. every member of the joint venture is registered with the CIDB;

2.2. the lead partner has a contractor grading designation of not lower than one level one level below the required grading designation in the class of construction works under consideration and possesses the required recognition status; and

2.3. 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 **8ME** class of construction work or a value determined in accordance with Regulation 25(1B) or 25(7A) of the Construction Industry Development Regulations.

2.4. the Contractor shall provide the employer with a certified copy of its signed joint venture agreement;

2.5. 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.

Signed ..... Date .....

Name ..... Position .....

Tenderer .....

T2.2-03: TECHNICAL PRE-QUALIFICATION FOR THE KEY PERSONNEL THAT WOULD BE RESPONSIBLE OF THE EXECUTION OF THIS PROJECT.

NB: Any tenderer that fail to submit any of the registered proposed key personnel as listed below will be regarded as unacceptable.

No	Evaluation Criteria	Proof of registration with registration number (MUST be submitted)
1	**Project Manager** – must be registered in the category Pr.CPM with the South African Council for the Project and Construction Management Professions((SACPCMP) or Pr.PM from an *international recognised body.*	
2	**Construction Manager** – must be registered in the category Pr.CM with the South African Council for the Project and Construction Management Professions((SACPCMP)	
3	**Mechanical Engineer**- must be registered with the Engineering Council of South Africa (ECSA) (Pr Eng / Pr Tech Eng/Pr Cert Eng) *or from an international recognised body.*	
4	**Electrical Engineer** -must be registered with the Engineering Council of South Africa (ECSA) (Pr Eng / Pr Tech Eng/Pr Cert Eng) or *from an international recognised body.*	
5	**Structural Engineer-** must be registered with the Engineering Council of South Africa (ECSA) (Pr Eng / Pr Tech Eng) *or from an international recognised body.*	
6	**Safety Officer** - South African Council for the Project and Construction Management Professions (SACPCMP)	

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T2.2-04: Evaluation Schedule – Qualification & CV's of Key Personnel

The Tenderer must demonstrate that they meet the minimum requirement; and need to submit the following documents as a minimum with your tender document:

The tender must be able to demonstrate that the project personnel have sufficient knowledge, experience and qualifications to provide the required services and submit the following documents as a minimum with the tender:

1. The experience of assigned key persons in relation to the scope of work will be evaluated from two different points of view, namely:
   i. Relevant experience - Proven industrial design capability, industrial manufacturing and installation of Port Harbour cranes and/ or similar and industrial rail installations for project managers, construction managers, engineers. *(The relevance of the experience will assessed against the discipline/key person)*
   ii. The education, training and skills of the assigned staff in the specific sector, field, subject, etc. which is directly linked to the Scope of Works. Proof of education and training must be attached to the C.V.
2. Comprehensive CV's should be attached to this schedule:
   As a minimum each CV should address the following, but not limited to;
   i. Personal particulars
      a. Name
      b. Place (s) of tertiary education and dates associated therewith.
      c. Professional awards
   ii. Qualifications (degrees, diplomas, grades of membership of professional societies and valid professional registrations)
   iii. Name of current employer and position in enterprise
   iv. Overview of post graduate experience (year, organization and position)
   v. Outline of recent assignments / experience that has a bearing on the Scope of Works

List of Key Persons assigned to the above disciplines:

	Evaluation Criteria	Experience:	Weighting
1	**Project Manager** – must be registered in the category Pr.CPM with the South African Council for the Project and Construction Management Professions((SACPCMP) or Pr.PM from an *international recognised body.*	Number of years of experience with qualification and number of years after professional registration.	2.5
2	**Construction Manager** – must be registered in the category Pr.CM with the South African Council for the Project and Construction Management	Number of years of experience with qualification and number of years after professional registration.	2.5

	Professions((SACPCMP).		
3	**Mechanical Engineer**- must be registered with the Engineering Council of South Africa (ECSA) (Pr Eng / Pr Tech Eng/Pr Cert Eng) *or from an international recognised body.*	Number of years of experience with qualification and number of years after professional registration.	2.5
4	**Electrical Engineer** -must be registered with the Engineering Council of South Africa (ECSA) (Pr Eng / Pr Tech Eng/Pr Cert Eng) or *from an international recognised body.*	Number of years of experience with qualification and number of years after professional registration.	2.5
5	**Structural Engineer-** must be registered with the Engineering Council of South Africa(ECSA) (Pr Eng / Pr Tech Eng) *or from an international recognised body.*	Number of years of experience with qualification and number of years after professional registration.	2.5
6	**Safety Officer** - South African Council for the Project and Construction Management Professions (SACPCMP)	Number of years of experience with qualification and number of years after professional registration.	2.5
	TOTAL		**15**

The scoring of key persons will be as follows:

Criteria	Sub-Criteria	Experience: pre-registration and experience post registration	Scoring	Criteria Matrix	Weighting Matrix	Weighting /Points
Evaluation Schedule: **T2.2-04: Track Record (Lead Resources)**					**100%**	**15**
Previous experience of proposed personnel (where applicable, Professional Registration documentation).	**Project Manager** – must be registered in the category Pr.CPM with the South African Council for the Project and Construction Management Professions((SACPCMP) or Pr.PM from an *international recognised body.*	Number of years of experience with qualification and number of years after professional registration.	**10** years and more of experience of which 5 years post professional registration	100%	10%	2.5
			8 years and more of experience of which 4 years post professional registration	80%		
			7 years and more of experience of which 3 years post professional registration	60%		
			5 years and more of experience of which 2 years post professional registration	40%		
			3 years and more of experience of which 1 year post professional registration	20%		
			Less than 3 years of experience with less than 1 year post professional registration	0		
	Construction Manager – must be registered in the category Pr.CM with the South African Council for the Project and Construction Management Professions((SACPCMP)	Number of years of experience with qualification and number of years after professional registration.	**10** years and more of experience of which 5 years post professional registration	100%	10%	2.5
			8 years and more of experience of which 4 years post professional registration	80%		
			7 years and more of experience of which 3 years post professional registration	60%		
			5 years and more of experience of which 2 years post professional registration	40%		
			3 years and more of experience of which 1 year post professional registration	20%		
			Less than 3 years of experience with less than 1 year post professional registration	0		
	Mechanical Engineer- must be registered with the Engineering Council of South Africa (ECSA) (Pr Eng / Pr Tech Eng/Pr Cert Eng) *or from an international recognised body.*	Number of years of experience with qualification and number of years after professional registration.	**10** years and more of experience of which 5 years post professional registration	100%	10%	2.5
			8 years and more of experience of which 4 years post professional registration	80%		
			7 years and more of experience of which 3 years post professional registration	60%		
			5 years and more of experience of which 2 years post professional registration	40%		
			3 years and more of experience of which 1 year post professional registration	20%		
			Less than 3 years of experience with less than 1 year post professional registration	0		

Criteria	Sub-Criteria	Experience: pre-registration and experience post registration	Scoring	Criteria Matrix	Weighting Matrix	Weighting /Points
	Electrical Engineer -must be registered with the Engineering Council of South Africa (ECSA) (Pr Eng / Pr Tech Eng/Pr Cert Eng) or *from an international recognised body.*international recognised body. *(Submission of a detailed CV)*	Number of years of experience with qualification and number of years after professional registration.	**10** years and more of experience of which 5 years post professional registration	100%	10%	2.5
			8 years and more of experience of which 4 years post processional registration	80%		
			7 years and more of experience of which 3 years post professional registration	60%		
			5 years and more of experience of which 2 years post professional registration	40%		
			3 years and more of experience of which 1 year post professional registration	20%		
			Less than 3 years of experience with less than 1 year post professional registration	0		
	Structural Engineer- must be registered with the Engineering Council of South Africa(ECSA) (Pr Eng / Pr Tech Eng) *or from an international recognised body.*	Number of years of experience with qualification and number of years after professional registration.	**10** years and more of experience of which 5 years post professional registration	100%	40%	2.5
			8 years and more of experience of which 4 years post professional registration	80%		
			7 years and more of experience of which 3 years post professional registration	60%		
			5 years and more of experience of which 2 years post professional registration	40%		
			3 years and more of experience of which 1 year post professional registration	20%		
			Less than 3 years of experience with less than 1 year post professional registration	0		
	Safety Officer - must be registered with South African Council for the Project and Construction Management Professions (SACPCMP)		**10 years and more of experience of** which 5 years post professional registration	100%	10	2.5
			8 years and more of experience of which 4 years post professional registration	80%		
			7 years and more of experience of which 3 years post professional registration	60%		
			5 years and more of experience of which 2 years post professional registration	40%		
			3 years and more of experience of which 1 year post professional registration	20%		
			Less than 3 years of experience with less than 1 year post professional registration	0		

T2.2-05: Evaluation Schedule: Company* Previous Experience

Note to Tenderers:

Tenderers are required to demonstrate their previous experience in comparable projects of similar size and nature by submitting the following:

- A list of past/ current comparable projects completed.
- Construction of similar works as detailed in the Works Information with reference to the following components:
    - Proven Industrial design capability of Dock-side Rail Mounted Portal Jib cranes and or similar cranes (Port Harbour Cranes, Ship to shore cranes, gantry mounted cranes and rubber tyred gantry cranes)
    - Proven Industrial manufacturing of Dock-side Rail Mounted Portal Jib cranes and/ or similar cranes (Port Harbour Cranes, Ship to shore cranes, gantry mounted cranes, rubber tyred gantry and portal harbour cranes.
    - Proven installation of Dock-side Rail Mounted Portal Jib cranes or similar cranes (Portal harbour cranes, ship to shore cranes, gantry mounted cranes and rubber tyred gantry cranes)
    - Proven industrial decommissioning and dismantling of Dock side Rail Mounted Portal Jib cranes or similar (Portal harbour cranes, ship to shore cranes, gantry mounted cranes and rubber tyred gantry cranes)
    - ***(The document must contain the following heading or topics or subheadings: Client name and contact details, project description, duration, and contract value). That would mean an appointment letter must be accompanied by completion certificate or letter from the Client/Consultant that is duly authorized or signed by the delegated employee of that company. The items highlighted in bold above – qualifies the evaluator to reduce the score if information is not supplied in the tender document.***

Index of documentation attached to this schedule:

	Document Name
1	
2	
3	

Evaluation Schedule:

T2.2-05: Previous Experience of the company*

Criteria	Sub-Criteria	Criteria	Scoring	Criteria Matrix	Weighting Matrix	Weighting
"Previous experience of the **company*** in similar works with: 1. Detailed previous experience of a company* in projects with the following components: 2. ***Detailed Design, Manufacture and supply, Procurement of equipment, Equipment delivery, Testing and installation, Commissioning, and handover Sufficient evidence of contactable references letter/s to substantiate experience indicated must be submitted.(The document must contain the following heading or topics or subheadings: Client name and contact details, project description, duration, and contract value).*** That would mean an appointment letter must be accompanied by completion certificate or letter from the Client/Consultant that is duly authorized or signed by the delegated employee of that company. The items highlighted in bold above – qualifies the evaluator to reduce the score if information is not supplied in the tender document.	"Similar works of 1 or more projects with the following components: 1. Proven industrial design capability of jib cranes and/or similar (Port Harbour cranes, ship-to-shore cranes, gantry mounted cranes, rubber tyred gantry and portal harbour cranes 2. Proven industrial design capability of industrial rail . 3. Proven industrial manufacturing of jib cranes and/or similar (Port Harbour cranes, ship-to-shore cranes, gantry mounted cranes, rubber tyred gantry and portal harbour cranes 4. Proven industrial rail installations. 5. Proven installation of jib cranes and/or similar (Port Harbour cranes, ship-to-shore cranes, gantry mounted cranes, rubber tyred gantry and portal harbour cranes	1 or more projects with 3 of the listed components.	1 or more projects with all listed components.	100%	100%	30
			1 or more projects with 4 of the listed components.	80%		
			1 or more projects with 3 of the listed components.	60%		
			1 or more projects with 2 of the listed components.	40%		
			1 or more projects with 1 of the listed components.	20%		
			No similar projects submitted.	0		

Note: In the event the bidder augments or supplements his or her experience by another company's experience (to meet one or more set criteria), a signed Partnership/Joint Venture/Consortium agreement must be attached. The bidder MUST package that proof of experience accordingly for purpose of evaluation.

T2.2-06: Evaluation Schedule – Method Statement

Tenderers are to submit a project specific Method Statement which responds to the scope of services and outlines their proposed methodology including, but not limited to, programme, technical approach, and understanding of the project objective. The method statement should explain the methodologies which are to be adopted and demonstrate its compatibility, including processes, procedures and associated resources to meet the requirements, and further indicate how risks will be managed. The tenderer must highlight the issues of importance and explain the technical approach they would adopt to address them. The method statement shall highlight the categories below:

Element	Sub-Criteria Elements	Weighting
a.	Detailed Designs for Portal Jib Cranes,	**5**
b.	Manufacture and Supply of Portal Jib Cranes	**5**
c.	Delivery and Installation of Portal Jib Cranes	**5**
d.	Installation, Testing and Commissioning of Portal jib Cranes	**3**
e.	Decommissioning & Dismantling Plan for the two (2) existing Portal Jib Cranes	**4**
f.	Project method statement proposal follows logical and sequential order in accordance with submitted project schedule/programme	**3**
	Total	**25**

Replacement of Two Graving Dock Jib Cranes	
Total Points: 25	
Score 0	The tender has submitted no information.
Score 20	The tenderer's method statement submitted addresses one (1) to three (3) listed elements of the scope of work.
Score 40	The tender's method statement submitted addresses four (4) - five (5) listed elements of the scope of work.
Score 60	The tender's method statement submitted addresses all six (6) listed elements of the scope of work.
Score 80	Besides meeting the "60" rating, the method statement covers all required aspects of the works, the methods and equipment required at various stages of the project, details of traffic management to minimise disruption to operations, and has close alignment to programme.
Score 100	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 methodologies. The method statement details ways to improve the project outcomes and the quality of the outputs.

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T.2.2-07: Programme

The Tenderer must provide a programme which provides the detail that would indicate the order and timing of activities to carry out the works in terms of the Employer's requirements and within the stipulated timeframes. The Tenderer must provide the proposed programme complying with, but not limited to, the minimum format requirements, as follows:

1) A **Level 3 Programme** aligned to the scope of works.
2) **Programme software**: Primavera P6 or MS Project ***(documents must be in PDF copy)*** detailed programme as per the scope of works.
3) **Project Timeframe**: The Tenderer to demonstrate capability to meet the required timeframe of sixteen (16) months aligning with the scope of works.
4) **Key Milestones**: The Tenderer to clearly indicate the key milestones for all activities e.g., project start date, site access date, completion date, material delivery date, employer documents review & approval date.
5) **Columns Required**: The columns that should reflect per activity, the date of requirements include the Start date, Finish date, Duration, Float (Tenderer must indicate where exactly their project float resides), Predecessors, Successors and Calendar.
6) **Critical Path**: Clearly show the sequencing of all deliverables/activities. All activities should be linked with no open-end activities, critical path method to be used, and critical path clearly visible.
7) **Project Activities**: The Tenderer to list all activities involved to complete the works, including but not limited to SHERQ submissions, Time Risk Allowance for Employer's review and approval activities, Time risk allowance (TRA) for e.g., allowance for inclement weather conditions, Engineering activities, construction and project close out activities.
8) **Basis of Schedule**: Schedule Narrative that explains schedule development, resources utilized /loaded (Personnel, Plant and Equipment) in the schedule, schedule risks, project calendar, project exclusions, assumptions made during schedule development and any deviations included.

The Programme to indicate the following as a minimum:

Activity No	Activity name	Duration	Start date	Finish date	Predecessor	Successor	Float	Calendar

Signed ..... Date .....

Name ..... Position .....

Tenderer .....

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The scoring of the Programme requirements will be as follows:

TOTAL POINTS: 10		Programme Software	Minimum Program Level	Project Timeframe	Key Milestones	Basis of schedule	Columns Required	Critical Path	Project Activities
SUB-TOTAL		(1)	(1)	(2)	(1)	(1)	(1)	(2)	(1)
Score	0	No Response/ Information submitted cannot be scored/ Information not submitted in Primavera P6 or MS Projects format.	No Response/Information submitted cannot be scored/ Programme is at Level 2 or less.	No Response/ Information submitted cannot be scored.	The tenderer has omitted all requirements.	No Response/ Information submitted cannot be scored.	The tenderer has omitted all requirements.	The tenderer has not indicated the critical path.	No Response/Information submitted cannot be scored.
	20			The programme exceeds the completion duration by fifteen (15) days.	The tenderer has omitted four (4) requirements.	The tenderer's submission does not address the critical requirements.	The tenderer has omitted four (4) requirements.	Critical Path has poor sequencing of deliverables/activities	The tenderer has omitted four (4) requirements.
	40			The programme exceeds the completion duration by ten (10) days.	The tenderer has omitted three (3) requirements.		The tenderer has omitted three (3) requirements.	Critical Path shows inadequate sequencing of deliverables/ activities	The tenderer has omitted three (3) requirements.
	60			The programme exceeds the completion duration by five (5) days.	The tenderer has omitted two (2) requirements.		The tenderer has omitted two (2) requirements	Critical Path shows the sequencing of all deliverables/ activities and linked with open-end activities	The tenderer has omitted two (2) requirements.
	80			The programme is in line with the completion duration of the project.	The tenderer has omitted one (1) requirement.		The tenderer has omitted one (1) requirement	Critical Path clearly shows the sequencing of all deliverables/ activities and linked with no open end activities	The tenderer has omitted one (1) requirement.
	100	The programme is in Primavera P6 or MS Project format.	The Programme is at Level 3 or more.	Besides meeting the "80" rating, the tenderer has exceeded the expectations by showing an earlier project completion date.	The tenderer has addressed all milestones requirements correctly.	The tenderer has addressed all the column requirements.	The tenderer has addressed all the column requirements.	Critical Path demonstrates sufficient details depicting delivery of the project within a period of 16 months.	The tenderer has indicated all activities.

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T2.2-08: Evaluation Schedule: Health and Safety Requirements

Submit the following documents as a minimum with your tender:

1. 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.
2. Roles & Responsibilities, such as S16.2 Ass to CEO, CR8.1 Construction Manager, CR8.5 Safety officer, CR8.7 Construction Supervisor, CR9.1 Risk Assessor, GAR Incident Investigator, 17.1 SHE Reps, etc. as per the Occupational health and safety Act 85 of 1993.
3. Overview of the project specific Task Risk Assessment (RA), indicating major activities of the project namely:
   - Site establishment;
   - Upgrading of Electrical equipment
   - Assembly and Installation of new cranes
   - Commissioning of new cranes
   - Decommissioning of existing cranes
4. Complete and return with tender documentation the Contractor Safety Questionnaire included to this Evaluation Schedule as a returnable, attach all required supporting documents and complete your company three-years synopsis of SHE incidents.
5. Evidence that the Principal Contractor have made adequate provisions for the cost of Health & Safety "Activity Schedule": CR 3(5) (b)(iii) read with CR 5(1)(g)

Attached submissions to this schedule:

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.....

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The scoring of the Tenderer's Health and safety requirements will be as follows:

Points(7)	**1**	**1**	**2**	**2**	**1**
	Policy (State points allocated) 1) Commitment to Safety, prevention of pollution, 2) Continual improvement, 3) Compliance to legal requirements, appropriate to the nature of contractor's activities, 4) Hold management accountable for development of the safety systems, 5) Include objectives and targets.	**Roles & Responsibilities** 1) S16.2 Ass to CEO 2) 8.1 Construction Manager - SACPCMP registration as Pr. Construction Manager, 3) 8.5 SACPMP Registered Construction Health and Safety officer, 4) 8.7 Construction Supervisor, 5) 9.1 Risk Assessor, 6) GAR Incident Investigator, 7) 17.1 SHE Rep as per the Occupational health and safety Act 85 of 1993	**Overview of the Baseline risk assessment** Indicating major activities of the project: 1) Site establishment; 2) Upgrading of Electrical equipment 3) Assembly and Installation of new cranes 4) Commissioning of new cranes 5) Decommissioning of existing cranes	**Safety Questionnaire** Complete and return with tender documentation the Contractor Safety Questionnaire with required all supporting documentation included as an Annexure. The questionnaire must be fully completed. Points will be allocated to the critical areas identified in the questionnaire. • Letter of good standing (0.5); • Health and safety plan (0.5); and • Health and Safety resource (1).	**Cost Breakdown Sheet.** Submission of completed cost breakdown sheet covering health and safety budget allocation.
Score 0	The Tenderer has submitted no information to determine a score.				

Score 20	**1 of the 5** key policy components are recognized and meet the *Employer's* requirement and it is signed by the Chief Executive Officer.	**≤2 of the 7** Roles and responsibilities are in compliance as per the Works Information and meet the Occupational health and safety Act as per construction regulations and TNPA health and safety specification.	**1 of the 5** submitted task risk assessment specific to the project and covers all the outline sub-activities, applicable to the task.	Less than eight (8) sections completed in questionnaire and total score of supporting documents as per the allocated points 01% – 30% on the returnable safety questionnaire.	Health and safety Budget submitted is totally insignificant / inadequate to achieve the required standard of service, between 0% - 1% of the tender value.
Score 40	**2 of the 5** key policy components are recognized and meet the *Employer's* requirement and it is signed by the Chief Executive Officer.	**>2 ≤ 4 of the 7** Roles and responsibilities are in compliance as per the Works Information and meet the Occupational health and safety Act as per construction regulations and TNPA health and safety specification.	**2 of the 5** submitted task risk assessment specific to the project and covers all the outline sub-activities, applicable to the task.	Up to eight (8) sections completed in questionnaire and total score of supporting documents as per the allocated points 31% - 50% on the returnable safety questionnaire.	Health and safety Budget submitted is insignificant / inadequate / answer / solution to the returnable, Employer's health and safety requirements will not be met, greater than 1% but less than 2% of the tender value.
Score 60	**3 of the 5** key policy components are recognized and meet the *Employer's* requirements and it is signed by the Chief Executive Officer.	**5 of the 7** Roles and responsibilities are in compliance as per the Works Information and meet the Occupational health and safety Act as per construction	**3 of the 5** submitted task risk assessment specific to the project and covers all the outline sub-activities, applicable to the task.	All sections completed in questionnaire and total score of supporting documents as per the allocated points 51% - 70% on the returnable safety questionnaire.	Health and safety Budget submitted is Satisfactory response / answer / solution to the returnable, Employer's health and safety requirements will be met, 2% and greater but

		regulations and TNPA health and safety specification.			less than 3% of the tender value.
Score 80	**4 of the 5** key policy components are recognized and meets the *Employer's* requirements and it is signed by the Chief Executive Officer.	**6 of the 7** Roles and responsibilities are in compliance as per the Works Information and meet the Occupational health and safety Act as per construction regulations and TNPA health and safety specification.	**4 of the 5** submitted task risk assessment specific to the project and covers all the outline sub-activities, applicable to the task.	All sections completed in questionnaire and total score of supporting documents as per the allocated points 71% - 90% on the returnable safety questionnaire.	Health and safety Budget submitted is good response / answer /solution to the returnable, Employer's health and safety requirements will be met, 3% and greater but less than 4% of the tender value.
Score 100	**All 5 key** policy components are recognized and meets the *Employer's* requirements, and it is signed by the Chief Executive Officer.	**All 7** Roles and responsibilities are in compliance as per the Works Information and meet the Occupational health and safety Act as per construction regulations and TNPA health and safety specification.	**all 5** submitted task risk assessments specific to the project and covers all the outline sub-activities, applicable to the task.	All sections completed in questionnaire and total score of supporting documents as per the allocated points 91% - 100% on the returnable safety questionnaire.	Health and safety Budget submitted is very good response / answer / solution to the returnable, Employer's health and safety requirements will be met, 4% and greater of the tender value.

T2.2-08A: Health and Safety Questionnaire

1. SAFE WORK PERFORMANCE

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			
Action taken to prevent re-occurrence			

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 valid copy)
☐ Yes
☐ No (0.5)

2. CITATIONS

2A. Has your company been cited, charged or prosecuted under Health, Safety and/or Environmental Legislation in the last 5 years?
☐ Yes ☐ No
If yes, provide details:

2B.	Has your company been cited, charged or prosecuted under the above Legislation in another Country, Region or State? ☐ Yes ☐ No If yes, provide details:

3. CERTIFICATE OF RECOGNITION

Does your company have a Certificate of Recognition?
☐ Yes ☐ No If Yes, what is the Certificate No. _____ Issue Date _____

4. SAFETY PROGRAM (0.5)

Do you have a written health and safety plan? ☐ Yes ☐ No
If Yes, provide a copy for review

Health and Safety plan should contain the following elements:

	YES	NO		YES	NO
HEALTH & SAFETY POLICY	☐	☐	EXCAVATIONS	☐	☐
INCIDENT MANAGEMENT, REPORTING & INVESTIGATION	☐	☐	EMERGENCY PREPAREDNESS & RESPONSE	☐	☐
RECORDKEEPING & STATISTICS	☐	☐	HAZARD IDENTIFICATION & RISK ASSESSMENT	☐	☐
REFERENCE TO LEGISLATION	☐	☐	MEASURING & MONITORING	☐	☐
GENERAL RULES & REGULATIONS	☐	☐	SAFE WORK PROCEDURES	☐	☐
PROGRESSIVE DISCIPLINE POLICY	☐	☐	WORKPLACE INSPECTIONS	☐	☐
ROLES & RESPONSIBILITIES	☐	☐	PERMIT TO WORK	☐	☐
PPE STANDARDS	☐	☐	COMPETENCE, TRAINING & AWARENESS	☐	☐
ALCOHOL, DRUGS & OTHER	☐	☐	COMMUNICATION, PARTICIPATION & CONSULTATION PROCESSES	☐	☐
WORKING AT HEIGHTS	☐	☐			

5. TRAINING PROGRAM

5A. Do you have an orientation program (inductions) for new hire employees? ☐ Yes ☐ No
If Yes, include a course outline. Does it include any of the following:

	YES	NO		YES	NO
GENERAL RULES & REGULATIONS	☐	☐	CONFINED SPACE ENTRY	☐	☐
EMERGENCY REPORTING	☐	☐	TRENCHING & EXCAVATION	☐	☐
INJURY REPORTING	☐	☐	SIGNS & BARRICADES	☐	☐
LEGISLATION	☐	☐	DANGEROUS HOLES & OPENINGS	☐	☐
RIGHT TO REFUSE WORK	☐	☐	RIGGING & CRANES	☐	☐
PERSONAL PROTECTIVE EQUIPMENT	☐	☐	MOBILE VEHICLES	☐	☐
EMERGENCY PROCEDURES	☐	☐	PREVENTATIVE MAINTENANCE	☐	☐

PROJECT SAFETY COMMITTEE	☐	☐	HAND & POWER TOOLS	☐	☐
HOUSEKEEPING	☐	☐	FIRE PREVENTION & PROTECTION	☐	☐
LADDERS & SCAFFOLDS	☐	☐	ELECTRICAL SAFETY	☐	☐
FALL ARREST STANDARDS	☐	☐	COMPRESSED GAS CYLINDERS	☐	☐
AERIAL WORK PLATFORMS	☐	☐	WEATHER EXTREMES	☐	☐

5B. Do you have a program for training newly hired or promoted supervisors? ☐ Yes ☐ No

(If Yes, submit an outline for evaluation. Does it include instruction on the following:

	Yes	No		Yes	No
EMPLOYER RESPONSIBILITIES	☐	☐	SAFETY COMMUNICATION	☐	☐
EMPLOYEE RESPONSIBILITIES	☐	☐	FIRST AID/MEDICAL PROCEDURES	☐	☐
DUE DILIGENCE	☐	☐	NEW WORKER TRAINING	☐	☐
SAFETY LEADERSHIP	☐	☐	ENVIRONMENTAL REQUIREMENTS	☐	☐
WORK REFUSALS	☐	☐	HAZARD ASSESSMENT	☐	☐
INSPECTION PROCESSES	☐	☐	PRE-JOB SAFETY INSTRUCTION	☐	☐
EMERGENCY PROCEDURES	☐	☐	DRUG & ALCOHOL POLICY	☐	☐
INCIDENT INVESTIGATION	☐	☐	PROGRESSIVE DISCIPLINARY POLICY	☐	☐
SAFE WORK PROCEDURES	☐	☐	SAFE WORK PRACTICES	☐	☐
SAFETY MEETINGS	☐	☐	NOTIFICATION REQUIREMENTS	☐	☐

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	☐	☐	☐	☐	☐
Managing Director	☐	☐	☐	☐	☐
Safety Director/Manager	☐	☐	☐	☐	☐
/Chief Executive Officer	☐	☐	☐	☐	☐

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	☐	☐	☐	☐	☐
Incidents totaled by project	☐	☐	☐	☐	☐
• Subtotaled by superintendent	☐	☐	☐	☐	☐
• Subtotaled by foreman	☐	☐	☐	☐	☐

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	☐	☐	☐	☐	☐
Costs totaled by project	☐	☐	☐	☐	☐
• Subtotaled by superintendent	☐	☐	☐	☐	☐
• Subtotaled by foreman/general foreman	☐	☐	☐	☐	☐

7D Does your company track non-injury incidents?

	Yes	No	Monthly	Quarterly	Annually
Near Miss	☐	☐	☐	☐	☐
Property Damage	☐	☐	☐	☐	☐
Fire	☐	☐	☐	☐	☐
Security	☐	☐	☐	☐	☐
Environmental	☐	☐	☐	☐	☐

8 PERSONNEL (1)

List health and safety officer planned for this project. Attach CV highlighting experience with copies of qualifications, trainings, valid proof of registration with SACPCMP

Name	Position/Title	SACPCMP registration number

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

T2.2-07B 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			

Total Health and Safety Estimate (R)	
Total Estimate Value (R)	
H&S Cost as % of Tender value	

T2.2 -09 Environmental Management

The Tenderer must review the following documents attached as **Annexures to the Scope of Works** for context to meet the environmental requirements, namely:

a) Transnet Governance Framework which comprises of the following:
- Contractor Environmental and Sustainability specification Guideline: TRN-IMS-GRP-014.4
- Standard Operating Procedure - Construction Environmental Management (009-TCC-CLO-SUS-11386)

1. The tenderer must provide evidence of how their Environmental Management Plan will ensure conformance to the below mentioned requirements.

   1.1. Roles and Responsibilities
   1.2. Legislative Requirements
   1.3. Impacts and Mitigation
   1.4. Incident and Non-conformance Reports
   1.5. Monitoring and Continuous Improvement

2. The tenderer must provide an environmental policy signed by Top Management which, as a minimum:

   2.1. Is appropriate given the purpose and context of the tenderer's business;
   2.2. Includes a commitment to fulfil the tenderer's environmental compliance (legal) obligations;
   2.3. Includes a commitment to the protection of the environment, including prevention of pollution;
   2.4. Provides framework for setting environmental objectives; and
   2.5. Includes a commitment to continual improvement of their Environmental Management System (EMS);

3. Provide the CV for the Environmental Officer that includes a qualification in Natural Science and three (3) years of relevant experience. The CV should depict the roles, and responsibilities within the Environmental Management discipline.

4. The tenderer must provide a list of projects where environmental duties of a similar nature have been executed including a brief description of such duties together with client reference contact details.

By signing this Tender Schedule, the tenderer confirms that they will comply with the above requirements and in particular Transnet policy statements and environmental specifications.

Attached submissions to this schedule:

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The scoring of the Tenderer's Environmental requirements will be as follows:

	Environmental Management Plan (EMP)	**Environmental policy**	**CV for Environmental Officer illustrating Previous Experience and Qualification**		**List of projects where environmental duties of a similar nature**
Total Points: 5	**1**	**1**	**1**	**1**	**1**
	Environmental Management Plan The tenderer must provide evidence of how their Environmental Management Plan that will ensure conformance to the abovementioned requirements 1. Roles and Responsibilities 2. Legislative Requirements 3. Impacts and Mitigation 4. Incident and Non-conformance Reports 5. Monitoring and Continuous Improvement	**Environmental Policy** The tenderer must provide an environmental policy signed by Top Management which, as a minimum: 1. Is appropriate given the purpose and context of the tenderer's business; 2. Includes a commitment to fulfil the tenderer's environmental compliance (legal) obligations; 3. Includes a commitment to the protection of the environment, including prevention of pollution; 4. Provides framework for setting environmental objectives; and 5. Includes a commitment to continual improvement of their EMS;	**Qualifications in a CV** Provide the CV for the Environmental Officer that includes a **qualification in Natural Science** and three (3) years of relevant experience. The CV should depict the roles, and responsibilities within the Environmental Management discipline.	**Years of experience in a CV** Provide the CV for the Environmental Officer that includes a qualification in Natural Science and **three (3) years of relevant experience**. The CV should depict the roles, and responsibilities within the Environmental Management discipline.	**List of projects where environmental duties of a similar nature** The tenderer must provide a list of projects where environmental duties of a similar nature have been executed including a brief description of such duties together with client reference contact details
Score 0	The tenderer has submitted no information				

Score 20	EMP only responds to 1 -2 of the items listed above	Policy only responds to 1 -2 of the items listed above	Environmental Officer in possession of a relevant Certificate in Environmental Management	Environmental Officer has ‹11 months of relevant on the job experience	Tenderer has completed 1 project of similar nature
Score 40	EMP only responds to 3 – 4 items listed above	Policy only responds to 3 – 4 items listed above	Environmental Officer in possession of a Diploma in Environmental Management	Environmental Officer has more than 11 months but less than 2 years of relevant on the job experience	Tenderer has completed 2 projects of similar nature
Score 60	EMP indicates all items listed above	Policy responds to all items listed above	Environmental Officer in possession of a Bachelor's Degree in Natural Science	Environmental Officer has more than 2 years but less than 4 years of relevant on the job experience.	Tenderer has completed 3 projects of similar nature
Score 80	EMP responds to all items listed above and includes additional elements to environmental performance	Policy responds to all items listed above and includes additional commitments to environmental performance	Environmental Officer in possession of a Bachelor's Degree with Honours Natural Science	Environmental Officer has ≥4 years but ≤8 years of relevant on the job experience	Tenderer has completed 4 projects of similar nature
Score 100	EMP responds to all items listed above, includes additional commitments to environmental performance and has been certified according to international best practice standards	Policy responds to all items listed above, includes additional commitments to environmental performance and has been certified according to international best practice standards	Environmental Officer in possession of a Master's Degree in Natural Science	Environmental Officer has >8 years of relevant on-the-job experience	Tenderer has completed more than 4 projects of similar nature

Signed ..... Date .....

Name ..... Position .....

Tenderer .....

T2.2-10: Quality Management

Due consideration must be given to the deliverables required to execute and complete the contract as per the:

- TNPA-QUAL-REQ-014.1 General Quality Requirements for Contractors and Suppliers **(Annexure to the scope of works)** and
- ISO 9001:2015 Quality Management System (QMS) requirements and should include:

1. **Quality Manual** that is aligned to ISO 9001:2015 QMS requirements.
2. **Project Quality Plan** (PQP) for the contract shall cover project specific scope and be aligned to TNPA-QUAL-REQ-014.1 General Quality Requirements for Contractors and Suppliers.
3. **CV of Quality Officer** supplemented by **Qualification** - Quality diploma / Technical diploma and ISO 9001:2015 Quality Management System training certificates (Implementation of QMS and Internal Auditing). The Quality Officer MUST have a minimum of 3 years' quality experience in mechanical and fabrication works.
4. **Quality Control Plans** to be submitted be MUST for:
    - Fabrication work (welding),
    - Distriution Board,
    - Electrical installation and
    - Corrosion Protection**.**

    All the above QCPs should clearly identify all inspection, test, verification requirements to meet contractual obligations, specifications and drawings as required by the project scope.

Index of documentation attached to this schedule:
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TRANSNET CONFIDENTIAL INFORMATION

The scoring of Quality Management will be as follows:

Score	Quality Maual	Project Quality Plan (PQP)	CV of Quality Officer		Quality Control Plans (QCPs)
	Quality Manual requirements aligned to ISO 9001:2015 1. Context of the organization 2. Leadership 3. Support 4. Operations 5. Performance evaluation	**Project Quality Plan (PQP) requirements for the project** 1. Scope of works 2. Control of documented information 3. Resources 4. Audits 5. Control of non-conforming outputs	**Experience**	**Qualifications**	**Quality Control Plans (QCPs) for** 1. Fabrication works (Welding) 2. Distriution Board 3. Electrical installation 4. Corrosion Protection **QCPs template format must indicate the following areas:** • Sequence of activities • Procedure/code specifications • Intervention points • Field inspection checklist • Relevant signatories
Total Points: 8	**1**	**1**	**1**	**1**	**4**
Score 0	No submission	No submission	No submission	No submission	No submission

Score	Quality Maual	Project Quality Plan (PQP)	CV of Quality Officer		Quality Control Plans (QCPs)
Score 20	Quality Manual contains 1 of the 5 QMS requirements.	Project Quality Plan contains 1 of the 5 PQP requirements.	Resource with zero experience in Quality in mechanical and fabrication works.	Qualifications not applicable as per item 3 above.	QCPs submitted are not project related
Score 40	Quality manual contains 2 of the 5 QMS requirements.	Project Quality Plan contains 2 of the 5 PQP requirements.	Less than 3 years Quality experience in mechanical and fabrication works.	Resource has a ISO 9001:2015 QMS training certificate (QMS Implementation Certificate)	Only one (1) QCP out of four (4) submitted for the listed work activities
Score 60	Quality manual contains 3 of the 5 QMS requirements.	Project Quality Plan contains 3 of the 5 PQP requirements.	More than 3 years but less than 5 years in Quality experience in mechanical and fabrication works.	Resource has a Quality Diploma or a Technical qualification	Only two (2) QCPs out of four (4) for the listed work activities
Score 80	Quality manual contains 4 of the 5 QMS requirements.	Project Quality Plan contains 4 of the 5 PQP requirements.	More than 5 years but less than 10 years experience in mechanical and fabrication works.	Resource has a Quality Diploma or a Technical qualification with a ISO 9001:2015 QMS certificates	Only three (3) QCPs out of four (4) for the listed work activities

Score	Quality Maual	Project Quality Plan (PQP)	CV of Quality Officer		Quality Control Plans (QCPs)
				(QMS Implementation Ceriticate)	
Score 100	Quality manual contains all 5 of the QMS requirements.	Project Quality Plan contains all 5 of the PQP requirements.	More than 10 years Quality experience in mechanical and fabrication works.	Resource has a Quality Diploma or a Technical qualification with a ISO 9001:2015 QMS certificates (QMS Auditing Certification)	All four (4) QCPs have meet the listed listed work activities

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

Signed	_____	Date	_____
Name	_____	Position	_____
Tenderer	_____		

T2.2-11: 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

TRANSNET CONFIDENTIAL INFORMATION

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.*

TRANSNET CONFIDENTIAL INFORMATION

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**

D. Certificate for Sole Proprietor

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

Signed ..... Date .....

Name ..... Position .....

TRANSNET CONFIDENTIAL INFORMATION

T2.2-12: 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		

NB: Attach additional pages if more space is required.

Signed ..... Date .....

Name ..... Position .....

Tenderer .....

TRANSNET CONFIDENTIAL INFORMATION

T2.2-13 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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.....
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.....
.....
.....
.....
.....
.....

Signed ..... Date .....

Name ..... Position .....

Tenderer .....

TRANSNET CONFIDENTIAL INFORMATION

T2.2-14: 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.

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.

Signed ..... Date .....

Name ..... Position .....

Tenderer .....

TRANSNET CONFIDENTIAL INFORMATION

T2.2-15: Availability of Equipment and Other Resources

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.

Equipment Type and Availability – Description	Hourly Rate	Number of Equipment	Details of Ownership

Signed ..... Date .....

Name ..... Position .....

Tenderer .....

TRANSNET CONFIDENTIAL INFORMATION

T2.2-16: 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:

- 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.

- 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-BBBEE 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**
	☐	☐	☐	☐	☐	☐	☐

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**
	☐	☐	☐	☐	☐	☐	☐

TRANSNET CONFIDENTIAL INFORMATION

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
	☐	☐	☐	☐	☐	☐	☐

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% Black Owned	EME	QSE	Youth	Women	Disabilities	Rural/ Underdeveloped areas/ Townships	Military Veterans
	☐	☐	☐	☐	☐	☐	☐

Signed ..... Date .....

Name ..... Position .....

Tenderer .....

TRANSNET CONFIDENTIAL INFORMATION

T2.2-17: Site Establishment Requirements

Tenderers to indicate their Site establishment area requirements:

Signed ..... Date .....

Name ..... Position .....

Tenderer .....

TRANSNET CONFIDENTIAL INFORMATION

T2.2-18: Capacity and Ability to meet Delivery Schedule

Note to tenderers:

The Tenderer is required to demonstrate to the *Employer* that the tenderer has sufficient current and future capacity to carry out the work as detailed in the Works Information and that the tenderer has the capacity and plans in place to meet the required delivery schedule as required. To this end, the following must be provided by the Tenderer:

A schedule detailing the following:

- Maximum quantity of work concurrently performed by the Tenderer in the recent past in order to illustrate his potential capacity to design, fabricate and/or construct work of a similar nature;
- Current and future work on his order book, showing quantity and type of equipment;
- Quantity of work for which the Tenderer has tenders in the market or is currently tendering on;
- The work as covered in this Works Information, planned and scheduled as per the Tenderer's capacities and methods but meeting the required delivery schedule.

Index of documentation attached to this schedule:
.....
.....
.....
.....
.....
.....

Signed ..... Date .....

Name ..... Position .....

Tenderer .....

TRANSNET CONFIDENTIAL INFORMATION

T2.2-19: 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 6.1 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			

T2.2-19: 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 6.1 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;

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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 Specific Goals contribution. Transnet will award preference points to companies who provide valid proof of evidence as per the table of evidence in paragraph 4.1 below.

1. GENERAL CONDITIONS

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

- the 90/10 system for requirements with a Rand value above R50 000 000 (all applicable taxes included); and

1.2 The value of this bid is estimated to exceed R50 000 000 (all applicable taxes included) and therefore the **90/10** 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.

1.3 Preference points for this bid shall be awarded for:

(a) Price;

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

(c) Any other specific goal determined in the Transnet preferential procurement policy

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

Specific Goals	Number of points (90/10 system)
B-BBEE Status Level of Contributor 1 or 2	2.00
The promotion of supplier development through subcontracting a minimum of 30% of the value of portions of the contract to /with EMEs and/or QSEs 51% owned by black people, youth, women or disabled people: • Manufacturing of the Dock side Rail Mounted Portal Jib cranes = 30% • Installation of Dock Side Rail Mounted Portal Jib cranes with and testing including commissioning = 30% • Decommissioning and Dismantling of Dock Side Rail Mounted Portal Jib Cranes = 30%	8.00
Non-compliant and/or B-BBEE Level 3-8 contributors	0.00

1.5 Failure on the part of a bidder to submit proof of evidence required for any of the specific

goals together with the bid will be interpreted to mean that preference points for that specific goal 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 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);

(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.

(l) **Specific goals"** means targeted advancement areas or categories of persons or

groups either previously disadvantaged or falling within the scope of the Reconstruction and Development Programme identified by Transnet to be given preference in allocation of procurement contracts in line with section 2(1) of the PPPFA.

3. POINTS AWARDED FOR PRICE

3.1 THE 90/10 PREFERENCE POINT SYSTEMS

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

90/10

$$Ps = 90\left(1 - \frac{Pt - P\min}{P\min}\right)$$

Where

Ps = Points scored for comparative price of bid under consideration

Pt = Comparative price of bid under consideration

Pmin = Comparative price of lowest acceptable bid

4. EVIDENCE REQUIRED FOR CLAIMING SPECIFIC GOALS

4.1 In terms of Transnet Preferential Procurement Policy (TPPP) and Procurement Manuals, preference points must be awarded to a bidder for providing evidence in accordance with the table below:

Specific Goals	Number of points (90/10 system)
B-BBEE Status Level of Contributor 1 or 2	• B-BBEE Certificate / Sworn - Affidavit / CIPC B-BBEE Certificate (in case of JV, a consolidated scorecard will be accepted) as per DTIC guidelines
The promotion of supplier development through subcontracting a minimum of 30% of the value of portions of the contract to /with EMEs and/or QSEs 51% owned by black people, youth, women or disabled people: • Manufacturing of the Dock sided Rail Mounted Portal Jib cranes = 30% • Installation of Dock Sided Rail Mounted Portal Jib cranes and testing including commissioning = 30% • Decommissioning and Dismantling of Dock Side Rail Mounted Portal Jib Cranes = 30%	• Sub-contracting agreement/s and declaration • Sub-Contractors CIPC registration documents • Sub-Contractors B-BBEE Certificate / Sworn Affidavit / CIPC B-BBEE Certificate as per DTIC guidelines. • Certified copy of ID Documents of the Owners which are 51% owned by black women, youth and disabled people. • Doctor's note confirming the disability and/or Employment Equity Act 1(EEA1) form

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 DTIC's website at www.thedtic.gov.za/economic_empowerment/bee_codes.jsp.]
EME[1]	Sworn Affidavit signed by the authorised EME representative and attested by a Commissioner of Oaths confirming annual turnover and black ownership Certificate issued by CIPC (formerly CIPRO) confirming annual turnover and black ownership Certificate issued by SANAS accredited verification agency only if the EME is being measured on the QSE scorecard

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

[1] 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.

Treasury or the DTIC. 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 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.

7. SUB-CONTRACTING

7.1 Will any portion of the contract be sub-contracted?

(*Tick applicable box*)

YES		NO	

7.1.1 If yes, indicate:

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.
(Tick applicable box)

YES		NO	

8. DECLARATION WITH REGARD TO COMPANY/FIRM

8.1 Name of company/firm:.....

8.2 VAT registration number:.....

8.3 Company registration number:.....

8.4 TYPE OF COMPANY/ FIRM

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

[TICK APPLICABLE BOX]

8.5 DESCRIBE PRINCIPAL BUSINESS ACTIVITIES

.....
.....
.....

8.6 COMPANY CLASSIFICATION

- ϒ Manufacturer
- ϒ Supplier
- ϒ Professional Service provider
- ϒ Other 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 certificates, 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 SBD 4

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 interest2 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

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] 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.

2.2.1 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 consortium3 will 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

[3] 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.

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**

T2.2-20 NON-DISCLOSURE AGREEMENT

[JULY 2023]

TRANSNET CONFIDENTIAL INFORMATION

Note to tenderers: This Non-Disclosure Agreement is to be completed and signed by an authorised signatory:

THIS AGREEMENT is made effective as of ..... day of ..... 20..... by and between:

TRANSNET SOC LTD

(Registration No. 1990/000900/30), a company incorporated and existing under the laws of South Africa, having its principal place of business at Transnet Corporate Centre 138 Eloff Street, Braamfontein, Johannesburg 2000

and

.....

(Registration No. .....), a private company incorporated and existing under the laws of South Africa having its principal place of business at

.....

.....

WHEREAS

Transnet and the Company wish to exchange Information [as defined below] and it is envisaged that each party may from time to time receive Information relating to the other in respect thereof. In consideration of each party making available to the other such Information, the parties jointly agree that any dealings between them shall be subject to the terms and conditions of this Agreement which themselves will be subject to the parameters of the Tender Document.

IT IS HEREBY AGREED

1. INTERPRETATION

In this Agreement:

1.1 **Agents** mean directors, officers, employees, agents, professional advisers, contractors or sub-contractors, or any Group member;

1.2 **Bid** or **Bid Document** (hereinafter Tender) means Transnet's Request for Information [**RFI**] Request for Proposal [**RFP**] or Request for Quotation [**RFQ**], as the case may be;

1.3 **Confidential Information** means any information or other data relating to one party [the **Disclosing Party**] and/or the business carried on or proposed or intended to be carried on by that party and which is made available for the purposes of the Bid to the other party [the **Receiving Party**] or its Agents by the Disclosing Party or its Agents or recorded in agreed minutes following oral disclosure and any other information otherwise made available by the Disclosing Party or its Agents to the Receiving Party or its Agents, whether before, on or after the date of this Agreement, and whether in writing or otherwise, including

any information, analysis or specifications derived from, containing or reflecting such information but excluding information which:

1.3.1 is publicly available at the time of its disclosure or becomes publicly available [other than as a result of disclosure by the Receiving Party or any of its Agents contrary to the terms of this Agreement]; or

1.3.2 was lawfully in the possession of the Receiving Party or its Agents [as can be demonstrated by its written records or other reasonable evidence] free of any restriction as to its use or disclosure prior to its being so disclosed; or

1.3.3 following such disclosure, becomes available to the Receiving Party or its Agents [as can be demonstrated by its written records or other reasonable evidence] from a source other than the Disclosing Party or its Agents, which source is not bound by any duty of confidentiality owed, directly or indirectly, to the Disclosing Party in relation to such information;

1.4 **Group** means any subsidiary, any holding company and any subsidiary of any holding company of either party; and

1.5 **Information** means all information in whatever form including, without limitation, any information relating to systems, operations, plans, intentions, market opportunities, know-how, trade secrets and business affairs whether in writing, conveyed orally or by machine-readable medium.

2. CONFIDENTIAL INFORMATION

2.1 All Confidential Information given by one party to this Agreement [the **Disclosing Party**] to the other party [the **Receiving Party**] will be treated by the Receiving Party as secret and confidential and will not, without the Disclosing Party's written consent, directly or indirectly communicate or disclose [whether in writing or orally or in any other manner] Confidential Information to any other person other than in accordance with the terms of this Agreement.

2.2 The Receiving Party will only use the Confidential Information for the sole purpose of technical and commercial discussions between the parties in relation to the Tender or for the subsequent performance of any contract between the parties in relation to the Tender.

2.3 Notwithstanding clause 2.1 above, the Receiving Party may disclose Confidential Information:

2.3.1 to those of its Agents who strictly need to know the Confidential Information for the sole purpose set out in clause 2.2 above, provided that the Receiving Party shall ensure that such Agents are made aware prior to the disclosure of any part of the Confidential Information that the same is confidential and that they owe a duty of confidence to the Disclosing Party. The Receiving Party shall at all times remain liable for any actions of such Agents that would constitute a breach of this Agreement; or

2.3.2 to the extent required by law or the rules of any applicable regulatory authority, subject to clause 2.4 below.

2.4 In the event that the Receiving Party is required to disclose any Confidential Information in accordance with clause 2.3.2 above, it shall promptly notify the Disclosing Party and cooperate with the Disclosing Party regarding the form, nature, content and purpose of such disclosure or any action which the Disclosing Party may reasonably take to challenge the validity of such requirement.

2.5 In the event that any Confidential Information shall be copied, disclosed or used otherwise than as permitted under this Agreement then, upon becoming aware of the same, without prejudice to any rights or remedies of the Disclosing Party, the Receiving Party shall as soon as practicable notify the Disclosing Party of such event and if requested take such steps [including the institution of legal proceedings] as shall be necessary to remedy [if capable of remedy] the default and/or to prevent further unauthorised copying, disclosure or use.

2.6 All Confidential Information shall remain the property of the Disclosing Party and its disclosure shall not confer on the Receiving Party any rights, including intellectual property rights over the Confidential Information whatsoever, beyond those contained in this Agreement.

3. RECORDS AND RETURN OF INFORMATION

3.1 The Receiving Party agrees to ensure proper and secure storage of all Information and any copies thereof.

3.2 The Receiving Party shall keep a written record, to be supplied to the Disclosing Party upon request, of the Confidential Information provided and any copies made thereof and, so far as is reasonably practicable, of the location of such Confidential Information and any copies thereof.

3.3 The Company shall, within 7 [seven] days of receipt of a written demand from Transnet:

3.3.1 return all written Confidential Information [including all copies]; and

3.3.2 expunge or destroy any Confidential Information from any computer, word processor or other device whatsoever into which it was copied, read or programmed by the Company or on its behalf.

3.4 The Company shall on request supply a certificate signed by a director as to its full compliance with the requirements of clause 3.3.2 above.

4. ANNOUNCEMENTS

4.1 Neither party will make or permit to be made any announcement or disclosure of its prospective interest in the Tender without the prior written consent of the other party.

4.2 Neither party shall make use of the other party's name, or any information acquired through its dealings with the other party for publicity or marketing purposes without the prior written consent of the other party.

5. DURATION

The obligations of each party and its Agents under this Agreement shall survive the termination of any discussions or negotiations between the parties regarding the Tender and continue thereafter for a period of 5 [five] years.

6. PRINCIPAL

Each party confirms that it is acting as principal and not as nominee, agent or broker for any other person and that it will be responsible for any costs incurred by it or its advisers in considering or pursuing the Tender and in complying with the terms of this Agreement.

7. ADEQUACY OF DAMAGES

Nothing contained in this Agreement shall be construed as prohibiting the Disclosing Party from pursuing any other remedies available to it, either at law or in equity, for any such threatened or actual breach of this Agreement, including specific performance, recovery of damages or otherwise.

8. PRIVACY AND DATA PROTECTION

8.1 The Receiving Party undertakes to comply with South Africa's general privacy protection in terms Section 14 of the Bill of Rights in connection with this Tender and shall procure that its personnel shall observe the provisions of such Act [as applicable] or any amendments and re-enactments thereof and any regulations made pursuant thereto.

8.2 The Receiving Party warrants that it and its Agents have the appropriate technical and organisational measures in place against unauthorised or unlawful processing of data relating to the Tender and against accidental loss or destruction of, or damage to such data held or processed by them.

9. GENERAL

9.1 Neither party may assign the benefit of this Agreement, or any interest hereunder, except with the prior written consent of the other, save that Transnet may assign this Agreement at any time to any member of the Transnet Group.

9.2 No failure or delay in exercising any right, power or privilege under this Agreement will operate as a waiver of it, nor will any single or partial exercise of it preclude any further exercise or the exercise of any right, power or privilege under this Agreement or otherwise.

9.3 The provisions of this Agreement shall be severable in the event that any of its provisions are held by a court of competent jurisdiction or other applicable authority to be invalid, void or otherwise unenforceable, and the remaining provisions shall remain enforceable to the fullest extent permitted by law.

9.4 This Agreement may only be modified by a written agreement duly signed by persons authorised on behalf of each party.

9.5 Nothing in this Agreement shall constitute the creation of a partnership, joint venture or agency between the parties.

9.6 This Agreement will be governed by and construed in accordance with South African law and the parties irrevocably submit to the exclusive jurisdiction of the South African courts.

Signed	.....	Date	.....
Name	.....	Position	.....
Tenderer	.....		

TRANSNET CONFIDENTIAL INFORMATION

T2.2-21: 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:

   _____

   _____

   _____

   Indicate nature of relationship with Transnet:

   _____

   _____

   _____

   _____

   [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]

TRANSNET CONFIDENTIAL INFORMATION

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 T2.2-22 "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.

- 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

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- 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.

Signed	.....	Date	.....
Name	.....	Position	.....
Tenderer	.....		

TRANSNET CONFIDENTIAL INFORMATION

T2.2-22: 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 TENDER

TRANSNET CONFIDENTIAL INFORMATION

T2.2-23 Certificate of Acquaintance with Tender Documents

NAME OF TENDERING ENTITY:

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]

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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

TRANSNET CONFIDENTIAL INFORMATION

T2.2-24 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.

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.

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 ……..

T2.2-25 : 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:

TRANSNET CONFIDENTIAL INFORMATION

- 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.

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- 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.

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4. 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

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T2.2-26: Certified copy of signed joint venture agreement

(Where applicable)

Please indicate the submission: Yes ☐ No ☐

Signed ..... Date .....

Name ..... Position .....

Tenderer .....

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T2.2-27 Domestic prominent influential persons (DPIP) or foreign prominent public officials (FPPO)

Transnet is free to procure the services of any person within or outside the Republic of South Africa in accordance with applicable legislation. Transnet shall not conduct or conclude business transactions, with any Respondents without having:

- Considered relevant governance protocols;
- Determined the DPIP or FPPO status of that counterparty; and
- Conducted a risk assessment and due diligence to assess the potential risks that may be posed by the business relationship.

As per the Transnet Domestic Prominent Influential Persons (DPIP) and Foreign Prominent Public Officials (FPPO) and Related Individuals Policy available on Transnet website https://www.transnet.net/search/pages/results.aspx?k=FPIDP#k=DPIP, Respondents are required to disclose any commercial relationship with a DPIP or FPPO (as defined in the Policy) by completing the following section:

The below form contains personal information as defined in the Protection of Personal Information Act, 2013 (the "Act"). By completing the form, the signatory consents to the processing of her/his personal information in accordance with the requirements of the Act. Consent cannot unreasonably be withheld.

Is the Respondent
(Complete with a "Yes" or "No")

A DPIP/FPPO		**Closely Related to a DPIP/FPPO**		**Closely Associated to a DPIP/FPPO**	

List all known business interests, in which a DPIP/FPPO may have a direct/indirect interest or significant participation or involvement.

No	**Name of Entity / Business**	**Role in the Entity / Business** (Nature of interest/ Participation)	**Shareholding %**	**Registration Number**	**Status** (Mark the applicable option with an X)	
					Active	**Non-Active**
1						
2						
3						
4						

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Respondents declaring a commercial relationship with a DPIP or FPPO are to note that Transnet is required to annually publish on its website a list of all business contracts entered into with DPIP or FPPO. This list will include successful Respondents, if applicable.

Signed	.....	Date	.....
Name	.....	Position	.....
Tenderer	.....		

TRANSNET CONFIDENTIAL INFORMATION

T2.2-28: 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 *Contractor* arising out of and in the course of their employment in connection with this contract with a minimum indemnity limit of R5 000 000/R10 000 000			
Motor Vehicle Liability Insurance comprising (as a minimum) "Balance of Third Party" Risks including Passenger and Unauthorised Passenger Liability indemnity			
Insurance in respect of loss of or damage to own property and equipment.			
(Other)			

Signed ..... Date .....

Name ..... Position .....

Tenderer .....

TRANSNET CONFIDENTIAL INFORMATION

T2.2-29: 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 .....

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T2.2-30: 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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TRANSNET CONFIDENTIAL INFORMATION

T2.2-31: Three (3) years latest 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:

.....

.....

.....

.....

.....

.....

.....

Signed	.....	Date	.....
Name	.....	Position	.....
Tenderer	.....		

TRANSNET CONFIDENTIAL INFORMATION

T2.2-32 Agreement in terms of Protection of Personal Information Act, 4 of 2013 ("POPIA")

1. PREAMBLE AND INTRODUCTION

1.1. The rights and obligation of the Parties in terms of the Protection of Personal Information Act, 4 of 2013 ("POPIA") are included as forming part of the terms and conditions of this contract.

2. PROTECTION OF PERSONAL INFORMATION

2.1. The following terms shall bear the same meaning as contemplated in Section 1 of the Protection of Person information act, No. of 2013" (POPIA"):

consent; data subject; electronic communication; information officer; operator; person; personal information; processing; record; Regulator; responsible party; special information; as well as any terms derived from these terms.

2.2. The Tenderer will process all information by the Transnet in terms of the requirements contemplated in Section 4(1) of the POPIA:

Accountability; Processing limitation; Purpose specification; Further processing limitation; Information quality; Openness; Security safeguards and Data subject participation.

2.3. The Parties acknowledge and agree that, in relation to personal information of Transnet and the information of a third party that will be processed pursuant to this Agreement, the Tenderer is (.....insert name of Tenderer/Contractor) hereinafter tenderer and the Data subject is "Transnet". Tenderer will process personal information only with the knowledge and authorisation of Transnet and will treat personal information and the information of a third party which comes to its knowledge as confidential and will not disclose it, unless so required by law or subject to the exceptions contained in the POPIA.

2.4. Transnet reserves all the rights afforded to it by the POPIA in the processing of any of its information as contained in this Agreement and the Operator is required to comply with all prescripts as detailed in the POPIA relating to all information concerning Transnet.

2.5. In terms of this Agreement, the Tenderer acknowledges that it will obtain and have access to personal information of Transnet and the information of a third party and agrees that it shall only process the information disclosed by Transnet in terms of this Agreement and only for the purposes as detailed in this Agreement and in accordance with any applicable law.

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2.6. Should there be a need for the Tenderer to process the personal information and the information of a third party in a way that is not agreed to in this Agreement, the Tenderer must request consent from Transnet to the processing of its personal information or and the information of a third party in a manner other than that it was collected for, which consent cannot be unreasonably withheld.

2.7. Furthermore, the Tenderer will not otherwise modify, amend or alter any personal information and the information of a third party submitted by Transnet or disclose or permit the disclosure of any personal information and the information of a third party to any third party without prior written consent from Transnet.

2.8. The tenderer shall, at all times, ensure compliance with any applicable laws put in place and maintain sufficient measures, policies and systems to manage and secure against all forms of risks to any information that may be shared or accessed pursuant to the services offered to Transnet in terms of this Agreement (physically, through a computer or any other form of electronic communication).

2.9. The Tenderer shall notify Transnet in writing of any unauthorised access to personal information and the information of a third party, cybercrimes or suspected cybercrimes, in its knowledge and report such crimes or suspected crimes to the relevant authorities in accordance with applicable laws, after becoming aware of such crimes or suspected crime. The Tenderer must inform Transnet of the breach as soon as it has occurred to allow Transnet to take all necessary remedial steps to mitigate the extent of the loss or compromise of personal information and the information of a third party and to restore the integrity of the affected personal information as quickly as is possible.

2.10. Transnet may, in writing, request the Tenderer to confirm and/or make available any personal information and the information of a third party in its possession in relation to Transnet and if such personal information has been accessed by third parties and the identity thereof in terms of the POPIA.

2.11. Transnet may further request that the Tenderer correct, delete, destroy, withdraw consent or object to the processing of any personal information and the information of a third party relating to the Transnet or a third party in the Tenderer's possession in terms of the provision of the POPIA and utilizing Form 2 of the POPIA Regulations.

2.12. In signing this addendum that is in terms of the POPIA, the Tenderer hereby agrees that it has adequate measures in place to provide protection of the personal information and the information of a third party given to it by Transnet in line with the 8 conditions of the POPIA and that it will provide to Transnet satisfactory evidence of these measures whenever called upon to do so by Transnet.

The Tenderer is required to provide confirmation that all measures in terms of the POPIA are in place when processing personal information and the information of a third party received from Transnet:

YES		NO	

2.13. Further, the Tenderer acknowledges that it will be held liable by Transnet should it fail to process personal information in line with the requirements of the POPIA. The Tenderer will be subject to any civil or criminal action, administrative fines or other penalty or loss that may arise as a result of the processing of any personal information that Transnet submitted to it.

2.14. Should a Tenderer have any complaints or objections to processing of its personal information, by Transnet, the Tenderer can submit a complaint to the Information Regulator on https://www.justice.gov.za/inforeg/, click on contact us, click on complaints.IR@justice.gov.za

3. SOLE AGREEMENT

3.1. The Agreement, constitute the sole agreement between the parties relating to the subject matter referred to in paragraph 1.1 of this and no amendment/variation/change shall be of any force and effect unless reduced to writing and signed by or on behalf of both parties.

Signed at _____ on this _____day of _____ 20_____

Name: _____

Title: _____

Signature: _____

....

(Tenderer)

Authorised signatory for and on behalf of ..... who warrants that he/she is duly authorised to sign this Agreement.

AS WITNESSES:

1. Name: _____ Signature: _____

2. Name: _____ Signature: _____

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T2.2-33 TO 35: SPECIFIC GOALS

1. T2.2-33 : B-BBEE Status Level 1 or 2

Evaluation Schedule/s: B-BBEE Certificate or Sworn Affidavit or CIPC B-BBEE Certificate or Consolidated B-BBEE certificate in case of JV, will be accepted as per DTIC guidelines

2. T2.2-34 : For promotion of enterprises located in a specific province (Eastern Cape) for work to be done or services to be rendered in this province.

Evaluation schedule/s:

CIPC registration documents

B-BBEE Certificate or Sworn Affidavit or CIPC B-BBEE Certificate as per DTIC guidelines

Proof of registered address of the entity (e.g., Municipality or Eskom Letter, Levy Statement, etc)

3. T2.2-35 : The promotion of supplier development through subcontracting of a minimum of 30% of the value of a contract to/with EMEs and/or QSEs who are 51% and more owned by black people, youth, women or disabled people:

Evaluation schedule/s:

Sub-contracting agreement/s and declaration

Subcontractors CIPC registration documents

Subcontractors B-BBEE Certificate or Sworn Affidavit or CIPC B-BBEE Certificate as per DTIC guidelines.

Certified copy of ID Documents of the Owners which are 51% or more owned by black women, youth and disabled people

Doctor's note confirming the disability and/or Employment Equity Act 1(EEA1) form

Signed ..... Date .....

Name ..... Position .....

Tenderer

.....

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T2.2-36: JOB-CREATION SCHEDULE

The Government has identified State Owned Enterprises sourcing activities as a key enabler to achieve the National Development Plan (NDP) objective of reducing unemployment from the current baseline of 28% to 6%.

In order to give effect to these job creation objectives, Tenderers are required to provide the following undertaking of new jobs that will be created (either by them or by their subcontractors) should they be awarded this tender.

Tenderers to note, that if successful, any deviations from the Job creation Schedule in the contract phase will be subject to acceptance by the *Project Manager* in terms of the Conditions of Contract. Please also note the applicable Z clauses in Contract Data by *Employer*.

(a) Please indicate total number of new jobs that will be created over the term of the contract:

Total number and value of new jobs created	**Total number of new jobs**	**Total rand value of new jobs created**

(b) Of the total number of new jobs created, please indicate the number and value of new jobs to be created for the following designated groups:

	Total number of new jobs	**Total rand value of new jobs**
Black men		
Black women		
Black Youth		
Black people living in rural or underdeveloped areas or townships		
Black People with Disabilities		

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(c) Of the total number of new jobs created, please indicate the number of skilled, semi-skilled and unskilled new jobs that will be created over the term of the contract:

	Total number of Skilled jobs	**Total number of Semi-skilled jobs**	**Total number of Unskilled jobs**
Black men			
Black women			
Black Youth			
Black people living in rural or underdeveloped areas or townships			
Black People with Disabilities			
Other			

(d) Please indicate the number of new jobs to be created, broken down per quarter over the term of the contract.

Year 1	**Q1**	**Q2**	**Q3**	**Q4**
Total number of new jobs				
Number of new jobs for Black men				
Number of new jobs for black women				
Number of new jobs for black youth				
Number of new jobs for black people living in rural or underdeveloped areas or townships				
Number of new jobs for black People with Disabilities				
Number of new jobs for other categories				
Number of new skilled jobs				

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Number of new semi-skilled jobs				
Number of new unskilled jobs				

Signed ..... Date .....

Name ..... Position .....

Tenderer .....

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T2.2-37: Foreign Exchange Requirements

The Tenderer to provide detailed breakdown of items that will have a foreign exchange implication.

Justification and full details supporting foreign currency requirements to be appended to this Schedule.

Items & activities	Currency	Bank	Maximum payment

The *exchange rates* to be used must be the exchange rate published by South African Reserve Bank (SARB) on the **date of advertisement** of the bid.

It is expected that the percentages of foreign currency or currencies quoted are realistic and that they adequately reflect the overall foreign component of cost.

Due to the introduction of International Financial Reporting Standards IS32 and IS39, the *Employer* may not be able to accommodate a tenderer's requirements in full or at all.

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Part C1: Agreements and Contract Data

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:

Title of the Contract

The tenderer, identified in the Offer signature block, has

either	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.
or	examined the draft contract as listed in the Acceptance section and agreed to provide this Offer.

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	**R**
Value Added Tax @ 15% is	**R**
The offered total of the Prices inclusive of VAT is	**R**
(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).

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	*(Insert name and address of organisation)*	Transnet SOC Ltd
Name & signature of witness	.....	.....
Date	.....	.....

C1.2 Contract Data

Part one - Data provided by the *Employer:*

Clause	Statement	Data
1	**General**	
	The *conditions of contract* are the core clauses and the clauses for main Option	
		A: Priced contract with Activity Schedule
	dispute resolution Option	**W1: Dispute resolution procedure**
	and secondary Options	**X1: Price adjustment for inflation** **X2: Changes in the Law** **X7: Delay damages** **X13: Performance Bond** **X16: Retention** **X18: Limitation of liability** **Z: *Additional conditions of contract***
	of the NEC3 Engineering and Construction Contract June 2005 (amended June 2006 and April 2013)	
10.1	The *Employer* is:	**Transnet SOC Ltd** **(Registration No. 1990/000900/30)**

	Address	Registered address: **Transnet Corporate Centre** **138 Eloff Street** **Braamfontein** **Johannesburg** **2000**
	Having elected its Contractual Address for the purposes of this contract as:	**Transnet National Ports Authority** **Port of East London** **Port Control** **Ganteaume Crescent** **Quigney** **East London** **5200**
10.1	The *Project Manager* is: (Name)	**Nolonwabo Zamani**
	Address	Port of East London Port Control Building Ganteaume Cres Quigney East London
	Tel	**043 700 2072**
	e-mail	**Nolonwabo.Zamani@transnet.net**
10.1	The *Supervisor* is: (Name)	**Thulani Mhlongo**
	Address	Port of East London Port Control Building Ganteaume Cres Quigney East London
	Tel No.	**031 361 8120**
	e-mail	**Thulani.Mhlongo@transnet.net**
11.2(13)	The *works* are	**Design, Manufacture, Supply, Delivering, Installation, Testing and Commissioning of Two Dock-Side-Rail Mounted Portal Jib Cranes.**
11.2(14)	The following matters will be included in the Risk Register	**Controlled entry to the Port Facilities** **Security of the Port during construction**

11.2(15)	The *boundaries of the site* are	**As stated in Part C4.1." Description of the Site and its surroundings"**	
11.2(16)	The Site Information is in	**Part C4**	
11.2(19)	The Works Information is in	**Part C3**	
12.2	The *law of the contract* is the law of	**the Republic of South Africa subject to the jurisdiction of the Courts of South Africa.**	
13.1	The *language of this contract* is	**English**	
13.3	The *period for reply* is	**Two (2)weeks**	
2	**The *Contractor*'s main responsibilities**	**No additional data is required for this section of the *conditions of contract*.**	
3	**Time**		
11.2(3)	The *completion date* for the whole of the *works* is	**30 September 2025**	
11.2(9)	The *key dates* and the *conditions* to be met are:	***Condition* to be met**	***key date***
		1 Starting Date	**01 May 2024**
		2 Completion Date	**30 September 2025**
30.1	The *access dates* are	**Part of the Site**	**Date**
		1 Whole of the Site	**01 May 2024**
31.1	The *Contractor* is to submit a first programme for acceptance within	**Two (2) weeks of the Award.**	
31.2	The *starting date* is	**01 May 2024**	
32.2	The *Contractor* submits revised programmes at intervals no longer than	**Two (2) weeks.**	
35.1	The *Employer* is not willing to take over the *works* before the Completion Date.		
4	**Testing and Defects**		
42.2	The *defects date* is	**Fifty-two (52) weeks after Completion of the whole of the *works*.**	

43.2	The *defect correction period* is	**Two (2) weeks**
5	**Payment**	
50.1	The *assessment interval* is monthly on the	**Twenty fifth (25th) day of each successive month.**
51.1	The *currency of this contract* is the	**South African Rand.**
51.2	The period within which payments are made is	**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.**
51.4	The *interest rate* is	**the prime lending rate of the Rand Merchant Bank**
6	**Compensation events**	
60.1(13)	The *weather measurements* to be recorded for each calendar month are,	**the cumulative rainfall (mm)** **the number of days with rainfall more than 10 mm** **the number of days with minimum air temperature less than 0 degrees Celsius** **the number of days with snow lying at 08:00 hours South African Time** **and these measurements:**
	The place where weather is to be recorded (on the Site) is:	**The *Contractor*'s Site establishment area**
	The *weather data* are the records of past *weather measurements* for each calendar month which were recorded at:	**East London**
	and which are available from:	**South African Weather Service 012 367 6023 or info3@weathersa.co.za.**
7	**Title**	**No additional data is required for this section of the *conditions of contract*.**
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:	**Loss of or damage to the *works*, Plant and Materials is as stated in the Insurance policy for Contract Works/ Public Liability.**
		Cover / indemnity:	**to the extent as stated in the insurance policy for Contract Works / Public Liability**
		The deductibles are:	**as stated in the insurance policy for Contract Works / Public Liability**
	2	Insurance against:	**Loss of or damage to property (except the *works*, Plant and Materials & Equipment) and liability for bodily injury to or death of a person (not an employee of the *Contractor)* arising out of or in connection with the performance of the Contract as stated in the insurance policy for Contract Works / Public Liability**
		Cover / indemnity	**Is to the extent as stated in the insurance policy for Contract Works / Public Liability**
		The deductibles are	**as stated in the insurance policy for Contract Works / Public Liability**
	3	Insurance against:	**Loss of or damage to Equipment (Temporary Works only) as stated in the insurance policy for contract Works and Public Liability**
		Cover / indemnity	**Is to the extent as stated in the insurance policy for Contract Works / Public Liability**
		The deductibles are:	**As stated in the insurance policy for Contract Works / Public Liability**
	4	Insurance against:	**Contract Works SASRIA insurance subject to the terms, exceptions and conditions of the SASRIA coupon**
		Cover / indemnity	**Cover / indemnity is to the extent provided by the SASRIA coupon**

	The deductibles are	**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.**
	Note:	**The deductibles for the insurance as stated above are listed in the document titled "Certificate of Insurance: Transnet (SOC) Limited Principal Controlled Insurance."**
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. **5 The insurance coverage referred to in 1, 2, 3, 4 and 4 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.***
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 *Contractor*) caused by activity in connection with this contract for any one event is	**Whatever the *Contractor* requires in addition to the amount of insurance taken out by the *Employer* for the same risk.**
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:	**Principal Controlled Insurance policy for Contract**
9	**Termination**	**There is no additional Contract Data required for this section of the *conditions of contract*.**
10	**Data for main Option clause**	

A	**Priced contract with Activity Schedule**	**No additional data is required for this Option.**
60.6	The *method of measurement* is	**The Activity schedule have been measured in accordance with SANS 1200 unless indicated otherwise.**
11	**Data for Option W1**	
W1.1	The *Adjudicator* is	**Both Parties will agree as and when a dispute arises. If the Parties cannot reach an agreement on the *Adjudicator*, the Chairman of the Association of Arbitrators will appoint an *Adjudicator.***
W1.2(3)	The *Adjudicator nominating body* is:	**The Chairman of the Association of Arbitrators (Southern Africa)**
	If no *Adjudicator nominating body* is entered, it is:	**the Association of Arbitrators (Southern Africa)**
W1.4(2)	The *tribunal* is:	**Arbitration**
W1.4(5)	The *arbitration procedure* is	**The Rules for the Conduct of Arbitrations of the Association of Arbitrators (Southern Africa)**
	The place where arbitration is to be held is	**East London, South Africa**
	The person or organisation who will choose an arbitrator - if the Parties cannot agree a choice or - if the arbitration procedure does not state who selects an arbitrator, is	**The Chairman of the Association of Arbitrators (Southern Africa)**
12	**Data for secondary Option clauses**	
X2	**Changes in the law**	**No additional data is required for this Option**
X7	**Delay damages**	
X7.1	Delay damages for Completion of the whole of the *works* are	**R15, 056.818 per day**

X13	**Performance bond**	
X13.1	The amount of the performance bond is	**Five per cent (5%) of the total of the Prices**
X16	**Retention**	
X16.1	The retention free amount is	**Nil**
	The retention percentage is	**Ten per cent (10%) on all payments certified.**
X18	**Limitation of liability**	
X18.1	The *Contractor*'s liability to the *Employer* for indirect or consequential loss is limited to:	**The deductible of the relevant insurance policy**
X18.2	For any one event, the *Contractor's* liability to the *Employer* for loss of or damage to the *Employer's* property is limited to:	**The cost of correcting the Defect**
X18.3	The *Contractor's* liability for Defects due to his design which are not listed on the Defects Certificate is limited to:	**The Total of the Prices**
X18.4	The *Contractor's* total liability to the *Employer* for all matters arising under or in connection with this contract, other than excluded matters, is limited to:	**Five (5) years after Completion of the whole of the *works***
X18.5	The *end of liability date* is	**30 September 2030**
Z	***Additional conditions of contract* are:**	

Z1	**Obligations in respect of Job Creation**	
Z1.1		**It will be a material term of this contract that the *Contractor* must contribute to the *Employer's* job-creation objectives as set out in Returnable Schedule T2.2-36**
Z1.2		**The *Contractor's* undertaking as to the number of new jobs created due to the award of this contract as set out in Returnable Schedule T.2.2-36 will constitute a binding agreement throughout the duration of the contract until Completion, if not, it will be deemed that the *Contractor* has failed in full to meet this specific material term of the contract, which may constitute a reason for termination.**
Z1.3		**The *Contractor* shall provide to the *Employer*, on a monthly basis or upon receiving an instruction to do so by the *Project Manager*, any documentation and/or evidence required by the *Employer*, which in the *Employer*'s opinion would be necessary to verify whether the *Contractor* has maintained the job-creation undertaking as stipulated in Returnable Schedule T.2.2-40 The *Contractor* shall provide the said documentation and/or evidence within the period stated or as instructed. The provision of the documentation and/or evidence shall not constitute a compensation event.**

Z2	**Additional clause relating to Performance Bonds and/or guarantees**	
Z2.1		**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 *Employer* by a financial institution reasonably acceptable to the *Employer.***

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 Four (4) 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)**

Z4.2	**Termination Table**	**The following will be included under core clause 90.2 Termination Table as follows:** **Amend "A reason other than R1 – R21" to "A reason other than R1 – R23"**
Z4.3		**Amend "R1 – R15 or R18" to "R1 – R15, R18, R22 or R23."**
Z5	**Right Reserved by the *Employer* to Conduct Vetting through SSA**	
Z5.1		**The *Employer* reserves the right to conduct vetting through State Security Agency (SSA) for security clearances of any *Contractor* who has access to National Key Points for the following without limitations:** **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.** **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.** **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.**
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.**

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.**

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

		CV's (and further key persons data including CVs) are appended to Tender Schedule entitled T2.2-03.
11.2(14)	The following matters will be included in the Risk Register	
31.1	The programme identified in the Contract Data is	
A	**Activity Schedule**	
11.2(20)	The *Activity schedule* is in	
11.2(30)	The tendered total of the Prices is	(in figures) (in words), excluding VAT
	Data for Schedules of Cost Components	*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.*

A	**Priced contract with activity schedule**	**Data for the Shorter Schedule of Cost Components**		
41 in SSCC	The percentage for people overheads is:	**%**		
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	**%** (state plus or minus)		
22 in SSCC	The rates of other Equipment are:	**Equipment**	**Size or capacity**	**Rate**

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

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 CONFIDENTIAL INFORMATION

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 Execution 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 CONFIDENTIAL INFORMATION

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 ..... 202_

Signature(s)	
Name(s) (printed)	
Position in Guarantor company	
Signature of Witness(s)	
Name(s) (printed)	

Part C2:
Pricing Data

C2.2 Activity Schedule

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

The details given below serve as guidelines only and the Tenderer may split or combine the activities to suit his methods.

Furthermore, it is advised that the Tenderer **must further break down activities into smaller activities** to ensure that payments can be made to represent the earned value of the project as it progresses. **Each activity must be tangible and measurable upon completion.**

ITEM	DESCRIPTION	Quantity	Unit Cost (ZAR)	Total Price (ZAR)
1	**Contractual Requirements**	**1**		
1,1	Contractual Requirements-Compilation of SHE files, Supervision, insurance, compliance with legislation and regulations, health and safety, OEM requirements, rigging requirements etc. (once off)			
2	**Site Investigation**	**1**		
2,1	**Site Investigation to confirm crane functional requirements, existing crane rail structure, dimensions, and all power supply requirements**			
3	**Detailed Designs and Approvals**	**1**		
3,1	**Detailed Designs** Provision of fully defined and detailed 15 ton- crane designs signed off by Professional Engineer. Designs to include structural, mechanical, and electrical components.			
3,2	Detailed Design for Upgrading the current power supply to ensure compatibility with new Cranes signed off by Professional Engineer.			
4	**Manufacture, Supply, and Installation of 2X 15-ton Jib Cranes**	**1**		
4,1	**Portal arrangement structure** Main structural components, mechanisms, bolt and seamed joints should keep safety factor, arranging faultless crane operation during its lifetime.			
4,2	**Motor control house**			
4,3	**Cabin & Fittings**			
4,4	**Top mast arrangement**			
4,5	**Jib structure**			

ITEM	DESCRIPTION	Quantity	Unit Cost (ZAR)	Total Price (ZAR)
4,6	**Long Travel structure**			
4,7	**Slewing Platform and Machinery** 360-degree slewing, wide working scope.			
4,8	**Counterweight**			
4.9	**Supply of 2 X 15-ton Jib Cranes**			
4,10	**Installation of 2 X 15-ton Jib Cranes**			
4,11	**Electrical Supply & Installations**	**1**		
4.11.1	Removal of existing Electrical distribution kiosks			
4.12.2	Removal of existing power plug boxes.			
4.12.3	Installation of Low voltage cabling in accordance with SANS 10142 and technical specifications.			
4.12.4	Installation of External Lighting around the drydock to improve lighting in the dry dock area at night.			
4.12.5	Installation of New distribution board kiosks (complete with single-phase sockets) and electrical circuits/breakers in accordance with technical specification.			
4.12.6	•Installation of floor mounted three phase socket outlets (size to match the crane three phase plug			
4.12.7	Installation of Earthing and Lightning protection in accordance to SANS and technical specification.			
4,12	**Stairs, Ladders, Walkways, Platforms & Anchor Points**			
4,13	**Control and Information Systems**			
4.13.1	PLC control, AC frequency speed control, stable and reliable running			
4.13.2	Remote controls according to the requirement.			
4.13.3	Adequate protection devices, communication, and lighting system			
4,14	**Firefighting Supply & Installation** Provision of multipurpose firefighting equipment with the cabin (hoses, extinguishers, fire blankets etc.)			
4,15	**Ventilation System Provision of a ventilation system in the machine house and driver's cabin.**			
4,16	**Installation of Air-Conditioning in the driver's cabin**			
4,17	**Painting and corrosion protection**			

ITEM	DESCRIPTION	Quantity	Unit Cost (ZAR)	Total Price (ZAR)
4,18	**Perform inspection tests as per SANS:**			
4.18.1	SANS 10307: Cranes, lifting and suspended equipment — Support documentation and training.			
5	**Testing and Commissioning**	**1**		
5.1.1	Testing and commissioning in accordance with OEMs instructions and specified technical standards.			
5.1.2	All Factory Acceptance tests (FAT), Site Acceptance Tests (SAT) and Commissioning tests shall be done in the presence of the Employer's Engineer.			
5.1.3	The Contractor shall provide the Project Manager with 2 weeks prior notice of all Testing and Commissioning activities to be undertaken.			
5.1.4	The mechanical testing and commissioning shall be done as per the SOW guidelines.			
5.1.5	The contractor shall provide a detailed testing and commissioning plan which shall be approved prior to the start of any testing activities.			
5,2	Supply signed Certificate of Compliance for Crane as per the OHS Act 85 of 1993.			
5,3	Provisions for the relevant FAT and SAT (Including transportation, Accommodation, and any relevant costs for Two TNPA Representatives travelling to OEM's Site to witness the Factory Acceptance tests)			
6	**Training of Maintenance personnel and crane operators.**	**1**		
6,1	Training of Maintenance personnel and Crane Operators. (Total of 8 personnel)			
6,2	Provision of Operating and Maintenance Manuals. (2 X Hard Copies and USB)			
7	**Decommissioning of Existing Cranes**	**1**		
7,1	Decommissioning, Dismantling, transportation of 4.5 -ton and 15 - ton Jib Cranes to a designated site indicated by employer.			
8.	**Total Amount Exclusive of Vat Carried to Form of Offer**	**R**		
9.	**Vat Amount (15%) Carried to Form of Offer**	**R**		
10.	**Total Amount Inclusive of Vat Carried to Form of Offer**	**R**		

Part C3:
Scope of Works

PART C3: SCOPE OF WORK

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Annexure E:	Standard Operating Procedure for Construction Environmental Management.	
Annexure F:	General arrangement for 15-ton Electric travelling Crane	
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SECTION 1

1 DESCRIPTION OF THE WORKS

1.1 Executive Overview

This scope of Works is for the detailed design, manufacture, supply, delivery, installation, testing, commissioning, and handover to the Employer, two (2) 15 ton Dock Side Rail Mounted Portal Jib Cranes complete and ready for immediate use. In addition, the contractor will be required to dismantle and transport the two cranes which are out of service to a designated site indicated by TNPA for scrapping purposes.

Transnet National Ports Authority currently owns and operate the ship repair facilities located along the South African coastline. The Princess Elizabeth Graving Dock facility located at the Port of East London was commissioned in 1946. The Dry Dock is located on the upstream of the Buffalo River and has capacity to handle vessels up to 190 m (LOA). The Dry Dock is core to the ship repair industry and economic growth of the Eastern Cape.

The Dry Dock has four (4) Portal Jib Cranes which have been in operations for over 70 years since the commissioning of dry dock. Two of the existing Cranes (15-ton and 4-ton cranes) are out of service and will be decommissioned by the *Contractor* in this project. The decommissioned cranes will be replaced by the Two new 15-ton cranes which will be designed, manufactured, supplied, and installed by the *Contractor*.

1.2 Employer's objectives

The Employer's objectives are to achieve delivery and installation of the Two 15-ton Portal Jib Cranes as soon as practically possible whilst still maintaining the highest quality and safety standards to ensure a safe, efficient, and functioning Dry Dock facility. The Employer intends to continue operating the Dry Dock facility and requires the delivery of the goods and services to be planned and executed in a manner which minimizes disruption to dry dock operations.

Note: The dry dock precinct is classified as a heavy industrial, operational environment requiring the Works to be planned and executed in a manner which results in minimal operational disruption and this requirement is a primary concern of the Employer.

1.3 Purpose

The purpose of this document is to outline the scope of services and deliverables that TNPA will require of a *Contractor* with the necessary experience and expertise to design, manufacture, supply, install the two 15-ton Portal Jib Cranes with minimal disruption to Port and Drydock operations. The Employer and the Owner of the works is Transnet National Ports Authority (TNPA).

1.4 Scope of Work

The scope of work for this project entails the following work packages:

- The design, fabrication, delivery, erections, testing and commissioning of Two 15-ton Portal Jib Cranes.

- The decommissioning, dismantling and removal of Two (2) existing Portal Jib Cranes to an area designated by the Project manager, where the material will be scrapped by the *Employer.* The size of the existing cranes to be decommissioned and dismantled is a 4 ton

and 15-ton cranes.

- Upgrade of the existing electrical supply to ensure compatibility with new Portal Jib Cranes

- Training of Crane Operators and Maintenance Personnel. The crane operators should be trained for a Rail mounted Electric driven crane to get C59 license certification upon completion of the training, or the crane operators should be trained for the license indicated by the contractor for the type of crane offered. The Maintenance crew should get general maintenance training, with the OEM specialist conducting on-site training on how to perform equipment maintenance in accordance with the maintenance manual guidelines.

1.4.1 Design Parameters

The *Contractor* shall provide detailed designs for the 15-ton Portal Jib cranes which meets all the requirements referred to on **Annexure A: Functional Design Requirements** Table 1, table 2 and table 3 summarises the design parameters, detail shall be obtained on Annexure A:

Table 1: Required Cranes Capacity for Graving Dock

Facility	**Crane Lifting Capacity at max radius [Tons]**	**Quantity**	**Crane Rail Gauge as measured on site (mm)**
Port side Dry Dock – Crane 50	15	1	4910 (verify dimensions on site)
Starboard side Dry Dock – Crane 68	15	1	4910 (verify dimensions on site)

Table 2: Operating Speeds

Speeds	
Hoisting 15tons at 40FPM (0.2032m/s) Hoisting 7,5tons at 80FPM (0.4064m/s)	60BHP
Slew 15tons at 1 revolution in 3 minutes	12BHP
Derricking 15tons from max to min radius 2¾minutes	75BHP
Travelling in 15tons at 60FPM(0.3048ms)	

Table 3: Existing Crane Dimensions

Main Dimensions	
Minimum radius	30 foot (9.144m)
Maximum radius	68 foot (20.7264m)
Height of lift above rail lever at maximum radius	73′ (22.2504m)
Height of lift at minimum radius	97′-9‟(29.7942m)
Range of blocks below rail level at minimum radius	51′ (15.5448m)
Tail radius	15′ (4.572m)
Rail to Portal Jib foot pin	43′-0½″ (13.119m)
Rail span	16′ (4.8768m)
Portal Jib c/c	75′ (22.86m)
Clearance from rail to bottom of travel platform	14′-6″ (4.4196m)
Wheel base	32′ (9.7536m)
Rail wheels (cast steel) diameter	2′-6″ (0.762m)
Crane rails	48kg/m

Basic Performance Requirements:

The Portal Jib Cranes shall be designed to handle 15 tons lifting capacity, the height of lift above rail level at maximum radius must be greater or equal to 20.73 metres, the height of lift above rail level at minimum radius must be greater or equal to 29.8 metres, and the clearance from rail to bottom of travel platform must be greater or equal to 4.4metres.

1.4.2 Production Information

Immediately after the starting date, and prior to final design, the Supplier shall survey the complete delivery place of final operation of the Portal Jib Cranes. This survey serves to confirm dimensions and relative positions of all aspects that will interface with the Portal Jib Cranes, for example location of electrical power supply points, location and dimensions of rail gauge and any obstacle protruding into the operations envelope, etc.

It is the Contractor's responsibility to ensure that the Portal Jib Cranes supplied in terms of the contract interfaces successfully with all existing infrastructure including the existing old cranes still in operation.

1.4.3 Manufacture and installation Information:

Tests and inspections before Delivery

Where the Goods Information requires inspections or tests to be performed, the *Contractor* shall provide such assistance, labour, materials, electricity, fuel, stores, apparatus, and instruments as may be a required at delivery place and as may be reasonable demanded to carry out such tests efficiently. The *Contractor* shall ensure that all gauges, templates, tools and other equipment required to check the accuracy of the work are calibrated at regular intervals by the respective authority in the country of origin of the equipment.

Unless the *Project Manager* otherwise accepts, no Plant or Materials shall be delivered to the delivery areas until the *Project Manager/ Supervisor* issues an inspection certificate in respect of such Plant or Materials. The *Contractor* is responsible for receiving delivery of all Plant and Materials delivered to the delivery areas.

Completed Portal Jib Cranes that are to be shipped fully erected or in modules to delivery place are to be inspected and commissioned or tested by the *Contractor* prior to leaving the *Contractor's* or his Sub Contractor's site. The associated test and inspection protocol submitted by the *Contractor's* must show the estimated duration for each item on the protocol.

Factory Acceptance Tests shall be carried out by the *Contractor* on the *Contractor's* premises. The *Contractor* shall make provision for *Employer's* representative to witness the Factory acceptance Tests at his own costs prior to the shipment of cranes or crane components to *Employer's* site. A list of documents will be required prior to shipment to Employer's' premises, these documents include but not limited to As-built Technical Drawings, Certificates of Compliance, Equipment Data Sheets,Installation, Maintenance and Users' Manuals, Instruments Calibration Certificates, Materials Data Sheets, Recommended Spare Parts Lists.

Standard Maintenance Procedures, Standard Work Procedures, Training Materials, Welding Processes Qualifications, Ergonomic Assessment etc.

The *Contractor* shall provide all the as-built drawings, operating manuals and maintenance schedules in three (3) hardcopies and two (2) electronic copies on a USB all in English. An advanced electronic copy of these manuals and drawings are required 3 months before Cranes deliveryfor approval purposes.

1.4.4 Decommissioning of existing cranes

The *Contractor* shall decommission, dismantle, and remove the existing two cranes at the Delivery Place to a designated area approved by the *Project Manager.*

When dismantling the existing cranes, the *Contractor* must follow a phased approach to minimize disruption to dry dock operations. The *Contractor* includes in his schedule the proposed phasing for dismantling of the existing cranes such that the *Employer* can continue operating the dry dock with the two existing cranes until such time that two new cranes have been commissioned and handed over to operations.

1.4.5 Electrical upgrades

The *Contractor* shall be required to carry out upgrades on the existing power supply to ensure compatibility with the new cranes. The *Contractor* shall perform the following services as part of the electrical upgrades.

- conduct a site investigation to establish and confirm all the power supply requirements.
- design, supply, and install low voltage cabling in accordance with the technical specifications.
- design, supply and install external lighting around the dock to improve lighting in the dry dock area at night.
- design, supply, and install new distribution board kiosks in accordance with the technical specifications.
- supply and install electrical plugs (three phase welding plugs and single-phase sockets) including wire ways and all terminations.
- design, supply and install earthing and lighting protection in accordance with the technical specifications.
- test electrical installations to satisfactory of Supply Manager and issue a Certificate of Compliance (COC).

1.4.6 Training of Purchaser's staff

The *Contractor* shall be required to provide training to the *Employer's* staff including crane operators, and maintenance personnel. The crane operators should be trained for a Rail mounted Electric driven crane to get C59 license certification upon completion of the training, or the crane operators should be trained for the license indicated by the contractor for the type of crane offered. The Maintenance crew should get general maintenance training, with the OEM specialist conducting on-site training on how to perform equipment maintenance in accordance with the maintenance manual guidelines.

The following *Employer's* staff will made available for training by the *Contractor* in their various functions.

Designation	**Number to trained**
Crane operators	4
Technical supervisor	2
Millwright	3
Trade hands	4
Technician (Electrical)	2

Technician (Mechanical)	2

1.5 Reference Documents

When reference is made to a code, specification or standard, the reference shall be taken to mean the latest edition of the code, specification, or standard, including addenda, supplements, and revisions thereto.

1.6 Supporting specification

Where this specification is required for a project, the following specifications shall, inter alia, form part of the contract.

- SANS Standards
- BS Standards
- IS Standards
- ISO Standards
- DIN Standards

1.7 Interpretation and Terminology

The following abbreviations are used in this Works Information:

Abbreviation	**Meaning given to the abbreviation**
Codes and Standards	Means the design and construction codes and standards that are applicable to the *Works*
Guaranteed performance parameters	Means the performance parameters and values stipulated in the Guaranteed Performance Schedule contained herein that the *Contractor* warrants and guarantees to the *Employer* that the Plant will achieve when being operated
Shall	Means that the requirement is mandatory
CA	*Contract* Administrator
CQA/QCM	*Contractor's* Quality Assurance/Quality Control Manager
CDR	*Contractor* Documentation Register
CDS	*Contractor* Documentation Schedule
QCP	Quality Control Plan
AIA	Approved Inspection Authority
CSHEO	*Contractor's* Safety Health and Environmental Officer
CHSMP	*Contractor's* Health and Safety Management Plan
CM	Construction Manager
PSIRM	Project Site Industrial Relations Manager
PSPM	Project Safety Program Manager
PSSM	Project Site Safety Manager
ProjM	*Project Manager*
ProjEM	Project Environmental Manager
ProjEO	Project Environmental Officer
QA	Quality Assurance
SANS	South African National Standards
SES	Standard Environmental Specification
SHERQ	Safety, Health, Environment, Risk and Quality

2 ENGINEERING AND THE CONTRACTOR'S DESIGN

2.1 Employer's Design

There are no designs developed by the *Employer* for this project. The *Employer* developed Annexure A: Functional design Requirements which must be addressed by the *Contractor's* design.

2.2 Contractor Design

The *Contractor's* designs for the Portal Jib Cranes and the upgrades to electrical supply shall be approved by a *Contractor's* Mechanical and electrical ECSA professionally registered Engineers and accepted by TNPA Project Manager.

The works shall include, but not be limited to:

- The detailed designs of the 15-ton Portal Jib Cranes
- Upgrades required for electrical supply.
- All Temporary Works
- Traffic Accommodation
- Traffic Management Plan for delivery of crane components to the Graving Dock Facility.
- All other items required for the Works

The *Contractor* warrants that his workmanship shall be of the highest grade, installed in a practical and quality manner in accordance with Best Practice, ready and complete for full operation upon completion of the works.

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*.

2.3 Procedure for submission and acceptance of Contractor's design

The *Contractor* shall address the following procedures:

- Prior to the manufacturing of the Portal Jib Cranes, the Contractor shall submit to the *Project Manager* the detail designs of the *works.* The detail design shall be accompanied by drawings and necessary specifications for review and acceptance by the Project Manager.
- The *Contractor* shall submit details of his temporary Works, planned traffic accommodation and all other items required for the Works to the *Project Manager* for review and acceptance.
- The Structural and component design shall be verified by the *Contractor* by using finite element analysis models and tested material properties.
- Drawings which are submitted for the acceptance of the *Project Manager* must bear the signature and designation of the Contractor's responsible professional Engineer.
- General arrangement drawings must show the complete structural layout arrangements with plan views, elevations, cross sections, location and sizes of members, erection details, cladding details, services where applicable, etc.
- The *Contractor's* fabrication shop drawings and detailed drawings are not required for purpose of acceptance by the *Project Manager* except when the *Project Manager* specifically requests such drawings for approval or to assist the *Supervisor* in the inspection of the structure at any stage.

- All alternative material not defined herein Annexure A or codes and standards proposed by the *Contractor* shall be tested for acceptability by the *Contractor* and the results of the test made available to the *Project Manager.* All such material will then require the approval of the *Project Manager.*
- The Costs of all test shall be borne by the *Contractor.*

2.4 Review and Acceptance of Contractor Documentation

The review period is a minimum of two (2) weeks from the date of receipt of the *Contractor's* design pack, this period can be extended provided both parties "*Contractor* and Project Manager" agree in writing to extend.

The *Project Manager* will provide written comments on the Contractor's designs for the *Contractor* to clarify or note, the *Contractor* will either incorporate the comments or clarify issues raised and assure the *Project Manager* that the design addresses all issues raised.

Once the review and comments process is finalized, the *Project Manager* will sign off for the acceptance of the Contractor's design, drawings and specifications.

NB: It shall be noted that the sign off for acceptance does not relieve the *Contractor* of his responsibility and accountability for his own design.

Documentation Submission in undertaking the 'Works' (including all incidental services required), the Contractor shall conform and adhere to the requirements as stipulated in section 6.2.

2.5 Other requirements of the Contractor's design

The Portal Jib cranes offered must be able to operate in a marine environment subject to the following conditions:

- Altitude Sea Level
- Ambient temperature 5 – 45°C
- Relative humidity Frequently 100%
- Air Pollution Heavily saline, dust laden and industrial fumes

All electrical, hydraulic, and pneumatic components shall be suitable and treated for use in tropical climate where rapid changes in weather conditions produce severe moisture condensation problems. The equipment shall be capable of withstanding the highly corrosive effects of the moist, saline atmosphere. All electrical components not installed in controlled environments (machine and electrical house or operator's cabin) must have a minimum enclosure protection of IP65.

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*.

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.

2.7 Design of Equipment

The *Contractor* submits his design details for categories of his proposed principal Equipment to the *Project Manager* for his information only.

The *Contractor* ensures that his Equipment is safe and that it complies fully with the applicable statutory requirements including the relevant provisions of the Construction Regulations.

The *Contractor* provides all qualified operators, special certificates, permits to operate and the like for Equipment as required by the Occupational Health and Safety Act 85 of 1993 and submits to the *Project Manager* for his acceptance prior to using the Equipment on the Site and/or Working Areas.

The *Contractor* indemnifies and holds indemnified the *Project Manager* and Employer against any claims and actions that may arise out of the Equipment.

2.8 Equipment required to be included in the works

The following equipment shall be made available by the Contractor for the completion of the works:

a) Equipment for assembling of Portal Hourbour Cranes
b) Equipment for disassembling the existing cranes and transport them to designated site.
c) Any other plant and equipment deemed necessary for the completion of the *works.*

3 CONSTRUCTION

This section deals with general construction constraints relating to site wide activities.

3.1 Temporary works, Site services & construction constraints

The *Contractor* complies with the Employer's Site entry and security control, permits, and Site regulations. The *Contractor* bears all costs incurred in providing their personnel with ID cards and access permits to the site.

The *Contractor* is specifically excluded from entering the *Employer's* Operational Areas which are outside the Site and Working Areas. The *Contractor* plans and organises his work in such a manner to cause the least possible disruption to the *Employer's* operations.

The *Contractor* ensures the safe passage of *Contractor's* traffic to and around the Site and Working Areas at all times that includes providing flagmen, protective barriers, signage, etc. for protection, direction and control of traffic.

The *Contractor* shall develop a traffic management plan in order to ensure safety in construction as well as to minimise the interference to operations and Others.

The *Contractor's* personnel and Sub-Contractor's on site are restricted from accessing areas outside the approved Working Area. The *Contractor* keeps daily records of his people 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.

The *Contractor* complies with the following hours of work for his people (including Sub-Contractors) employed on the Site:

Monday to Friday: 07h00 to 17h00

Saturday and Sunday: 07h00 to 14h00

NB: Should the *Contractor* wish to deviate from the above working hours, a formal request shall be submitted to the *Project Manager* for approval two weeks prior to the start date of the deviation.

The *Contractor* ensures that all his construction staff, labour and Equipment remains within his allocated and fenced off construction area.

Prior to bringing Equipment to Site the *Contractor* will be required to notify the *Project Manager* as per the NEC3 communication procedures and provide details of the Equipment to be brought to Site and obtain approval from the Project Manager, the Contractor can only bring Equipment to Site once the *Project Manager* issues approval in writing.

All the *Contractor's* staff and labour complies with the *Employer's* operational safety requirements and are equipped with all necessary PPE and high visibility apparel. When working within two meters of the quay wall, the necessary floating apparel should be always worn.

The *works* are located within operational areas and the *Contractor* shall organise his work to cause the least possible inconvenience to the operations in these areas. Before the cranes are delivered on site, the *Contractor* must submit his projected schedule for site activities to the *Project Manager* to organise the work around operations.

3.2 Health and safety facilities on Site

All health and safety matters associated with the Works shall be dealt with in accordance with Occupational Health and Safety Act (Act No. 85 of 19993) and the Transnet National Ports Authority Health and Safety Specifications contained in Annexure B: Project Health and Safety Specifications.

The *Contractor* performs the Works and all construction activities within the Site and Working Areas in accordance with the Transnet requirements.

The *Contractor* complies with the requirements stated under section 6.3.

Title to Materials from demolition and excavation

The Contractor has no title to all Materials arising from excavation and demolition in the performance of the works with title to such Materials (as referenced above) remaining with the Employer. The Project Manager shall instruct the Contractor how to label, mark, set aside and/or dispose of such Materials for the benefit of the Employer in accordance with ECC Clause 73.1.

Cooperating with and obtaining acceptance of Others

The works will be performed in a port operational environment. The Graving dock facility will remain operational for the duration of the Contract.

The *Contractor* performs the works and co-operates with the Employer (including the agents of the Employer) who operates on Site during the duration of the Contract period.

The *Contractor* shall note that there may be other projects in progress within the East bank precinct which are expected at some point to run in parallel to this project, hence the Contractor shall co-operate with Others by allowing access through parts of the Working Areas as and when required during the duration of the Contract period.

3.3 Publicity and progress photographs

The *Contractor* obtains the permission and approval of the *Project Manager* before erecting any notice boards.

The *Contractor* provides progress photographs at bi-weekly progress meetings in a CD format or uploaded to a virtual drive.

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.*

3.4 *Contractor's* Equipment

This section deals with general requirements relating to the *Contractor's* Equipment.

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.

All Equipment used by the Contractor on site shall be properly maintained and operated. All vehicles on public roads shall be roadworthy, with the necessary licences and safety requirements. A checklist/register shall be implemented which lists the operators' qualifications and medical records.

The *Contractor* shall submit a comprehensive list of Equipment, intended to complete the works. The use of all Equipment shall be subject to approval by the *Project Manager,* though such approval shall not relieve the *Contractor* of any of their responsibilities under the Contract.

The *Employer* does not provide any Equipment for the *Contractor.* The *Contractor* provides all qualified operators, special certificates, permits to operate and the like for Equipment as required by the Occupational Health and Safety Act 85 of 1993 and submits to the *Project Manager* for his acceptance prior to using the Equipment on the Site and/or Working Areas.

3.5 Site services and facilities

The *Contractor's* site establishment area(s) is to be within the *Contractor's* boundary of the area that will be confirmed with the successful *Contractor* after award and shall be clearly sign posted and be compliant with the relevant safety regulations and restrictions that might be in place until the *Contractor* has de-established from site. The site establishment layout must be approved by the *Project Manager.*

The *Contractor* shall ensure that the area used has a suitable continuous security fence and the necessary access gates. All preparation and fencing, etc. shall be done by the *Contractor* and shall be for his account, this includes clearing away and leaving clean and clear at completion.

The *Contractor* shall provide, maintain, and remove lockable portable chemical type toilets. An area will be made available within the *Contractor's* Working Areas.

The Employer provides the following facilities for the Contractor:

- For the duration of the Contract, the *Employer* will provide with an area, free of charge, for the *Contractor* to establish his offices, lay down areas, stores, workshops, and other *Contractor's* Equipment.
- The *Contractor* ensures that this 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.
- The *Employer* provides connection points for services such as water, power etc. 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 for the *Contractor's* account.
- Wherever the *Employer* provides facilities (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*.

3.6 Facilities provided by the Contractor.

The *Contractor* shall ensure that his Site establishment area is compliant with the relevant safety regulations and restrictions and is clearly sign posted.

All costs for preparation of the Site establishment area shall be for the *Contractor's* account.

The *Contractor* shall submit details of the layout of his Site establishment to the *Project Manager* for his acceptance.

The C*ontractor* shall be 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 shall be for the Contractor's account.

The *Contractor* shall provide 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 shall only make construction power available upon receipt of the COC.

The Supervisor (or his nominated representative) shall conduct routine inspections of the *Contractor's* construction power reticulation and power tools. If found to be unsafe and/or non-compliant with statutory requirements, the electrical power supply shall be disconnected until the Contractor rectifies all defects.

Wherever the *Contractor* provides facilities and all items of Equipment, involving, inter alia, offices, accommodation, laboratories, Plant and Material storage, etc., within the Working Areas, the *Contractor* shall make good and provide full reinstatement to the land (including all apparatus of the Employer in, on or under the land) and surrounding areas to its original standard, upon dismantling of such facilities and items of Equipment.

Upon completion, and within 2 weeks of the date of acceptance of the works, the *Contractor* shall completely remove 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 shall leave the Site and Working Areas in a tidy condition to the satisfaction of the *Project Manager.*

No excess or discarded materials or Equipment shall be buried or dumped within the port boundary.

Demolition of all temporary structures surfaces etc. shall be first approved by the *Project Manager* prior to the work being carried out.

The *Employer* shall not provide any security for the Site and working areas. The *Contractor* shall provide 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.

The *Contractor* shall sign the in-survey and out-survey and furnishes copies in accordance with the CDS to the *Project Manager* for record purposes.

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.

Unless expressly stated as a responsibility of the *Employer*, Site services and facilities, 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.

3.7 Existing premises, inspection of adjoining properties and checking work of Others

The *Contractor* is required to conduct detailed physical inspections and photographic surveys to record the condition of the surrounding area, including the condition of existing facilities, premises and machinery/equipment. The *Contractor* shall submit to the *Project Manager* a detailed condition and photographic survey report. On completion of the project the *Contractor* and the *Project Manager* will do a physical inspection of the surrounding area to ascertain the condition after construction, the inspection and photographic report will be used as the reference document.

The *Contractor* will be held responsible for any damage to existing structures and surfacing caused by the *Contractor* during the execution of the contract; fair wear and tear excluded and shall repair it to the satisfaction of the Supervisor on conclusion of the *works*. 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.

3.8 Underground services, other existing services, cable and pipe trenches and covers

The *Project Manager* shall provide the *Contractor*, as a guide only, with drawing(s) showing various known existing underground services for his information. It is however possible that there are other existing services, which are not reflected, and which may affect the *works*.

The *Contractor* shall conduct proving trenches before excavation work using machinery to ensure underground services are identified and protected before any excavations.

The *Contractor* shall establish the location of the various existing services situated within the Site and Working Areas and records all such information on "marked-up" drawing(s) which remain available for reference at all times.

The *Contractor* shall exercise due care and attention in carrying out any excavation work to avoid damage or disruption to existing services. The *Contractor* shall consult the *Project Manager* prior to undertaking any excavation work.

Should the *Contractor* fail to exercise the requisite care and attention in carrying out the excavation work, then the *Contractor* shall be held liable for any claims arising out of damage caused by such excavation.

3.9 Control of noise, dust, water and waste

Before moving Equipment onto the Site and Working Areas and commencing operations, the *Contractor* submits his proposed methods of construction which demonstrate the measures taken to avoid and or reduce any nuisance arising from dust, noise and vibration for acceptance by the *Project Manager*.

3.10 Giving notice of work to be covered up

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 24 (twenty-four) hours prior to the proposed covering up.

3.11 Completion, testing, commissioning and correction of Defects

3.11.1 The *work* to be done by the Completion Date

On or before the Completion Date the *Contractor* shall have done everything required to Provide the Works including the work listed below which is to be done before the Completion Date and in any case before the dates stated. The *Project Manager* cannot certify Completion until all the work 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 of the *works*	Within 2 days prior Completion.
Description of the system and Equipment detail	Within 2 days prior Completion.
Complete set of layout and engineering drawings	Within 2 days prior Completion.
Certificates of Compliance, permission to install and concessions	Within 2 days prior Completion.

Testing and commissioning certificates and data sheets	Within 2 days prior to Completion.
Copy of the Particular Specification	At Handover

3.11.2 The Contractor is permitted to conduct the following works after Completion:

Provide Operation and Maintenance training to TNPA employees who will operate and maintain the cranes.

3.12 Materials facilities and samples for tests and inspections

The *Contractor* to provide all materials, facilities and apparatus required for any test and /or inspections required by the Works Information.

The *Contractor* to provide samples as required by the Works Information. The Employer provides nothing.

3.13 Testing and Commissioning

3.13.1 Tests and inspections before Delivery

Where the Goods Information requires inspections or tests to be performed, the *Contractor* shall provide such assistance, labour, materials, electricity, fuel, stores, apparatus, and instruments as may be required at a delivery place and as may be reasonable demanded to carry out such tests efficiently. The *Contractor* shall ensure that all gauges, templates, tools and other equipment required to check the accuracy of the work are calibrated at regular intervals by the respective authority in the country of origin of the equipment.

Unless the *Project Manager* otherwise accepts, no Plant or Materials shall be delivered to the delivery areas until the *Supervisor* issues an inspection certificate in respect of such Plant or Materials. The *Contractor* is responsible for receiving all Plant and Materials delivered to the delivery areas.

Completed *Portal Jib Cranes* that are to be shipped fully erected or in modules to the delivery place are to be inspected and commissioned or tested by the *Contractor* prior to leaving the C*ontractor's* or his Sub Contractor's premises. The associated test and inspection protocol submitted by the Contractor must show the estimated duration for each item on the protocol.

Factory Acceptance Tests shall be carried out by the *Contractor* on the *Contractor's* premises. The *Contractor* shall make provision for *Employer's* representative to witness the Factory acceptance Tests at his own costs prior to the shipment of cranes or crane components to *Employer's* site. A list of documents will be required prior to shipment to Employer's' premises, these documents include but not limited to As-built Technical Drawings, Certificates of Compliance, Equipment Data Sheets, Installation, Maintenance and Users' Manuals, Instruments Calibration Certificates, Materials Data Sheets, Recommended Spare Parts Lists, Standard Maintenance Procedures, Standard Work Procedures, Training Materials, Welding Processes Qualifications, Ergonomic Assessment etc.

3.13.2 Delivery place for commissioning

A complete and detailed test and inspection protocol for testing of pre-assembled modules (if applicable), as well as the commissioning of the complete Portal Jib Cranes, shall be submitted by the *Contractor* for approval by the *Project Manager*, two months before the start of testing and/or commissioning. This test and inspection protocol shall include all tests and inspections required in terms of the respective specifications and other tests and inspections deemed necessary by the

Contractor to prove to the *Employer's* satisfaction that the equipment complies with the Goods Information and must include the following where applicable:

- Pre-commissioning tests to be performed by the *Contractor*
- Performance test recording the speeds of all motions under various load conditions
- Overload tests to Portal Jib Cranes structure, mechanical and electrical equipment
- Stability and wheel load tests
- Tests to prove the integrity of the safety devices, limit systems and emergency systems
- Tests to prove the integrity of all service brakes and emergency brakes
- Functional tests
- Operational tests under simulated conditions
- Endurance test of 8 hours for electrical and mechanical Plant
- General inspection for final quality, including paint quality

The *Contractor* will be required to show practically and analytically that the motors and their controls can repeat the duty cycle continuously at rated capacity and rated speeds and accelerations, without over heating or unduly breaking down.

3.13.3 Testing and Commissioning

Testing and commissioning are detailed in Annexure A – Functional Design Requirements Specification, and in addition the following is applicable:

Modules pre-assembled off Delivery Place shall be trial assembled and fully tested as far as practical and be accepted by the *Project Manager* prior to delivering to Delivery Place. All tests performed off Delivery Place shall be repeated once the Portal Jib Cranes has been completely erected as part of commissioning.

Before commissioning starts, the *Contractor* shall satisfy himself that the equipment is complete in all respects and shall carry out the necessary pre-commissioning tests of the equipment. During this period the Supervisor will carry out visual inspections on the equipment.

After approval of the test and inspection protocol by the *Project Manager,* the *Supervisor*, the *Contractor* shall fully test the equipment in the presence of the *Project Manager* and according to the approved protocol. As far as practical the equipment shall be fully tested prior to it being moved into the operational area.

Load testing on the Portal Jib Cranes shall be performed on the quay side in accordance with code of practice 29 (125% overload tests. Stability tests of the Portal Jib Cranes shall constitute the measuring of the wheel loads on all corners, with the boom under the most critical conditions for dead loads and also live loads. Calculations for maximum operating and wind loads will be added. The *Contractor* shall be responsible for the supply of all load-testing masses and measuring instruments.

All motions of the equipment shall be tested under dead-load and dead load plus simulated live load conditions, where applicable, to prove correct operation and to enable position indicators and limit switches to be set, and other operational adjustments made. Live load shall be defined as the SWL when the Portal Jib Cranes is working at maximum capacity, and including dynamic factors such as wind loads, shock loads due to acceleration and deceleration, etc.

Before the commencement of any tests the *Contractor* shall provide the initial fill of oil for all gearboxes and grease for components which require grease lubrication.

All simulation devices and test weights required shall be provided by the *Contractor.*

3.13.4 Acceptance testing

After successful delivery of commissioning, the equipment shall be subjected to acceptance testing, i.e. actual operation of the equipment in the handling of containers onto and off ships.

Acceptance testing will constitute a minimum of 100 hours (either continuous or consecutive sessions) of actual hours operation of the equipment doing unloading and loading, of which the last 80 hours must be completely trouble-free operation to the satisfaction of the *Project Manager.* If the operation is not trouble free, acceptance testing will continue until the equipment functions trouble free for 80 hours before the acceptance testing is deemed complete.

The cycle time shall be proved during acceptance testing.

During acceptance testing the Portal Jib Cranes will be operated by the *Employer's* operators, but the Contractor shall provide at his own costs the personnel and all equipment necessary for the acceptance testing, including enough suitable qualified personnel to assist the *Employer's* Crane operators for the duration of acceptance testing. On delivery of acceptance testing and before take-over, the *Contractor* shall supply in triplicate complete test certificates, as necessary, and such prescribed statutory documents as are required certifying the class and safe working loads of the equipment (and specific components e.g. personnel lift, twist locks, maintenance hoists etc.) and that the equipment is in complete working order and that all working parts are effectively lubricated. Where required by law these certificates shall be issued by local authorities.

Technical support after Delivery

If a maintenance contract is not signed with the *Contractor,* then the *Contracto*r shall have a branch or local agent at or near the particular port with full time personnel available for defect repairs up until the defects date. Spare parts and components must also be available from the branch or agent.

Should the equipment become substantially inoperable, inefficient, or unsafe during the period between take over and the defects date due to defects, the defects date will be extended by the same amount of time that it takes to return the equipment to satisfactory operating st

3.14 Take over procedures

Takeover is after or at the same time as Completion. The *Employer* may require the *Contractor* to provide assistance, security personnel on a temporary basis etc.

The *Contractor* provides the assistance to the *Employer* as deemed necessary by the *Employer*, in terms of the contract:

The *Contractor* ensures that the documentation as described under paragraph 6.2 of the *Works* Information is presented to the *Project Manager* before Completion.

The *Contractor* ensures that the *Project Manager* has a full and accurate dossier of As-built documents that represent the represent the status of the completed *works* (to include Plant within the *works*) to present to the *Employer*.

3.15 Access given by the Employer for correction of Defects

The *Contractor* complies with the following constraints and procedures of the *Employer* where the *Project Manager* arranges access for the *Contractor* after Completion: The *Contractor* will be required to undertake certain procedures before such access can be granted this will include but not limited to:

- Safety requirements, develop method statement and risk assessment.
- Undergo TNPA inductions to obtain access permits.
- Obtain access permits from TNPA permit office.

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

Limited working space available for the Contractor to perform defects corrections.

4 PLANT AND MATERIALS STANDARDS AND WORKMANSHIP

4.1 Investigation, Survey and Site Clearance

The *Contractor* carries out the following investigations at the Site:

- Conducts an investigation to determine all the existing services on the site. Marks and records all these services.
- Confirms crane rail dimensions, electrical supply points and all information required to achieve completion of detailed designs for the Portal Jib cranes and associated electrical supply upgrades.
- Maintains a concise record of the conditions of all existing site infrastructure and services.

4.2 National Standards

The latest editions and/or amendments of the following Standards and Codes shall be considered a minimum requirement. In the event of differing requirements, the most stringent Code or Standard shall apply:

- Occupational Health and Safety (OHS) Act No. 85 of 1993.
- South African National Standards.
- DIN or British Standard Specifications. / DIN, EN and ASME Standard Specifications.
- N.O.S.A. Safety Guidelines.

4.3 Civil Engineering and Structural Works

4.3.1 Code of Practice for Steel Construction

- The relevant sections of this document shall conform to the requirements of the SANS 1200 H Series of Standards.

Steel Castings

- Steel castings shall be sound, clean and free from all defects and distortion of any kind and should, except where otherwise specified, confirm with the conditions and tests specified in SANS 407: 2000 for the particular purpose according to service. They shall be thoroughly annealed and all working parts and bearing surfaces shall be machined and turned accurately with correct finish.

Galvanising of Steelwork

- This shall be in accordance with SANS 121: 2000 latest revision and the relevant Project Standards

Note: on National Standards: Where given, these are a minimum requirement, and not limited. Equivalent Standards are acceptable but must be specified.

Electrical and Mechanical engineering Works

- Code of Practice for the design of shipyards and sea locks
- The relevant sections of this document and the Works in general as it pertains to design and fabrication shall conform to the requirements of BS 6349-3:2013 Maritime Works.

Materials, fabrication and finishing

- All materials, where applicable, shall conform in respect to quality, manufacture, tests, and performance, to the Project Standards, South African National Standards/the International Electro technical Commission, or where no such Standard exists, the appropriate British Standard. Materials not specifically stipulated shall be of the best commercial quality.
- All welding activities performed by the *Contractor* shall be in accordance with appropriate codes, standards and the Project Standards and shall also include the following:
- All welds shall be laid smooth and external welds strip polished.
- All stainless steel and 3Cr12 welds shall be pickled and passivated.

Ease of Operation and Maintenance

- All Plant and Materials supplied by the *Contractor* shall be designed and constructed for ease of operation and maintenance to ensure that the availability, reliability requirements and operating time efficiencies stated in the Specifications are achieved and maintained throughout the life span of the Plant and Materials. The Following shall also be noted:
- All operational, maintenance and inspection points shall be safely accessible
- All working platforms shall be wide enough for safe and easy passage.
- The Contractor shall provide a specification and procedure that shall suggest the safest and most efficient operation to carry out the cleaning and maintenance of all Plant and Materials to be supplied by the Contractor as well as outline and supply all specialist tools required for these operations.

Safety equipment and name plates

- The *Contractor* shall secure all safety equipment, guards, notices, and nameplates associated with all Plant and Materials erected by the Contractor. This will include but is not limited to the following items:
  - Hot surface guards
  - Railings and chains
  - Signage and notices
  - Name plates

4.4 Erection Planning

The *Contractor* shall develop and submit to the Supervisor and *Project Manager* a detailed erection plan for the erection of all Plant and Materials, 10 (ten) days after the award date. The erection plan shall outline the following as a minimum:

- Critical Path definitions
- Installation start Dates
- All site progress meeting dates
- Installation milestone dates
- Installation and Erection completion dates

4.5 Rigging

Before undertaking heavy lifting and rigging, the Contractor must undertake a rigging study and all rigging activities must have the following in place:

The rigging study must be reviewed by the *Supervisor* and the *Employer*s Safety Officer prior to any heavy lifting and rigging activities being undertaken by the *Contractor*.

The rigging study must be co-ordinated with the overall site planning and activities schedule.

The Contractor shall supply all qualified and experienced personal required to effectively and efficiently position, align, install, and erect all Plant and Materials supplied (by others) in a timely manner. This shall also include the installation of all rigging equipment fixed and mobile, such as crawl beams, crawls, "A" frame, gantries, hoists, etc. as required to lift, suspend, position, and align, etc., all Plant and Materials in their respective positions and in accordance with the manufacturer's specifications and the Project Standards.

4.6 Workmanship

The Contractor shall only employ competent staff to execute the Works and submit a competency and compliance certificate of each employee (e.g., electricians, millwrights' certifications or certificates, fitter qualifications, etc.) to the Employer for approval.

The Contract shall be executed in accordance with good engineering practice and the relevant standards, codes, statutory requirements, and the Project Standards applicable to the satisfaction of the Employer.

Should any material or workmanship supplied and performed by the Contractor not be to the satisfaction of the Project Manager/Employer; it shall be rectified at the cost of the Contractor and all rejected material removed from Site. The Contractor shall be responsible for the correct and complete installation of all Plant and Materials supplied by others.

Inspections by the Supervisor shall not release the Contractor from his responsibilities within the Contract unless covered by a formal Take over Certificate.

4.7 Painting and Corrosion Protection

The *Contractor* shall carry out all preparation, priming, protection coating, painting, and finishing activities as required in accordance with both the Project Standard Technical Specification for Corrosion Protection as supplied by in this document and by TNPA.

The final coat of paint or touch ups on Plant and Materials supplied by others shall be done by the *Contractor*.

Touch ups shall be limited to any damages, scratches, scraps etc. which occurred during the offloading, storage, retrieval, assembly, positioning, alignment, installation, erection and securing of all Plant and Material or unless approved by the Employer. All painting activities shall be undertaken by competent personnel supplied by the *Contractor*.

4.8 Lubrication

The *Contractor* shall ensure that all initial fluids, lubrication oils and greases, associated mechanisms and equipment required by all Plant and Materials and supplied by others are installed correctly and in accordance with the manufacturer's specifications. This shall also include consumables such as oil filters and chemicals, etc.

The *Contractor* shall ensure that all Plant and Materials installed, modified, removed, and reinstalled by the *Contractor* are correctly lubricated prior to Commissioning.

5 LIST OF DRAWINGS

5.1 Drawings issued by the *Employer*

This is the list of drawings issued by the *Employer* at or before the Contract Date and which apply to this contract.

Note: Some drawings may contain both Works Information and Site Information.

Drawing number	Revision	Title
N-GDC-D-628		General Arrangement for 15-ton Electric Travelling Crane

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 proactively and jointly manage the administration of the contract with the objective of minimising the adverse effects of risks and surprises for both Parties.

Regular meetings of a general nature may be convened and chaired by the *Project Manager* as follows:

Title and purpose	Approximate time & interval	Location	Attendance by:
Kick-off meeting	Once off at the start of the contract	Port Control Building, Port of East London	*Project Manager* (and appropriate key persons) and *Contractor*
Risk register and compensation events	weekly or as soon as risks have been identified	On Site / Virtual	*Project Manager* (and appropriate key persons) and *Contractor*
Overall contract progress and feedback	Bi-weekly	Port Control Boardroom / On Site / Virtual	*Project Manager* (and appropriate key persons) and *Contractor*
Safety meetings	Monthly	On Site	Construction Manager (and key persons), Safety Manager and *Contractor*

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.

The *Contractor* must have the necessary equipment and software to conduct any of the above meetings virtually through the use of Microsoft Teams if the project so requires.

6.2 Documentation Control

In undertaking the *works* (including all incidental services required), the *Contractor* shall conform and adhere to the requirements of the '*Contractor* Documentation Submittal Requirements' Standard (refer DOC-STD-0001).

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.

All documentation requirements for the works will be dealt with in accordance with TNPA document system extracted from the Standard Project Protocol document (SPP).

The Head of Documentation Control shall be the Management Representative for Quality (MRQ). The Document Controller shall provide assurance that all project related documents shall be fully controlled.

All project related incoming and outgoing e-mails, faxes, letters, documents and drawings shall be copied to the Document Controller and *Project Manager*. The Document Controller shall allocate a reference and sequence number, and file the documents electronically within 48 hours of receipt.

Drawings shall be issued as per *Project Manager's* requirements to Documentation Control. Document Controller shall register drawings and issue with an electronic document transmittal.

All project related incoming and outgoing correspondence (internal Origin) shall be sent to Documentation Control for date stamping and distribution as per the *Project Manager's* and/or *Supervisor's* requirements. This shall exclude e-mails.

All incoming documents (external origin) shall be forwarded to the Documentation Control for scanning, filing, including reference, sequential number allocation and registration.

Outgoing documents of external origin shall be forwarded to the Documentation Control with the Request Instruction Forms. The Document Controller shall register the documents and issue a transmittal note.

6.3 Health and Safety management

The Principal *Contractor* complies with the following Health and Safety requirements, but not limited to:

- TNPA Health and Safety Project Specification
- Occupational Health and Safety Act (Act 85 of 1993) and Regulations.
- Transnet health and safety policies and procedures.

- National Road Traffic Act.

The Principal *Contractor* ensures that its Contractors comply with the above-mentioned requirements. All health and safety requirements applicable to the Principal *Contractor* is applicable to all Contractors as well.

The *Employer* will acknowledge the achievement of specific safety milestones set for the project with regards to incident statistics, incident recording, safety observation and conversations (SOC's) participation, safety initiatives, etc.

The Principal *Contractor* makes the Health and Safety specification available to its employees and Contractors in the language of this contract and other local languages as required.

The Principal *Contractor* conducts a method statement, risk assessment and safe work procedures pack per activity prior to carrying out that activity on the Site to the approval of the *Project Manager.*

The lines of communication of the various personnel acting on behalf of the *Project Manager,* who communicates directly with the Principal Contractor, and his key persons with respect to the HAS specification, are contained within (Health and Safety Project Specification).

The Principal *Contractor* shall appoint a full time CHSO per shift, registered and in good standing with SACPCMP for the duration of the works, the number of which depending on the scope, complexity, and high-risk activities involved, as required by the Construction regulations of 2014, regulation 8(5). The Health, Safety and Environmental Officer(s) 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 Contractors) have been completed.

The Principal Contractor shall appoint a full time CM for the project who is responsible, within the context of the HAS project Specification, for health and safety on the site and reports to the *Project Manager. The CM to be registered and in good standing with SACPCMP in the category of Pr.CM.* The CM specific tasks are detailed in the Health and Safety Project Specification

All items of plant, equipment and vehicles travelling within the site shall be equipped with fully operational amber rotating flashing lights. All vehicles shall be roadworthy and shall at all times adhere to all traffic signage and speed limits.

All employees of the Principal *Contractor* will undergo entry medicals before the commencement of the project and thereafter on an annual basis inclusive of exit medicals. Medicals to include drug testing. Medicals to be done by an Occupational Medical Practitioner (OMP).

Trainings as stipulated in the HS project specification will be completed by relevant Principal *Contractor and Contractor* employees before and during the project.

All will comply with PPE requirements as mentioned in this document as well as Health and Safety Project Specification taking note that only long sleeve pants and shirts are allowed to be worn on site in addition to the compulsory project PPE requirements.

Transportation of employees will not be allowed at the back of LDV's, even those fitted with a canopy.

All permit costs required for any activities relating to the project shall be for the Principal Contractors/Contractors account.

All employees and visitors to undergo daily alcohol testing by a trained person and calibration certificates to be available upon request.

The Principal *Contractor* shall further comply with all applicable legislative requirements and standards with respect to his own activities and others on the site. A health and safety file to be submitted by the Principal *Contractor* and all Contractors for acceptance by the *Employer* or Employers representative before site access can be granted. In addition, sufficient time to be allowed for health and safety file to be reviewed and accepted by TNPA HS Department and other affected parties.

6.4 Environmental constraints and management

All work is to be conducted in accordance with the principles of the National Environmental Management Act, 1998 (Act no 107 of 1998) as well as all other applicable legislation, regulations and accepted environmental good practice.

Contractor Environmental and Sustainability Specification Guideline: TRN-IMS-GDL-014.4 and Standard Operating Procedure - Construction Environmental Management (009-TCC-CLO-SUS-11386) dated 01 July 2023 will be implemented for the project.

The SOPs provide an integrated approach to environmental management. This approach is designed to guide the appropriate allocation of human resources, assign responsibilities, develop procedures and ensure project compliance with regulatory and best practice requirements. The SOPs outline the minimum acceptable standard for the Project that shall be complied with at all times. The requirements of these documents shall be applicable to the main Contractor and all appointed service providers.

The Contractor must sign the declaration of understanding as a commitment to abide with the SOPs. Sufficient environmental budget must be allocated to meet all the project environmental requirements for the duration of the contract.

The *Contractor* must appoint a suitably qualified Environmental Officer with a relevant environmental qualification and a minimum of 3 years relevant construction environmental management experience.

The roles and responsibilities of the Contractor's EO are clearly outlined in the SOP for Construction Management. The appointed EO is required to be on site daily. The **EO may be shared with the other discipline on site such as Health and Safety.**

The *Contractor* will be required to submit an environmental file to the Project Manager post award of tender. The *Contractor* will be required to submit an environmental method statement for hydrocarbon management coming from the dismantling of the old Portal Jib cranes. Particular requirements of the Employer will be made known on award of the contract. A Site access certificate shall not be granted until the environmental file has been approved by the Employer.

6.5 Quality assurance requirements

The *Contractor* shall ensure that all contractual deliverables required to be executed and completed are given due consideration to meet the client's Technical Specifications, Drawings and General Quality Requirements for Contractors and Suppliers (TNPA-QUAL-REQ-014.1).

The *Contractor's* Quality Management System (QMS) shall conform with the requirements of ISO 9001:2015 to ensure and demonstrate that material, workmanship, procedures, and services conform to the specified requirements.

The *Contractor* submits his Quality documents to the Employer as part of his programme under ECC Clause 31.2 to include details of:

- Quality Manual that is aligned to ISO 9001:2015 QMS requirements.
- Project Quality Plan for the contract SHALL cover project scope and be aligned to TNPA-QUAL-REQ-014.1_General Quality Requirements for Contractors and Suppliers.
- Project Specific Quality Data Book Index
- Quality Officer with a Quality diploma / Technical diploma with ISO 9001:2015 Quality Management System certificates, MUST have a minimum of 3 years' experience in similar projects.
- Quality Control Plan MUST cover all Engineering disciplines and clearly identify all inspection, test, verification requirements to meet contractual obligations, specification and drawings as required by the project scope.

6.5.1 Project Quality Plan

The Project Quality Plan (PQP) shall outline the quality strategy, methodology, quality resource allocation, Quality Assurance and Quality Control co-ordination activities to ensure that the scope meet the standards stated in the Scope Information.

The *Contractor's* PQP shall provide a description of how documents provided by the Employer to the *Contractor* are to be managed. The *Contractor* develops and maintains a comprehensive register of documents that will be generated throughout the contract including all quality related documents as part of its Quality Plan.

The *Employer* indicates those documents required to be submitted for information, review or acceptance and the *Contractor* indicates such requirements within his register of documents.

The register shall indicate the dates of issue of the documents with the Employer responding to documents submitted by the *Contractor* for review or acceptance within the period for reply prior to such documents being used by the *Contractor.*

6.5.2 Quality Manual

A copy of the *Contractor*'s Quality Manual will be requested for review by the Employer followed, by a Quality Management Systems (QMS) audit at the Contractor's Head Office to obtain evidence that a satisfactory quality management system is being maintained.

6.5.3 Quality Data Book Index

The *Contractor* shall submit a project specific quality data book index that lists all the project deliverables as per the contract requirements.

6.5.4 Quality Officer

The *Contractor* shall nominate a suitably experienced quality representative as referenced on number 4 above. The Quality representative is responsible to ensure that the PQP requirements are implemented accordingly on site. The *Contractor* shall submit the CV and qualifications / certificates of his nominated quality representative for the *Project Manager's* review and approval.

6.6 Subcontractor

The Contractor shall also ensure that all Sub-contractors are suitably qualified and experienced to carry out the work for which they have been sub-contracted.

The *Employer* may, at own discretion, require a Quality Audit of sub-contractor(s) to ensure that the sub-Contractor(s) have the necessary management, facilities, skilled staff, and quality control facilities to carry out the Works to ensure compliance with the Works Information.

The *Contractor* shall accept full responsibility for the quality of his sub-contractor(s) work and of materials used, irrespective of any quality surveillance that may be caried out by the *Employer* or his representative.

6.7 Programming constraints

The *Contractor* is required to submit a program for approval within 14 days of the award of this contract. This program shall be subject to discussion and review by the *Project Manager* prior to acceptance.

The *Contractor's* proposed programme shall be in the form of a bar chart (Gantt chart) or any other time-activity form acceptable to the Project Manager. The program shall clearly show:

- The proposed rate of progress to complete the Works within the required period as tendered, showing the various activities, their durations and proposed resourcing levels (major plant and labour) for each element of the Works. Sufficient detail shall be provided to enable the Employer to be able to gauge supply progress. All activities, including any establishment on site, trimming and finishing and the completion of all minor ancillary work are to be included in the program.
- The sequence of activities and any dependencies (time or resource related) between them.
- The critical path activities.
- Key dates in respect of work to be carried out, or information, etc., to be provided, by others.
- The anticipated value of work to be done during each month.
- Other information specifically required by the Project Manager.

When drawing up his programme, the Contractor shall, inter alia, take into consideration and make allowance for:

- Known physical conditions or artificial obstructions.
- Obtaining permits for all workers and staff, vehicle permits, vehicle operating permits for drivers and operators and radio operators.
- The accommodation and safeguarding of public and traffic.
- Dealing with, altering, and installing services.
- The reasonable requirements and programmes of the *Project Manager*.
- All other actions required in terms of this contract.

The following details shall be submitted together with the programme:

- The number of working hours per day, working days per week, assumed holiday, or shut down periods on which the programme is based.
- The overall labour and major plant resource levels on which the programme is based.
- The detailed traffic and construction plant accommodation proposals on which the programme is based.

The *Contractor* shall base its initial programme of work on the scope of the works as described in the project specification and the schedule of quantities. This programme shall be reviewed on a regular basis by the *Contractor* in accordance with changing circumstances, delays and amendments to the work ordered by the *Employer* as a result of further examinations made by the *Employer.*

Minor revisions to the approved program may be introduced from time to time by mutual agreement between the *Project Manager,* and *Contractor*. Should the *Project Manager* believe that a major revision of the program is required, the *Contractor* will be notified in writing and a revised program shall be submitted within two weeks of receipt of such notification.

It should be noted that it is in the *Contractor's* interest to provide a comprehensive program giving as much information as possible about the times allowed for the various activities as well as resources or other limitations affecting the program, since the approved program may be used to evaluate any claims in terms of the general conditions of contract for extensions of time.

The *Contractor* shall submit to the *Project Manager* a detailed cash flow chart based on the contract programme showing the anticipated cash flow as represented by expected payment claim submissions, not only payments received.

The *Contractor* shall provide a written status report by the 20th of each month, or such other reporting period as may be required by the *Project Manager* from time-to-time. The report shall summarise progress and problems encountered during that month in respect of all parts of the work under the Contract.

As a minimum the report shall include:

- progress against the current approved contract programme;
- summary of progress achieved during the period;
- list of milestones achieved during the period;
- status of design, procurement, and off-delivery place goods;
- status of on-delivery place goods;
- deviations from the contract programme "baseline", and in particular, the forecast delivery
- dates of activities which have or should have commenced;
- status of approvals;
- actual or anticipated problems with corresponding action plans to minimise the impact;
- summary of goods planned for the following period, and
- cash flow status versus the original forecast.

The progress report shall form the basis of a monthly progress meeting between the *Project Manager* and the *Contractor*

6.8 Contractor's management, supervision and key people

The minimum key people required by the *Employer* for this project are indicated as follows:

Key People	**Qualifications & Experience**
Project/ Construction Manager	• The Project/Construction Manager should at least have a minimum qualification of a BSc. /B.Eng./B-Tech./National Diploma in Project Management/ Mechanical Engineering with experience in Mechanical Engineering projects and SACPCMP registration as a Project/Construction Manager (Pr. CPM/ Pr. CM). • The Project/Construction Manager must have a minimum of three years post registration experience on Mechanical Engineering works or projects.
Mechanical Engineer	• The Mechanical Engineer should at least have a minimum qualification of a BSc. /B.Eng./B-Tech./National Diploma in Mechanical Engineering with experience in Mechanical/ Engineering projects and ECSA registration as a Pr. Eng/Pr.Tech Eng). • The Mechanical Engineer must have minimum of three years post professional registration experience on Mechanical Engineering works or projects.
Electrical Engineer	• The Electrical Engineer should at least have a minimum qualification of a BSc. /B.Eng./B-Tech./National Diploma in Electrical Engineering with experience in Electrical/Mechanical Engineering projects and ECSA registration as a Pr. Eng/Pr.Tech Eng. • The Electrical Engineer must have minimum of three years post professional registration experience on Electrical/Mechanical Engineering works or projects.
Structural Engineer	• The Structural Engineer should at least have a minimum qualification of a BSc. /B.Eng./B-Tech./National Diploma in Civil/ Structural Engineering with experience in Structural /Industrial Engineering projects and ECSA registration as a Pr. Eng/Pr.Tech Eng. • The Structural Engineer must have minimum of three (3) years post professional registration experience on structural/Industrial Engineering works or projects.
Electrician	• The Electrician should have a wireman's license issued by the Department of Labour. • And the Electrician must at least have a minimum of three years of experience in electrical installation.

Environmental Officer	• The Environmental Officer must be in possession of a B degree in Environmental Management. • The environmental Officer must have minimum three (3) years' experience in the construction sector.
Quality Officer	• Quality Officer with a Quality diploma / Technical diploma with ISO 9001:2015 Quality Management System certificates, • MUST have a minimum of 3 years' experience in similar projects.
Construction Health and Safety Officer	• Safety officer to be registered with SACPCMP. • Must have a minimum of 5 years' experience in similar projects.

6.9 Training workshops and technology transfer

The *Contractor* facilitates the following requirements for training workshops:

- A safety pre-mobilisation workshop
- A *Contractor* employee safety training programmes
- 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.

6.10 Insurance provided by the *Employer*

Insurance provided by the *Employer* is contained in the Contract Data – Part 1.

6.11 Contract change management

No additional requirements apply to ECC Clause 60 series.

6.12 Provision of bonds and guarantees

The form in which a bond or guarantee required by the conditions of contract (if any) is to be provided by the *Contractor* is given in Part 1 Agreements and Contract Data, document C1.3, Sureties.

The *Contractor* provides a bond or guarantee as required by the conditions of contract concurrently with the execution by the Parties of the form of agreement for the ECC contract.

Records of Defined Cost, payments & assessments of compensation events kept by Contractor.

6.13 The Contractor keeps the following records available for the Project Manager to inspect:

- Records of design employee's location of work (if appropriate);
- Records of Equipment used and people employed outside the Working Areas (if applicable);

People

Minimum requirements of people employed on the Site

- South African Work Permits

The Contractor complies with the following PIRPMP

CONTRACTOR LIABILITY

The *Contractor* warrants that it will be liable to Transnet for any loss or damage caused by strikes, riots, lockouts or any labour disputes by and/or confined to the *Contractor's* employees, which loss will include any indirect or consequential damages;

The *Contractor* warrants that no negotiations or feedback meetings by the *Contractor's* employees shall take place on Transnet premises, whether owned or rented by Transnet.

The *Contractor* shall give notice to Transnet of any industrial action by the *Contractor's* employees immediately upon becoming aware of any actual or contemplated action that is or may be carried out on Transnet's premises, whether owned or rented, and shall notify Transnet of all matters associated with such action that may potentially affect Transnet.

The *Contractor* is responsible for educating its employees on relevant provisions of the Labour Relations Act which deal with industrial action processes, and the risks of non-compliance.

The *Contractor* is required to develop a Contingency Strike Handling Plan, which plan the *Contractor* is obliged to update on a three monthly basis. The *Contractor* must provide Transnet with this plan and all updates to the Plan. The *Contractor* is responsible to communicate with its employees on site details of the plan.

INDUSTRIAL ACTION BY *CONTRACTOR* EMPLOYEES

In the event of any industrial action by the *Contractor's* employees, the *Contractor* is required to provide competent contingency resources permitted in law to carry out any of the duties that are or could potentially be interrupted by industrial action in delivering the Service.

The *Contractor* warrants that it will compensate Transnet for any costs Transnet incurs in providing additional security to deal with any industrial action by the *Contractor's* employees.

In the event of any industrial action by the *Contractor's* employees, the *Contractor* is obliged:

- To prepare and deliver to Transnet, within two (2) hours of the commencement of industrial action an Industrial Action Report. If the industrial action persists the *Contractor* is required to deliver the report at 8h30 each day.

- The Industrial Action Report must provide at least the following information:
    - Industrial incident report,

    - Attendance register,
    - Productivity / progress to schedule reports,
    - Operational contingency plan,
    - Site security report,
    - Industrial action intelligence gathered.
- The final Industrial Action Report is to be delivered 24 hours after finalisation of the industrial action.

- The management of the *Contractor* is required to hold a daily industrial action teleconference with personnel identified by Transnet to discuss the industrial action, settlement of the industrial action, security issues and the impact on delivery under the contract.

The resolution of any disputes or industrial action by the *Contractor's* employees is the sole responsibility of the *Contractor*.

Access to Transnet premises by the *Contractor* and its employees is only provided for purposes of the *Contractor* delivering its services to Transnet. Should the *Contractor* and its employees not, for any reason, be capable of delivering its services Transnet is entitled to restrict or deny access onto its premises and unless otherwise authorized; such person will deemed to be trespassing.

The *Contractor* complies with the requirements of the IRCC involving the engineering construction *Contractor*s engaged (including all future *Contractor*s) by the *Employer*.

The roles and responsibilities of the various personnel acting on behalf of the *Project Manager* with respect to IR issues are stated in the paragraphs following:

The PIRM is responsible for ensuring that the *Contractor* complies with the PIRPMP. The PIRM acts on behalf of the *Project Manager*.

The PIRM specific tasks are:

To complete the PLA prior to the Contract Date; and

To assign specific duties to the PSIRM.

The PSIRM is responsible for IR (to include the PLA) on the Site and Working Areas and reports to the Project Manager.

The SIRM is responsible, inter alia, for day-to-day IR on the Site and Working Areas through the implementation of the PIRPMP. The SIRM reports directly to the PSIRM and the Project Manager.

The SIRM specific tasks are:

To liaise with the Contractor prior to the commencement of construction activities (as per the Contractor's programme accepted by the Project Manager) with respect to IR issues under the SIP.

6.14 The *Contractor's* Invoices

When the *Project Manager* certifies payment (see 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.

The invoice states the following:

Invoice addressed to Transnet SOC Ltd;

Transnet SOC Limited's VAT No: 4720103177;

Invoice number;

The *Contractor's* VAT Number; and

The Contract number [insert relevant details].

The invoice contains the supporting detail [insert relevant details].

The invoice is presented by hand delivery.

Invoices submitted by hand are presented to:

Transnet
Port Control Building

Ganteaume Crescent

Quigney, East London

5200

For the attention of The Contract Administrator, Transnet National Ports Authority

The invoice is presented as an original.

The *Contractor* submits their invoices every 20th day of the month as per Contract Data Part C1.a

Invoices can be sent electronically to the *Project Manager*. Only PDF invoices from the system are acceptable (This could be done in Excel, word or any other system and directly converted into PDF). No scanned PDF will be accepted.

Invoices can be hand deliver to:

The *Project Manager*

Port Control Building Ganteaume CrescentQuigney

East London5201

All payment will be done via the electronic payment system. The *Contractor* ensures that the *Employer* has the correct banking details to make the electronic payments.

6.15 Annexures issued by the *Employer*

This is the list of annexures issued by the *Employer* at or before the Contract Date and which apply to this contract.

- Annexure A: Functional Design Requirements
- Annexure B: Health and Safety Specification
- Annexure C: Baseline Risk Assessment
- Annexure D: Contractor Environmental and Sustainability Specification Guideline: TRN-IMS-GDL-014.4
- Annexure E: Standard Operating Procedure for Construction Environmental Management.
- Annexure F: General arrangement for 15-ton Electric travelling Crane
- Annexure G: TNPA-QUAL-REQ-014.1_General Quality Requirements for Contractors and Suppliers

Part C4: Site Information

PART 4: SITE INFORMATION

1. Description of the Site and its surroundings

1.1. General description

The site is within the Buffalo City Metropolitan Municipality region in East London, situated in the Eastern Cape province. The site is situated in the summer rainfall area of the Eastern Cape. The average rainfall is in the order of 800 to 1000mm/year.

Figure1: Locality Map



The Port of East London is in the process of replacing Two of the four Existing Jib Cranes due to their condition. The cranes are located at the East London Graving Dock facility, on the East bank side of the Port.

1.2. Geotechnical investigations

There is no geotechnical information available.

1.3. Contractor Establishment

Upon receipt of the site access certificate, the contractor will be required to establish site offices and laydown areas. The facilities established on site will remain for the duration of the works, and connection points will be available for the contractor, however, the contractor will be required to pay for services utilized during the duration of the contract. The proposed contractor site establishment and laydown area is shown below.

Figure 2: Proposed Site Establishment Area



The proposed site establishment , including site office, storage facility, plant storage and ablution will be accommodated in an open area adjacent to the Graving dock facility, opposite the repair quay. The Site can be accessed from the dry dock entrance using Pontoon road, alternatively from Helly Hutcheson Port Entrance. The contractor shall bring their own ablution facilities. The *Contractor* must adhere to any additional requirements stipulated by TNPA. They must adhere to the basic screening (Alcohol and drug) requirements at all entry and exit points of the Port. If the contractor or its employees tested positive during the screening, employee will not be permitted onto TNPA premises.

1.4. Operations on the site

The works will be performed in an operational environment; the port internal road will remain operational with on-going traffic for the entire duration of the contract. The contractor is to take cognisance of the TNPA employees and its stakeholders in and around the road. In addition, the drydock facility will be operational during the contractor's project duration; therefore the contractor shall organise his equipment, plant and tools to located area to avoid creating traffic congestion around the Graving dock.

1.5. Existing buildings, structures, and plant & machinery on the Site

The Graving Dock facility has the following infrastructure in close proximity:

- TNPA Clinic with people visiting frequently.
- Rail Infrastructure for the existing cranes
- Four existing Cranes (2 x 15 ton, 4 ton and 4.5 ton)
- Electrical kiosks, cables and general equipment
- Free-standing buildings
- Plant & machinery
- Port Infrastructure
- Private businesses
- Workshop 17

1.6. Hidden services

The Contractor shall carry out visual inspections, using detecting apparatus, to identify unknown Services and by making excavations to expose the position of the service at critical points if need arise. The services known by TNPA will be indicated on site-by-Site Supervisor.

1.7. Other reports and publicly available information

This report is to be read in conjunction with the C3 Works Information Report provided.

Annexure A: Functional Design Requirements

TRANSNET NATIONAL PORTS AUTHORITY

A DIVISION OF TRANSNET LTD

(Registration No. 1990/000900/06)

PART C3: GOODS INFORMATION – REPLACEMENT OF TWO GRAVING DOCK JIB CRANES AT THE PORT OF EAST LONDON

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1 INTRODUCTION

This Functional Specification is for the design, manufacture, delivery, installation, and commissioning of (15 ton) Jib Cranes to be installed at the Dry Dock Ship Repair Facility in the Port of East London.

The Portal jib cranes shall be designed to the latest technological design standards for such cranes to enhance efficiencies of the dry dock operations.

The proposed cranes are to be used for;

- Positioning of keel blocks,
- Hoisting man-occupied cradles for painting and grit blasting,
- Bed preparations,
- Removal of equipment to and from the vessels to and from the dockside
- Hoisting and movement of gang-ways and other rigging requirements within the dry docks.

A single jib would be appropriate for the operational requirements which include a level-luffing operation that could be achieved with PLC control (current Man-Machine Interface (MMI) technology).

The crane shall be commissioned complete and fully assembled in all respects; including standard equipment supplied by the manufacturer, and shall comply with all applicable regulations within the Health and Safety Act, Act 85 of 1993/as amended or equivalent international standard for mobile lifting equipment such as ISO, DIN, etc. Upon handover, critical spares as identified by OEMs shall be included as part of delivery.

2 OPERATIONAL REQUIREMENTS

2.1 Physical Performance

2.1.1 The minimum physical performance of the proposed new jib cranes is based on the current 15-ton jib cranes and it proposed that the new cranes must therefore meet or exceed the following performance parameters presented in Table 1 below:

Table 1: Required Cranes Capacity for Graving Dock

Facility	Crane Lifting Capacity at max radius [Tons]	Quantity	Crane Rail Gauge(mm)
Port side Dry Dock	15	1	4910
Starboard side Dry Dock	15	1	4910

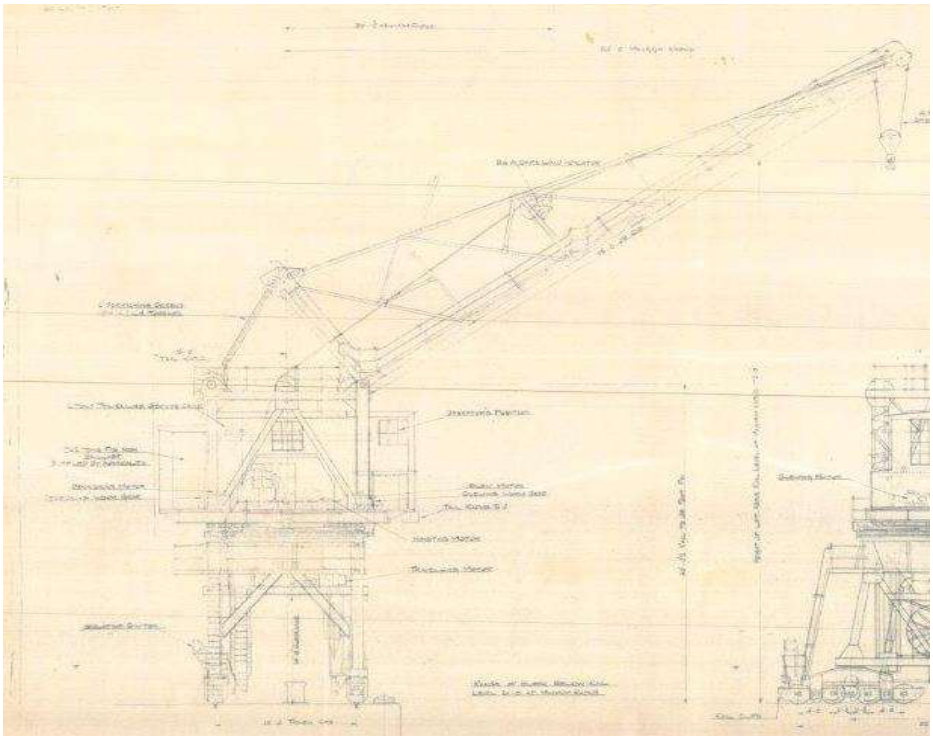


Figure 1: The Existing Crane Arrangement

Table 2: Operating Speeds

Speeds	
Hoisting 15tons at 40FPM (0.2032m/s) Hoisting 7,5tons at 80FPM (0.4064m/s)	60BHP
Slew 15tons at 1 revolution in 3 minutes	12BHP
Derricking 15tons from max to min radius 2¾minutes	75BHP
Travelling in 15tons at 60FPM(0.3048ms)	

2.1.2 There are four jib cranes currently in operation at the Port of East London Drydock as illustrated in figure 2. The OEM must adhere to the minimum crane parameters for all the cranes required for the Port of East London Dry Dock as indicated in Table 3.

Table 3: Existing Crane Dimensions

Main Dimensions	
Minimum radius	30 foot (9.144m)
Maximum radius	68 foot (20.7264m)
Height of lift above rail lever at maximum radius	73′ (22.2504m)
Height of lift at minimum radius	97′-9‟(29.7942m)
Range of blocks below rail level at minimum radius	51′ (15.5448m)
Tail radius	15′ (4.572m)

Rail to jib foot pin	43'-0½" (13.119m)
Rail span	16' (4.8768m)
Jib c/c	75' (22.86m)
Clearance from rail to bottom of travel platform	14'-6" (4.4196m)
Wheel base	32' (9.7536m)
Rail wheels (cast steel) diameter	2'-6" (0.762m)
Crane rails	48kg/m

2.2 Standards applicable to the Design & Manufacture of Cranes

2.2.1 The principal specifications shall follow Standards and rules for the design of the cranes and components (latest editions shall apply):

Table 4: Engineering standards governing the design and manufacturing of Jib Cranes Principle.

EN 13001-1:2004	Cranes - Safety - General design - Part 1: General principles and requirements
EN 13001-2:2004	Cranes - Safety - General design - Part 2: Load actions
CEN/TS 13001-3-1:2004	Cranes - General design - Part 3-1: Limit states and proof of competence of steel structures
CEN/TS 13001-3-2:2004	Cranes - General design - Part 3-2: Limit states and proof of competence of wire ropes in reeving systems
prCEN/TS 13001-3-3	Cranes - General design - Part 3-3: Limit states and proof of competence of wheel/rail contacts
EN 13135-1:2003	Cranes - Safety - Design - Requirements for equipment - Part 1: Electro technical equipment
EN 13135-2:2004	Cranes - Equipment - Part 2: Non-electro technical equipment
EN 13557:2003	Cranes - Controls and control stations
EN 12077-2:1998	Cranes safety - Requirements for health and safety - Part 2: Limiting and indicating devices
EN 13586:2004	Cranes - Access
EN 14502-1:2005	Cranes - Equipment for the lifting of persons - Part 1: Suspended baskets
EN 14502-2:2005	Cranes - Equipment for the lifting of persons - Part 2: Elevating control stations
EN 12644-1 :2001	Cranes -Information for use and testing - Part 1: Instructions
EN 12644-2:2000	Cranes -Information for use and testing - Part 2: Marking
FEM 1.001 (All Parts)	Rules for the design of hoisting appliances
FEM 1.003:1995	Tower Cranes - Graphical Symbols
FEM 1.005:2003	Recommendation for the calculation of tower crane structures in out-of service conditions



Figure 2: Port of East London with the ship repair facilities showing the cranes around the Dry Dock

3 ELECTRICAL POWER SUPPPLY

3.1 Electrical Supply Distribution

3.1.1 All materials and equipment shall be new and of a high quality that complies with the Specifications. The Contractor shall ensure compliance with the following Specifications:

- The Occupational Health and Safety Act 85 of 1993 and Regulations specifying electrical works.
- The Code of Practice for wiring of premises as amended - SANS 10142.
- Transnet Electrical safety instructions for Substations- working within Transnet substation
- SANS 1765: Low voltage switchgear and control assemblies.

3.1.2 All electrical equipment associated herewith is specified elsewhere within this document.

3.2 Existing Electrical Capacity

3.2.1 The equipment offered shall be designed to operate off the available electrical power supply of 380 V, 3 phase, 50 Hz AC. The voltage may, however, vary within the range of 90% to 110% of the nominal and frequency from 49 Hz to 51 Hz and all equipment installed shall be suitable for continuous operation anywhere in this range.

Table 5: Existing Electrical Capacity

Current supply	380/400V, 50 cycles (50 Hz), 3 phase
Crane power supply	Cable reel
Drive and control system	thyromat controlled and PLC driven, all motors are AC slipring induction motors

3.3 Standards for Motors and Machinery.

3.3.1 All motors and machinery shall comply, wherever applicable, with the latest issues of the following Electrical standards and other relevant standards.

Table 6: Electrical Standards for Motors and Machinery.

IS: 325	Three Phase Induction Motors
IS: 1231	Dimensions of 3 phase foot mounted Induction motors
IS: 1271	Classification of insulating materials
IS: 2148	Flameproof enclosures of electrical apparatus
IS: 2223	Dimensions of flange mounted AC Induction motors
IS: 2253	Designations for types of construction and mounting arrangements of rotating electrical machines
IS: 2254	Dimensions of vertical shaft motors for pumps
IS: 4029	Guide for testing three-phase induction motors
IS: 4691	Degrees of protection provided by enclosure for rotating electrical Machinery
IS: 4722	Rotating electrical machines
IS: 4728	Terminal markings and direction of rotation for rotating electrical Machinery
IS: 6362	Designation of methods of cooling of rotating electrical machines
IS: 6381	Construction and testing of electrical apparatus with type of Protection-"E"
IS: 8241	Method of marking for identifying electrical equipment for explosive atmosphere
IS: 8289	Electrical equipment with "n" type protection
IS: 8789	Values of performance characteristics for 3 phase induction motors
IS: 12065	Permissible limits of noise levels for rotating electrical machines
IS: 12075	Mechanical vibration of rotating electrical machines with shaft Heights From 56mm & higher- measurement, evaluation and limits of vibration severity
IS: 12615	Energy-efficient motors

4 CRANES CONTROL

4.1 Main Hoist and Slewing

4.1.1 A control mechanism should be provided for the operator to manage all the controls conveniently when seated and shall include the operations for;

- Lowering,
- Hoisting,
- and slewing to the left and right.

4.2 Long Travel and Level-luffing

4.2.1 A control mechanism should be provided for the operator to manage all the controls conveniently when seated and shall include the operations for:

- Level-luffing up and down.
- Travelling to the left and right (when facing the dock)

4.3 Other Control Equipment

4.3.1 The following maximum additional controllers shall be arranged in the cabin within easy reach of, and clearly visible from, the operator's normal working position, preferably on the driver's consoles.

- Push buttons for tripping and resetting the main contractor.
- Key switch for over-riding the long travel anti-collision device.
- Emergency stop push button.
- Selector switch for rail brake application.
- Selector switch between cabin control or remote control.
- Push button to test all indicator lights.
- Push buttons for floodlights on/off

4.3.2 The following minimum indications shall be provided using LED-type indicator lights.

- The main circuit breaker closed.
- Hoisting and lowering overload.
- Slewing indicator
- Derricking indicator
- Status of rail brakes.
- Status of long travel storm pins. (Storm Pins designed to meet existing infrastructure installation)
- General alarm
- Wind speed reaching pre-set values.

5 DESIGN PARAMETERS

5.1.1 The supplier shall ensure that the crane is designed to at least meet the design requirements specified in this document in Table 3. All structural steelworks shall be carried out in accordance with the specifications listed in Table 7 Below.

Table 7: Structural Steelworks Specifications

CORROSION SPECIFICATIONS	
SPECIFICATION	PURPOSE
SANS 10064	Preparation of steel surfaces for coating
SANS 1091	National colour standards for paint
SANS 121 (ISO 4610)	Hot-dip (galvanized) zinc coatings
SANS 2409	Cross-cut test
SANS 5493	Protective coating of iron and steel structures against corrosion
STEEL STRUCTURE AND OTHER SPECIFICATIONS TO BE CONSIDERED	
SPECIFICATION	PURPOSE
ISO 4308	Cranes and lifting appliances- selection of wire ropes
ANSI/AWS D1.1	Structural welding code-steel.
BS-EN 287 Part 1	Approval testing of welders/fusion welding
BS-EN 288 Part 3	Specifications and approval of welding procedures for metallic materials
BS 5135	Metal arc welding of carbon and manganese steel.
BS 4360/SANS 1431	Weld-able structural steel.
BS 3923	Methods for ultrasonic examination of welds.
BS 2600	Radiographic examination of fusion welded butt joints in steel.
DIN 1026	Metric channels.
ISO R657	Angles.
SANS 094	The use of high strength friction grip bolts and nuts.
SANS 1091	National colour standards for paint.
SANS 10064	Preparation of steel surfaces for coating
SANS 2409	Cross-cut test
SABS 135	ISO metric bolts, screws and nuts (hexagon and square)(coarse thread free fit series
BS 4 Part 1	Structural steel, hot rolled sections:
BS 4848 Part 2:	Hot finished hollow sections
BS 6363:	Cold formed sections
BS 29:	Forgings
BS 3100:	Steel castings
BS 1452:	Cast iron
SANS 10142	Electrical wiring code

5.2 Structure

5.2.1 The principal specifications shall follow Standard and rules for the design of the crane's components as given in section 5.1.1 above.

5.2.2 All load combinations, stress, mechanical and component calculations shall be according to the above specifications.

5.2.3 Loads due to snow, ice and earthquakes can be excluded from the design as these conditions are not normally encountered in South Africa.

5.2.4 The cranes shall be designed for maximum in-service wind (uniform with height above ground) of 72 km/h from the least favourable direction relative to the crane. The effects of such wind on all mechanisms shall be taken into account. The effect of wind channelling in locations where applicable shall be factored in the design calculations.

5.2.5 The design calculations must take into consideration that, when the crane is not in service, the jib must be in the raised position, so as not to interfere with the dock traffic.

5.2.6 In wind speeds above the in-service conditions, the crane would be required to be made safe. This would require the crane to be able to safely travel to the nearest parking position against such wind; alternatively, the crane shall be able to come to a complete stop using the service brakes only when travelling in such winds.

5.2.7 Supplementary means of mooring/parking may only be considered to ensure stability when required for out-of-service conditions.

5.3 Long travel Structure

5.3.1 Bogie assemblies shall be fully compensating and welded to the structure. Jacking points shall be provided in positions allowing each corner to be jacked.

5.3.2 The spacing between bogie wheels and the design of the bogies shall be such as to allow the removal of any wheel without lifting the entire leg.

5.3.3 Suitable jacking pads for the removal of individual wheels shall be provided.

5.3.4 Structural stops shall be provided on each bogie to prevent the bogie from dropping more than 35 mm in case of a shaft or wheel failure.

5.3.5 In addition to the service brakes, a sufficient number of hydraulically released, spring applied, stamp down type rail brakes are to be provided on each side of the crane (At least one on the dockside and one on the land side) Clamp type or wedge type rail brakes are not acceptable. These brakes are to be engaged automatically when the crane is powered down in wind speeds above 126km/h; in the event of a power failure; or when the crane starts drifting during

operation. The coefficient of friction to be used for the calculation of the braking effect between the rail crown and serrated brake block must not exceed μ = 0.25.

5.3.6 The driving units of the rail brakes shall be enclosed in corrosion-resistant steel weatherproof housings, which must offer easy access for maintenance and servicing purposes.

5.3.7 The travel drives shall consist of separate reduction gearbox motors and disc brakes. The reduction gearbox must drive directly onto the wheel shafts and be coupled to the wheel shafts with a flange type coupling.

5.3.8 The connection bolts must be easily accessible. Hollow shafts with shrunk- disks are not acceptable.

5.3.9 Long travel drives are to be mounted in such a way that they do not stand out of the bogies in a position that can cause a collision hazard for passing traffic. Gear motor and gear arrangements must be protected by a bolt-on steel guard frame manufactured from suitable tubing. The Gear-motor arrangement must be accurately aligned and have minimal vibrations.

5.3.10 Bearing housings for long travel wheel bearings shall be bolted onto the bogie's frame to facilitate easy replacement of complete wheel assemblies.

5.3.11 Wheels shall be keyed and shrunk onto the wheel axles.

5.3.12 The wheel axle and bearings assembly shall be designed in such a way that maintenance and inspection can be achieved with minimum delay without removal of the respective bogie. Substantial jacking points shall be provided to enable safe lifting for maintenance.

5.3.13 All long travel wheels and bogies shall be identical and completely interchangeable including bogies, and landside and dock-side shall also be completely interchangeable.

5.3.14 Rail sweeps shall be provided on the leading bogies. These sweeps must clean the top of the rail.

5.3.15 Suitable constant face hydraulic buffers with telescopic dust covers shall be provided on the leading bogies on both sides. The distance of these buffers above the centre line of the rails needs to be specified by the manufacturer.

5.3.16 Safety against drifting in stormwind conditions must be attainable using only the rail brakes, or the service brakes, or only the parking pins.

5.3.17 A ground control station must be provided at ground level on the inside of the landside bogies to give an adequate view of the parking operation. This ground control station shall be provided

with an emergency stop button to ensure that the bogie is lockable, and there should be a platform for the operator to stand on whilst operating the crane.

5.3.18 Controls at the ground control station shall allow for inching of the long travel motion to facilitate the release of the parking pin. The main selector switch shall close the main supply and allow long travel from the ground control station.

5.3.19 Interlocking shall be provided such that, when the Operator is in control of the crane, the long travel from the ground control station shall be inoperative.

5.3.20 Brass pantograph type earth shoes running on the rails shall be provided on each side of the structure. The structure and all the bogies shall be electrically interconnected using suitable welding-type insulated cable bonding straps.

5.4 Portal Structure

5.4.1 Where the crane structure consists of sealed welded box/ tubular sections, the airtight integrity of each box shall be pressure tested with compressed air up to a pressure of 0.5 bar (dry air).

5.4.2 Adjustable flange connections shall be installed in suitable positions to allow for future differences in the level of the dock-side and landside rails.

5.4.3 The ballast/counterweight shall be of concrete or cast iron, in manageable sections with the mass (kg) cast into the visible surface, and shall be painted with an appropriate system to prevent corrosion. Where required, stainless steel lifting lugs shall be provided in each section. A plate showing the total ballast mass shall be fixed to the ballast structure.

6 JIB CRANE REQUIREMENTS

6.1 Jib structure and operation

6.1.1 The jib shall be of a welded construction.

6.1.2 The jib shall be designed is such a way that it is easy to drop down (lower), remove and maintain.

6.1.3 The jib hinge shall be of a spherical plain bearing type. The hinge arrangement shall be such that the hinge pins/bushes can be easily replaced.

6.1.4 The components for the jib hoisting mechanism shall be installed in the machine house.

6.1.5 All jib hoist mechanisms shall be provided with a system to stop and hold the jib in any position under full load (i.e., a spring-applied hydraulically-released fail-safe service brake is required.

6.1.6 The crane must be able to long travel with the jib at any inclination.

6.1.7 The reeving system shall include a mechanism that does not allow rope separation from the drum in cases of overspeeding.

6.2 Slewing operation

6.2.1 All machinery required for the slewing mechanism shall be arranged to permit easy removal for maintenance.

6.2.2 The slewing drives shall be mounted in easily accessible positions in the machine house.

6.2.3 Slewing drives consisting of separate reduction gearbox motors and disc brakes are required.

6.2.4 The brakes and gearboxes shall comply with the same requirements as those for the long travel.

6.2.5 Provision shall be made for access to the slewing bearing for inspection and maintenance purposes

6.3 Main hoist operation

6.3.1 The main hoist mechanisms must be located in the machinery house.

6.3.2 The main hoist mechanism shall consist of a single gearbox with a motor, a service brake, a rope drum and an emergency brake.

6.3.3 The service brakes shall be spring-applied, hydraulically released, self-adjustable Tcalliper disc brakes with manual release. The make of the service brakes shall be approved by the Employer and must be fitted with reliable brake open/close limit switches.

6.3.4 The main hoist drum shall be fitted with an emergency disc brake; with the disc mounted directly onto the rope drum. An emergency brake must engage in the event of a hoist overspeed. An emergency stop must be engaged when the crane is powered down.

6.3.5 The emergency brake shall be capable of safely stopping and holding the rated load from a 20% overspeed.

6.4 Machinery / Electrical House

6.4.1 The electrical control and drive equipment shall be mounted inside electrical panels.

6.4.2 Electrical panels with control equipment shall be housed in a separate, self-contained, insulated steel-framed enclosure with a lockable door; which shall be air-conditioned with filtered air at an ambient temperature of not more than 20 degrees Celsius, and pressurised to at least 50 Pa above the atmosphere.

6.4.3 The enclosure shall be of sufficient size to permit unrestricted access to all equipment for routine service and maintenance.

6.4.4 The air-conditioner must be locally supplied. The air-conditioner must be a split type, heavy-duty, off-shore marine type generally complying with the Employer's specification. All fittings, bolts, brackets etc. must be stainless steel. The condenser/evaporator must be made from either stainless steel or brass tubing. The enclosure must be stainless steel.

6.5 Gearboxes

6.5.1 All gearboxes must be fitted with conveniently located sight glasses for checking the oil level.

6.5.2 Reduction Gear motors shall be fitted.

6.5.3 The breather and filler holes must be fitted with suitable filters to prevent the ingress of dust into the gearboxes.

6.5.4 All breathers and fillers must be designed such that the ingress of water and condensation is prevented.

6.5.5 The gearbox lubrication system must be suitable for the duty and cyclic duration of the particular mechanism. If pumps are required, these are to be electrically driven.

6.5.6 The appropriate mechanical and thermal rating and load factor of the application must be applied for the sizing of all gearboxes. Force-cooled gearboxes are not acceptable.

6.6 Stairs, Ladders, Walkways, Platforms and Anchor Points

6.6.1 Stairs, cat-ladders, walkways and platforms shall be provided to give easy access to the Operator's cab, machinery house, all sheaves and lubrication points, anemometer, and all the sections of the jib for normal operation, inspection, maintenance and lubrication and shall be in compliance with the OSH Act.

6.6.2 A stairway/cat-ladder shall be provided from the bottom to the top of the A-frame, and to the tip of the jib to enable easy and safe access.

6.6.3 The rise of a stair ladder shall not exceed 0.3 m and the width between stringers should be between 450 mm and 540 mm. The stringers are to be at least 90 mm wide and made from a flat bar. Safety cages and rungs shall be designed in line with international standards.

6.6.4 Stairs and walkways shall not be less than 700 mm wide, and walking areas around drives etc. shall be of sufficient size to allow for ease of maintenance. Cat ladders shall not be less than 500 mm wide and fitted with back hoops.

6.6.5 All other locations that require frequent inspections and maintenance shall be easily accessible using walkways, staircases and/or cat-ladders.

6.6.6 Trapdoors must be of light, but robust, construction; hinged with opposing stainless steel hinges and provided with a catch to keep them in the open position, when desired. Trapdoor openings must be suitably protected.

7 CABIN REQUIREMENTS

The operator's cabin shall be designed by the *Contractor* to meet the user requirements. The cabin shall include but not be limited to, the following:

7.1 Cabin Construction

7.1.1 Window space that is constantly clear to provide the operator with sufficient visibility for a 180-degree view of the floor, arm, jib and rope during operations. The window glazing shall be shatterproof, with sun-filter tint with 2-way visibility, with wipers and spray water for self-cleaning.

7.1.2 The walls shall be insulated with a thermal layer to trap heat or cold to maintain cabin temperature as per air conditioner settings.

7.1.3 The floor shall be rigid, slip-resistant and free of any form of mechanical obstructions. The cabin shall have a double floor (for cabling) with removable galvanized checker plates.

7.1.4 The cabin and equipment inside the cabin shall be of a white colour coding as per best practices. SANS1091:2012.

7.1.5 The cabin shall be provided with fire detection and firefighting equipment. The latest environmentally friendly firefighting technology that complies with applicable standards shall be used.

7.1.6 The cabin shall be provided with emergency escape facilities in case of fire and shall allow for the safe removal of an unconscious person.

7.1.7 The flooring shall also be of a uniform plane, free from humps or bumps that could cause trips.

7.1.8 The noise level inside the operator's cabin shall not exceed 55 decibels during normal dock operation for a period longer than an hour.

7.1.9 The cabin shell and door shall be made of corrosion resistance steel (minimum grade is 3CR12). The door shall be fitted with airtight seals, a window and handles of robust construction. The

door shall open outwards and be arranged for exterior locking and connecting to an exterior access platform.

7.2 Cabin Dimensions

7.2.1 The manufacturer shall supply a cabin with ample space to fit all the necessary equipment and controls. The cabin must provide an environment that allows the operator to perform his duties obstruction-free.

7.3 Cabin Environment

7.3.1 The air inside the cabin must be distributed evenly rather than directly onto the operator and must regulate the temperature between 18 and 24 degrees Celsius (dry bulb).

7.3.2 The cabin shall be dust and water penetration resistant to a rating of IP66.

7.3.3 The cabin must be capable of being well insulated from the outside environment and achieving the required air changes via a suitably sized air-conditioning unit.

7.3.4 The cabin must contain a fanlight (top hung) window for the operator to be able to open to obtain natural air, as and when required.

7.4 Cabin Illumination

7.4.1 The crane cabin shall be illuminated in accordance with the illuminance values specified under OSH Act-Environmental regulations.

7.4.2 The minimum average values of maintained illuminance measured on the working plane shall be of a value of 200 lux. However, this light shall be dimmable to allow night operations.

7.4.3 The type of light fixtures must be energy-saving and shall be LED type, providing clear light.

7.4.4 Indicator lamps of various colours (LEDs are preferred) shall be adequately marked.

7.4.5 (The use of embossed tape is permitted).

7.5 External Illumination

7.5.1 The crane must be equipped with medium intensity (Type A&B) aircraft LED warning lights, preferably solar power with a battery pack as the crane may be disconnected for nighttime operations unless equipped with UPS.

7.5.2 The crane must also be equipped with medium intensity obstruction lights preferably LED.

7.5.3 The crane must further be equipped with LED floodlights depending on structure height for ease of nighttime operations.

7.6 Cabin Operator's Seat

7.6.1 The operator's chair shall be such that it is ergonomically correct for the crane operator and conforms to the OHS Act as such in that it is:

7.6.2 Designed of material that requires minimal maintenance (preferably black leather), is durable, and comfortable for an operator working long shifts.

7.6.3 Designed such that the chair has back-, head-, and arm-rests. The backrest shall be high, the headrest adjustable and the armrest shall be manually adjustable and engaged or disabled, as and when the operator requires.

7.6.4 Designed with a safety belt that will secure the operator to the seat but also allow the operator to perform all movements required for operations. The seat belt must not provide an obstacle but also act as a safety device to stabilise the operator in one position in the event of a crash.

7.6.5 Fully adjustable so that the driver attains the proper posture required for multiple operations. The adjustments should be forward, backward, up, down, fore inclination, etc.

7.6.6 The seat must be of a type that is shaped to provide adequate support to wide-apart legs, and leg, arm and body movements.

7.7 Cabin Control Display

7.7.1 The display unit shall cater for the display of the following information (but not limited to):

7.7.2 Slew angle, luffing angle, and hoist limits.

7.7.3 Status of the anti-collision devices (key switch operation) – (on/off)

7.7.4 Mass of the load lifted.

7.7.5 Warnings and fault messages e.g. overload, alarms, operational limitation.

7.7.6 Main circuit breaker (CB) status.

7.7.7 Hoisting overload status (engaged/disengaged).

7.7.8 Rail brake status.

7.7.9 Wind speed.

7.7.10 Gravity storm pin status.

7.7.11 Graphical Real-Time, Maintenance and Diagnostic Reporting capability.

7.8 Cabin Controls

7.8.1 The control equipment within the operator's cabin shall be such that it includes manual pushbuttons, a joystick, and a display screen (HMI) mounted in such a manner to allow the operator to be able to effectively use all of these in conjunction during operations. In order to be user-friendly and effective, the controls shall be labelled, colour-coded, and simple to access or read.

7.8.2 The operator's cabin shall contain control equipment, arranged in a form of control consoles positioned on either side of the arm-rests of the operator's chair and designed to achieve maximum visibility of the control console as well as maximum accessibility.

7.8.3 All the necessary controllers, selector switches, pushbuttons, etc. for manual control shall be mounted on the consoles.

7.8.4 The HMI display unit shall have touchscreen capability and be mounted in a convenient position to prevent excessive glare and eye strain.

7.8.5 It shall be made possible for easy access to conduct routine inspections or replacement of equipment when required without removing any wiring or other equipment unnecessarily.

7.8.6 Robust digital joystick controllers of the step-less type are preferred for the control of the main mechanisms. The controllers shall be fitted with artificial steps and shall be fitted with definite

spring checks in each working position. There shall be a minimal effort in operating the controls, to avoid fatigue during long spells of duty.

7.8.7 The main controls shall be equipped with a "dead-man" switch, causing the crane motions to revert to a safe situation when the operator's grip on the controllers is released. The handle on controllers shall be of hardwood or equivalent environmentally friendly synthetic material.

8 SIGNAGE, MARKING AND COLOUR SCHEME

8.1 Signage and Marking

8.1.1 Two Transnet logos as per Transnet specifications shall be supplied and fitted by the crane manufacturer, one logo on either side of the machine house.

8.1.2 All necessary warning notices, i.e., emergency exits, no entry, warning signs, no unauthorized person signs, etc. shall be provided, where necessary and as accepted by the Project Manager, as per the South African National Standard for signage.

8.1.3 A notice, stating the starting up and shutting down procedure of the crane and mounted in a glass frame, shall be provided in a prominent position in the operator's cabin.

8.1.4 The Safe Working Load of the crane shall be indicated in tonnes in a conspicuous position on each side of the crane and shall be readily legible from ground level. The crane number shall be indicated next to the Safe Working Load inscription.

8.1.5 The Safe Working Load of each lifting hook shall be permanently marked on the particular hook.

8.1.6 The crane shall be prominently and permanently marked with a metal nameplate bearing the following information:

- Employer's name and crane number.
- Manufacturer's name and serial number.
- The year of the manufacture.
- Rated lifting capacity.
- Crane classification with state of loading and class utilization.
- Classification of each mechanism with state of loading and class of utilization.

8.2 Colour Scheme

8.2.1 The overall crane shall be painted white in accordance with the specification CTSR1 supplied in Annexure B of this document.

8.2.2 All electrical low voltage distribution boxes shall be painted electrical orange B26 in accordance with the SANS1091 specifications for electrical equipment.

9 MAINTENANCE: LUBRICATION, SPARES & MANUALS

9.1 Lubrication

9.1.1 All lubrication points shall be grouped into the following manual systems:

9.1.2 Main hoist machinery,

9.1.3 Luffing machinery,

9.1.4 Slewing machinery,

9.1.5 All sheaves at the tip (end) of the jib, to be piped to an accessible position.

9.1.6 Sheaves on A-frame (top of the crane),

9.1.7 Gantry, one system per bogie,

9.1.8 Other items as deemed required by the manufacturer.

9.1.9 All bearings on shafts, axles and other bearings, exposed gears, drive chains, articulated hinge points, etc. must be included in these lubrication systems.

9.2 Spares

9.2.1 All critical spares shall be provided for by the original equipment manufacturer (OEM) for the first major service - SANS1073:2006/ISO10973:1995.

9.2.2 A fully priced critical spares (with part number) list shall be supplied by the OEM with the drawings for replaceable spares - SANS1073:2006 /ISO10973:1995.

9.2.3 All specialist tools shall be supplied by the OEM on delivery of the cranes.

9.2.4 The manufacturer shall supply the crane maintenance manual that complies with SANS10307:2006/ISO12478-1:1997.

9.2.5 The maintenance manual provided shall include the provision for statutory inspection, testing and examination - as per SANS 10375:2006.

9.3 Training & Manuals

9.3.1 The OEM must provide training manuals that comply with SANS10307:2006.

9.3.2 The OEM must provide training for the maintenance team trainers from the School of Ports and issue competency certification - SANS10307:2006.

10 TESTING AND COMMISSIONING

10.1 Testing

10.1.1 Supplier shall issue a full set of testing forms that will be used for the commissioning of the cranes to the Project Manager for review prior to delivery of the crane to site.

10.1.2 The following testing shall be included as a minimum over and above the testing conducted by the supplier as part of his commissioning and handover sequence:

- Slewing function through the full slewing angle with full load at minimum and maximum radius,
- Lifting of a full load at minimum and maximum radius,
- The lifting speed of the load through the full lifting height at minimum and maximum radius,
- The lowering speed of a full load through the full lifting height at maximum and minimum radius,
- Long travel with a full load at minimum and maximum radius,
- Minimum and maximum luffing angles with a full load.

10.1.3 The supplier shall comply with all testing requirements as specified by the independent lifting inspector appointed in accordance with the Engineering Council of South Africa and OHS Act requirements.

10.2 Commissioning

10.2.1 The crane supplier shall test all functions for a minimum period of 48 working hours prior to final commissioning and hand-over for operations

Annexure B: Health and Safety Specification

Health and Safety Specification:

Replacement of Graving Dock Jib Cranes at the Port of East London

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1. Project Description

Transnet National Ports Authority (Purchaser) currently owns and operate the ship repair facilities located along the South African coastline. The Princess Elizabeth Graving Dock facility located at the Port of East London was commissioned in 1946. The Dry Dock is located on the upstream of the Buffalo River and has capacity to handle vessels up to 190 m (LOA). The Dry Dock is core to the ship repair industry and economic growth of the Eastern Cape.

The Dry Dock has undergone major upgrades in the past 6 years to improve safety, reliability, and capacity to ensure the port continues to offer dry docking service for vessel calling the port for repairs.

The Dry Dock has four (4) Jib Cranes which have been in operations for over 70 years since the commissioning of dry dock. Two Jib Cranes are located on either side of the Dry Dock (portsideand starboard side). Their primary function, amongst others, is the loading and unloading of equipment between dockside and vessel. The existing Jib Cranes have varying capacities, i.e.,4Ton, 4.5Ton, and two (2) 15Ton. Two of these Jib Cranes, Crane 50 (4Ton) and Cranes

67 (15Ton), have since been taken out of operation due to structural concerns and constant mechanical breakdowns. The remaining two (2) Jib Cranes, Cranes 68 (15Ton) and Crane 68 (4.5Ton), have limited capacity to service all the requirements of the graving dock, as a result, there is a need for the Purchaser to replace Two Jib Cranes with 15Ton Jib Cranes to improve the current operational constraints and improve safety within the dry dock facility.

2. Scope and Purpose

This health and safety specification outlines the working behaviours and safe work practices that must be implemented and complied with by all Transnet employees, Contractors, Consultants, Visitors and Suppliers, that will be undertaking activities associated with the Replacement of graving dock jib cranes project at the Port of East London. The specification has been developed in accordance with the requirements of the Construction Regulation of 2014, Regulation 5(1)(b) as well as any other applicable legislation.

Appointed contractors must identify all requirements applicable to their scope of works and address these accordingly in their Contractor's Site Specific Health and Safety Management Plan. 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 Specification.

The scope of goods and services that the Supplier will be required to perform involves:

- The design, fabrication, delivery, erections, testing and commissioning of Two 15Ton Jib Cranes
- The decommissioning and removal of Two (2) existing jib cranes to an area designated by the Purchaser.

- Upgrade of the existing electrical supply to ensure compatibility with new Jib Cranes
- Supply one set of critical spares to support the Jib Cranes for first 5 years of service.
- Perform the first maintenance service of the Jib Cranes
- Training of crane operators and maintenance personnel

This Health and Safety Specification 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.



Figure 1: Port of East London with the ship repair facilities showing the cranes around the Dry Dock

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.

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 OHS Act, 1993 (Act 85 of 1993) and Construction Regulations 2014.

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 (SUV's), 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-Miss
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

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

OHS - Occupational Health and Safety

SACPCMP - The South African Council for Project and Construction Management Professions, here in refer to as the registrar of Health and Safety Professionals

5. Contractor Health and Safety Management Plan

The contractor must prepare, implement and maintain a project-specific Health and Safety Management Plan. The plan must be aligned with the requirements set out in this specification as well as all relevant/applicable legislation. It must cover all activities that will be undertaken as part of the Project from mobilisation and set-up 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 TRANSNET 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 TRANSNET 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.

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

7. Hazard Identification and Risk Assessment

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 the contractor on the hazards and risks on site. The 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;
- 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, TRANSNET (the Client) will conduct a 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. An attendance register must be completed and retained for reference purpose.

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 Construction Regulations 9, clause (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 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.

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.

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.).

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;
- Establishing, implementing and maintaining health and safety programmes and procedures to ensure that all work is carried out in compliance with the requirements of this specification, the contract, and all applicable legislation;
- Establishing, implementing and maintaining effective hazard identification and risk management processes and procedures to ensure that all reasonably foreseeable hazards are controlled in order to minimise risk;
- Providing the resources necessary to meet the requirements of this specification;
- Ensuring that all contractor employees have clearly defined responsibilities with regard to health and safety, and that these responsibilities are clearly communicated and understood;

- Establishing, implementing and maintaining a system for on-going training and assessment of skills and competence;
- Establishing, implementing and maintaining procedures to ensure that only qualified and competent personnel are permitted to work on the project site(s);
- Establishing, implementing and maintaining effective communication and consultative processes concerning health and safety for the duration of the contract;
- Maintaining operational control for the protection of all persons on the project site(s) as well as the public;
- Establishing, implementing and maintaining effective emergency preparedness and response procedures;
- Establishing, implementing and maintaining effective management of change processes and procedures;
- Establishing, implementing and maintaining effective incident reporting and investigation processes and procedures;
- Establishing, implementing and maintaining effective auditing and inspection processes and procedures; 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.

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 full-time competent Construction Manager, registered in that category with SACPCMP, 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 Construction 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;
- Participating in the project's Visible Felt Leadership (VFL) programme;
- 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.

10.2 Contractor Construction Health and Safety Manager

The Principal Contractor must appoint a full-time Construction Health and Safety Manager for the duration of the contract who is registered and in good standing with the SACPCMP (The South African Council for Project Construction Management Professions). The project site(s) (directly or through contractors), must appoint full-time Construction Health and Safety Officers, the number of which depending on the scope, complexity, budget and high risk activities involved, as required by the Construction regulations of 2014, regulation 8(5).

The Construction Health and Safety Manager/Officers 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 contractors) have been completed. A Construction Health and Safety Manager/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 additional Construction Health and Safety Managers/Officer.

Each Principal Contractor Construction Health and Safety Manager shall be responsible for:

- Reviewing all applicable legal and project health and safety requirements and providing guidance to principal contractor and 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 principal contractor and contractor personnel;
- Compiling and maintaining all health and safety related documents and records required of the contractors;
- Communicating relevant health and safety information to principal contractor and contractor personnel (e.g. Incidents and lessons learnt, leading practices, hazards, risks and control measures, etc.);

- Carrying out Safety Observations and Conversations (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 principal contractor and Site Health and Safety Meetings;
- Assisting with the implementation of the principal and 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 principal contractor and each 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 Construction Health and Safety Manager is adequately equipped to enable him to perform his duties effectively. Each Construction Health and Safety Manager 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 Construction Health and Safety Manager must over and above the SACPCMP registration as a Manager; be computer literate, fluent in English, and must have the following minimum qualifications, training and experience:

- At least 10 years' experience as a healthy and safety resource on construction projects of a similar nature;
- A National Diploma in Safety Management 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 Construction Health and Safety Manager with SACPCMP.

The Client will stipulate whether a CHSO or CHSM is required depending on the size of the project and on the risks. Before placing a health and safety resource on the project site(s), the contractor must forward a copy of the person's CV to the nominated TRANSNET Project Management Representative or to the Health and Safety Manager for review and acceptance. A proposed candidate may be rejected should he/she not meet the experience and/or qualification requirements, or due to poor work performance on previous projects. The candidate may also be accepted for a probationary period to the project.

10.3 Contractor Construction 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 Construction supervisors who have experience in the type of work being carried out as required by Construction regulations of 2014, regulation 8(7) and 8(8).

No work may be carried out without an appointed Construction supervisor being physically present in the work area(s) and without a daily safety task instruction having been completed.

Each Contractor Construction Supervisor shall be responsible for:

- Ensuring that all work carried out under his supervision is done so in accordance with the requirements of all applicable legislation, rules, standards, specifications, plans and procedures;
- Participating in 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;
- Carrying out Safety Observations and Conservations (one per day);
- 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);
- Ensuring that emergency response procedures are understood by all employees under his supervision and that these procedures are followed in the event of an emergency;
- Reporting all incidents immediately, participating in incident investigations, communicating the lessons learnt to all employees under his supervision, and implementing corrective actions where required; and
- Carrying out workplace health and safety inspections.

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

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

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

At least one trained and competent First Aider must be in place and must be appointed for the project site(s). 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.

10.6 Duties of Client

The duties of the Client, Transnet are as per the Construction regulations of 2014, regulation 5(1) – (8).

10.7 Duties of the Designer

The duties of the Designer are as per the Construction regulations of 2014, regulation 6(1) &(2).

A design team must be established to review all health and safety issues that may affect the safety of the structure during construction and ensure that all recommendations are considered by the appointed principal contractor. The team must consider plans, calculations, specifications, instructions or drawings for a structure, including variations to a plan or changes to a structure or making decisions for a design that may affect the health or safety of persons during construction, occupy, use or carry out other activities in relation to the structure.

10.8 Duties of Principal Contractor

The duties of the Principal Contractor are as per the Construction regulations of 2014, regulation 7(1) – (8).

10.9 Duties of Contractor

The duties of the Contractor as per Construction Regulations of 2014, Regulations 7(2).

10.10 Management and supervision of Construction work

A principal contractor must in writing appoint one full-time competent person as the construction manager with the duty of managing all the construction work on a single site, including the duty of ensuring occupational health and safety compliance, and in the absence of the construction manager an alternate must be appointed by the principal contractor.

A principal contractor must upon having considered the size of the project, in writing appoint one or more assistant construction managers for different sections thereof: Provided that the designation of any such person does not relieve the construction manager of any personal accountability for failing in his or her management duties in terms of this regulation.

Where the construction manager has not appointed assistant construction managers as in the opinion of an inspector, a sufficient number of such assistant construction managers, that inspector must direct the construction manager in writing to appoint the number of assistant construction managers indicated by the inspector.

No construction manager appointed may manage any construction work on or in any construction site other than the site in respect of which he or she has been appointed.

No contractor may appoint a construction health and safety resource in the control of health and safety related aspects on the site unless he or she is reasonably satisfied that the construction health and safety resource that he or she intends to appoint is registered with a statutory body approved by the Chief Inspector and has necessary competencies and resources to assist the contractor

A construction manager must in writing appoint construction supervisors responsible for construction activities and ensuring occupational health and safety compliance on the construction site.

A contractor must, upon having considered the size of the project, in writing appoint one or more competent employees for different sections thereof to assist the construction supervisor and every such employee has, to the extent clearly defined by the contractor in the letter of appointment, the same duties as the construction supervisor: Provided that the designation of any such employee does not relieve the construction supervisor of any personal accountability for failing in his or her supervisory duties in terms of this regulation.

No construction supervisor appointed under may supervise any construction work on or in any construction site other than the site in respect of which he or she has been appointed: Provided that if a sufficient number of competent assistant construction supervisors have been appropriately designated on all the relevant construction sites, the appointed construction supervisor may supervise more than one site.

11. Competence, Training and Awareness

Each employee (including 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.

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 Principal Contractor and 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-
        - an emergency;
        - the malfunctioning of equipment; and
        - the discovery of a suspected defect in the equipment;
        - an instructions on the proper use of body harnesses.
- Training for all operators of construction vehicles and mobile plant.

A contractor must at all times keep on his or her construction site records of the health and safety induction training and such records must be made available on request to an inspector, the client, the client's agent or the 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. No employee will be permitted to enter any project work site until he has attended this training. Each employee must carry proof that he has completed the induction training and may be removed from a site if such proof cannot be produced on request, this as required by the Construction regulations 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, where applicable to the project.

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

Table 11-1: Specific Training and Competency Requirements

Training	Applicable To
Health and Safety Induction	All employees
Safety Observations and Conversations (Safety Interactions)	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 working at elevated positions where using a safety harness is required
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)

Training	Applicable To
Isolation and Lockout	All Authorised Persons (i.e. Persons who authorise work that requires Isolation and Lockout), all Isolation Officers, and all Applicants (i.e. Persons who request permission to work on systems or equipment requiring Isolation and Lockout)
Mobile Equipment Site Licence*	All mobile equipment operators

Training requirements marked with an * must be arranged by the contractor through accredited external training institutions.

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 Visible Felt Leadership (VFL) and Safety Observations and Conversations (SOCs)

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

- Reinforce behaviours consistent with standards, procedures and management system requirements;
- Correct behaviours inconsistent with standards, procedures and management system requirements; and
- Verify whether employees have the necessary training, certification, equipment, etc. To perform the work that they are carrying out.

Each manager, construction supervisor, safety personnel has a required number of SOCs to be completed per week. All SOCs that are recorded must be submitted to the nominated project management representative on a weekly basis.

The information that is gathered must be analysed and any trends that are identified must be acted on to correct unsafe behaviour or conditions.

12.2 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.

12.3 Daily Safe Task Instructions (DSTIs)

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, updated and re-communicated with the team, and the changes must be signed off by the relevant Contractor Health and Safety Manager/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 the DSTI discussion but must not lead the DSTI discussions, as this is the responsibility of the appointed supervisor.

12.4 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.

12.5 Health and Safety Meetings

12.5.1 Contractor Health and Safety Meetings

The contractor must schedule and consistently hold monthly health and safety meetings. These meetings must be chaired by the contractor's 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 Construction Health and Safety Manager/Officers; and

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;
- SOCs, PTOs and DSTIs 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 such minutes must be signed off by the Chairperson as a true reflection and attendance records must be kept. These records must be maintained in the contractor's health and safety file.

12.5.2 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;
- SOCs, PTOs and DSTIs 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.

12.6 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.

12.7 Health and Safety Management Information Notice Boards

The contractor must provide, for each construction site, 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;
- Safety Data Sheets (SDS) 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;
- Emergency procedures;
- A site plan indicating evacuation routes and emergency assembly point locations;
- First Aider and Health and Safety Representatives names, contact telephone numbers as well as recent photo; and
- The appointed supervisor's contact details.

12.8 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 contents of the file will be audited by a nominated Project Health and Safety Representative on a monthly basis.
Required documentation will align to the HS file compliance assessment checklist which will be used as an index.

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

14. Operational Control

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.

14.1 Safe Work Procedures

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).

14.2 Planned Task Observations

All contractor, management supervisors must perform Planned Task Observations (PTOs) 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 two PTO per week involving one or more employees in his work team. This number of PTOs is at the discretion of TRANSNET's Project Manager or appointed Representative.

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 PTOs 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.

14.3 General Rules of Conduct

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

The following acts are prohibited:

- Engaging in practical jokes, horseplay, scuffling, wrestling, fighting, or gambling;
- Assault, intimidation, or abuse of any person;
- Insubordination towards any supervisor or manager;
- Refusing to carry out a reasonable and lawful instruction concerning health and safety;
- Entry into any restricted area (including barricaded areas), unless authorised to do so by the responsible person;
- Unauthorised use / operation of any equipment or machinery;
- Negligently, carelessly or wilfully causing damage to any property;
- Destroying or tampering with safety devices, signs, or signals;
- The use of water from fire hydrants or hose reels for any purpose other than extinguishing a fire;
- The wilful and unnecessary discharging of fire extinguishers;
- Refusing to give evidence or deliberately making false statements during incident investigations;
- Bringing alcohol, drugs, or any other intoxicating substance onto site;
- Bringing a firearm, ammunition, or any other offensive weapon onto site;
- Bringing animals onto site;
- Running, except in an emergency;
- The use of cell-phones (or similar devices) 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 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.

14.4 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.

14.4.1 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:

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 which states that the employee is fit for duty;
- Completion of all required project induction training;
- Completion of special training / licensing if applicable (e.g. Driving/operating Licence).

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.

14.4.2 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.

14.4.3 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 Contractors designated Site Office where they must sign in.

All visitors must undergo a visitor induction briefing before entering the site.

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 designated Site Office, and when the visit is over, must be escorted back to the Site Office.

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.

14.4.4 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 daily 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.

14.4.5 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.

14.5 Construction Vehicles

Construction vehicles, such as transportation vehicles, vehicles being used by the Contractors team, that is brought onto site must meet safety requirements. 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 is brought 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, but not limited to:

- 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).

14.5.1 Mobile Equipment

All Contractors must ensure that mobile equipment and light vehicles comply with relevant/applicable legislation.

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 relevant/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. The assessment must:

- Involve operators and maintenance personnel who will use and work on the equipment; and
- Address all aspects of safe operation including but not limited to 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. 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 not be used by the driver or operator of a light vehicle or item of mobile equipment unless the vehicle/equipment is parked in a safe location and not operational. 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, (where relevant to the scope of work) 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 Traffic management Plan must be reviewed/revised where changes to the works areas require. 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.

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 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 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.

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.

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.

14.5.2 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.

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.

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 is 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.

14.5.3 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.

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.

14.5.4 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 specific 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.

The Contractor must ensure that Licenses and Operators' competency certificates are valid for the duration of their activities on site. No training of drivers or operators may be carried out on site unless authorised by a nominated project management representative.

14.5.5 Tyre and Rim Safety

These requirements apply to tyres and rims with a rim diameter of 60cm (24 inches) or greater. Safe Work Procedures must be in place for all tyre maintenance and servicing activities and for tyre fire emergency response.

In the event of a tyre fire, an exclusion zone of 300 metres must be established and may only be accessed by emergency services personnel who are shielded while fighting the fire.
Restricted Work Zones must be established for tyre installation, removal and handling processes.
All tyre and rim handling equipment must have fall back prevention in place prior to anyone entering the Restricted Work Zone.
No hot work (e.g. Welding or cutting) may be carried out on a rim (wheel) while the rim is fitted with a tyre – whether inflated or deflated. A periodic testing and / or inspection regime must be in place for tyres, rims (wheels), and assemblies.

All tyres and rims (wheels) must be made unserviceable when deemed unfit for service or before being sent off site for disposal. A tracking system must be in place to track the lifecycle of tyres and rims (wheels).

14.6 Access Road to Project Site

The contractor shall ensure that trained flagman are placed at strategic positions that may be identified along the access roads where high risk activities are being undertaken and/or at points of traffic interface.

The project access roads may not be closed without permission from a nominated project management representative.

14.7 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.

14.8 Barricading

Barricading requirements found within the Construction Regulations, 2014 as well as TRANSNET's barricading standards, but not limited to, 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.);
- To protect openings and edges (to prevent persons from falling, all openings and edges associated with 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);
- To prevent access into areas where overhead work is in progress;
- To route vehicles safety 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.

14.9 Excavations

Excavation work or activities which are required as part of the scope shall be undertaken in accordance with the requirements of this Specification as well as all applicable legislation concerning excavation work.

The contractor will be required to 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 will be issued. 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 this activity.

If buried services are identified (or are suspected to be present) then the safe work procedure must be altered if necessary to avoid these services. 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 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.

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.

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.

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.

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.
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.

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.

Excavations must be backfilled as soon as possible, and the material used (usually the original material) must be properly compacted.

14.10 Cranes and Lifting Equipment

All applicable legislation concerning cranes and lifting equipment must be complied with at all times (Driven Machinery Regulation, Construction Regulations, Code of Practice 29, but not limited to). 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 Specification.

14.10.1 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, but not limited to:

- 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 as a minimum:

- 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.

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.

14.10.2 Operation

At the start of every day or shift, the operator of a crane or hoist must carry out a pre-operation safety check as per Driven Machinery Regulation 18.

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.

14.10.3 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.

14.10.4 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.

14.11 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.

14.11.1 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.

14.11.2 Floor openings, holes and edges

Any opening or hole (temporary or permanent) in a 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.

14.11.3 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.

14.11.4 Fall Protection

Whenever there is a risk of falling onto dangerous equipment or machinery, or whenever work must be carried out near an opening through which (or an edge over which) a person could fall, no work may commence unless:

- A fall protection (and rescue) plan is in place (prepared by a competent person, approved by the nominated project management representative, and implemented by the contractor);
- A detailed task-specific risk assessment has been carried out;
- A safe work procedure is in place for the task to be performed;
- A permit to work has been obtained; and
- Each person has been provided with suitable fall protection equipment.

Fall protection equipment (either fall restraint or fall arrest equipment) must be used at all times whilst the work is being carried out. To prevent persons from falling, fall restraint equipment must be used whenever work must be carried out within an opening through which (or an edge over which) a person could fall.

Fall arrest equipment must be used whenever the potential exists for a person to fall. A person has been provided with suitable fall protection equipment if he is secured by means of an approved full body harness (well fitted) with two shock absorbing lanyards or an inertia reel (when fall arrest equipment is required) or two short restraining lanyards (when fall restraint equipment is required), double or triple action snap hooks (or karabiner type rings), and secure anchorage points (a person's lanyard may be attached either directly to an anchorage point or indirectly through the use of a variety of systems that incorporate a lifeline).
A dual lanyard system must be used to ensure that at least one connection point is maintained at all times.

Note: When selecting fall arrest equipment, care must be taken to ensure that the potential fall distance is greater than the height of the person plus the length of the lanyard with its shock absorber deployed (taking the height of attachment into account).

Anchorage points must, where practical, be above the head of the person, and must ensure that in the event of a fall the person will neither swing nor touch the ground. All permanent anchorage points must be designed and approved by a professional structural engineer.

All anchorage points must be periodically inspected and tested by a competent person to ensure that they are secure and can support the required load. A system must be in place

to identify anchorage points as authorised for use. Temporary anchorage points (and lifeline systems) may only be used if a competent person has certified them safe to use.

If an elevating work platform is used, such equipment must be fitted with a fixed anchorage point for the attachment of fall protection equipment.

The use of fall protection (fall restraint or fall arrest) systems must be avoided wherever and whenever possible through design, the installation of physical barriers that protect persons from falling, and employing alternative methods of working. Only if physical barriers protecting against free falls cannot be installed must fall protection equipment be used.

Fall protection (fall restraint or fall arrest) systems are items of personal protective equipment and, if required, must be purchased, installed and provided to employees. Prior to commencing with any work at height, an assessment must be conducted to determine if the work requires the use of fall protection equipment, and if so, which fall protection system is the most appropriate for the work.

There must be a system for ensuring that fall protection equipment is:

- Tested and certified for use;
- Inspected by the user before use; and
- Destroyed following a fall or where inspection has shown evidence of excessive wear or mechanical malfunction.

All persons that are required to work at height (in order to carry out routine or non-routine tasks) must first be trained and certified competent to do so. Furthermore, each person must be in possession of a valid medical certificate of fitness specifically indicating that the person is fit to work at height.

All persons required to use personal fall protection equipment must be trained and certified competent in the correct selection, use, maintenance and inspection of such equipment.

All fall protection equipment must be thoroughly inspected visually prior to use and on a monthly basis thereafter by competent persons appointed in writing and each item of equipment must be tagged to show when it was last inspected. All inspections must be recorded in a register. On finding defective or damaged equipment, appropriate action must be taken by the competent person (i.e. the destruction of the equipment to prevent further use).

Persons making use of personal fall protection equipment must do so in strict accordance with the instructions or requirements specified by the manufacturer or supplier of the equipment or system. Specific pre-use inspection, maintenance and fitting protocols must be established in accordance with the manufacturer's requirements or guidelines and these protocols must be followed by all users of the fall protection equipment.

Solvents may not be used to clean fall protection equipment. Only manufacturer-approved cleaning solutions may be used.
No person required to use personal fall protection equipment may work in isolation (a minimum of two persons working together is required). Competent supervision must be in place at all times for all work carried out at height. Supervisors must be appointed in writing.
Emergency response (rescue) procedures for the rapid retrieval of suspended persons in the event of a fall from height must be prepared and tested.

Note: Even though there is no risk of free fall, fall protection equipment may be required in situations where there is a risk of falling, slipping or sliding down a slope of more than 45 degrees.

Note: The maximum service life of fall protection equipment manufactured of synthetic fibre shall be 5 years from the date of first use and / or manufacture unless otherwise specified by the manufacturer.
A person may climb or descend a ladder without fall protection provided that he is able to use both hands and legs to do so, faces the ladder, and uses one step at a time. The ladder must be tied off or supported at its base.

Prior to any roof work being performed, or prior to persons accessing a roof, a structural engineer must verify that the roof is of sound construction and that it is capable of supporting the weight of the persons as well as any equipment that may be required. Should the engineer's findings be to the contrary, alternative methods of performing the work must be found. Particular care must be taken when work is carried out on an asbestos cement roof or a fibreglass roof.

14.11.5 Risk Assessment and Permitting

The following documentation is required for any work where fall protection is required (i.e. where a risk of falling exists):

- A Fall Protection (and Rescue) Plan;
- A Risk Assessment for the task to be performed;
- A Safe Work Procedure for the task to be performed; and
- A Permit to Work.

As part of the Risk Assessment and planning processes, the following must be considered, but not limited to:

- Hazards relating to accessing the location at height;
- The nature of the work location;
- The nature of the work activities to be undertaken at height;
- Environmental and weather conditions;
- The presence of nearby persons who may be at risk due to falling objects (potentially) or who's activities may be affected by the work being performed at height;
- The selection of fall protection equipment (considering fall clearances) and / or access equipment;
- The selection of anchorage points;

- The load ratings of access platforms, work areas, anchorage points, etc.;
- The condition of supporting structures such as roofs;
- The need for the work to be carried out by multiple persons and the means of communication;
- A rescue plan that addresses retrieval or rescue contingencies;
- Working above open furnaces or molten metal;
- Exposure to heat sources;
- The use of a mobile elevating work platform, man basket, suspended scaffold or boatswain's chair; and
- Any other conditions that may affect the safe execution of the task.

14.11.6 Elevating Work Platforms

Before hiring or purchasing an elevating work platform (e.g. a scissor lift, man lift, boom lift, cherry picker or similar equipment), the certification of the equipment (with regard to suitability of design and construction) must be verified.

Before using an elevating work platform, it must be verified that the equipment is in good working order and has been serviced regularly. The service record and instruction manual must be kept on site. A system must be in place to ensure that the equipment is maintained and inspected as required by the manufacturer and / or local regulations.

Persons (operators) must be formally trained through an accredited training provider and certified competent in the operation of the equipment. Once a person has been issued with the necessary licence or qualification as required under local regulations, he must be appointed in writing to operate the equipment.

Before using an elevating work platform, the operator must inspect the equipment and a pre-use checklist must be completed. The operator of an elevating work platform must be in the "basket" unless it can be demonstrated to the satisfaction of the nominated project management representative that this is not possible or practical.
Every person in the "basket" must keep his feet on the floor at all times. Every person in the "basket" must be secured at all times by means of personal fall protection equipment attached to an approved anchorage point, and systems must be in place to prevent tools and equipment from falling.

A mobile elevating work platform must not be driven unless the "basket" has been lowered and secured in a stable position. Every elevating work platform that is used must be equipped with a dead man's switch or foot pedal at the operator controls. An elevating work platform must only be operated on a firm surface with the outriggers extended (where fitted).

An elevating work platform must not be operated on a grade or slope beyond the capability of the machine (every mobile elevating work platform that is used must be fitted with an inclinometer which sounds an audible alarm before the maximum safe incline has been reached).

The area beneath the "basket" and the boom must be barricaded. A second competent operator of the mobile elevated work platform to be in place on the ground level – to ensure that the elevated work platform could be lowered in case of an emergency. A spotter must be used at all times when moving a mobile elevating work platform and when the "basket" is in an elevated position.

14.11.7 Man Baskets, Suspended Scaffolds and Boatswain's Chairs

The use of a man basket, suspended scaffold or a boatswain's chair may only be considered when all other avenues to safely perform the work (e.g. ladder, scaffolding, mobile elevating work platform, etc.) have been exhausted. Authorisation to use a man basket, suspended scaffold or a boatswain's chair must be obtained from the nominated project management representative. If permission is granted, the use of such equipment must be in strict compliance with all applicable legislation.

Each person working from a man basket, suspended scaffold or a boatswain's chair must be in possession of a valid medical certificate of fitness and must be trained (and assessed competent) in the Safe Work Procedures pertaining to the use of the equipment, as well as the Fall Protection Plan.

Each person working from within a man basket or suspended scaffold or from a boatswain's chair must wear personal fall protection equipment at all times (i.e. an approved full body harness connected by means of a shock absorbing lanyard to an anchorage point or lifeline that does not form part of the basket or chair).
If suspended using a crane, the man basket, suspended scaffold or boatswain's chair must be visible to the crane operator at all times. A suitable means of communication must be in place to ensure that the suspended person(s) are able to communicate with the crane operator and personnel on the ground.

The crane operator must remain at the controls at all times while the man basket, suspended scaffold or boatswain's chair is occupied. Where feasible (and if it is safe to do so), tag lines must be used to stabilise the man basket, suspended scaffold or boatswain's chair.

A man basket or suspended scaffold (including the suspension system) must be designed by a qualified engineer. Only an approved and certified man basket or suspended scaffold from a Regulatory Body can be used. Regulations require approval by an authority or certification to a national or international standard. The manufacturer's procedures and conditions for use must be strictly complied with at all times.

Each man basket or suspended scaffold must be fitted with an information plate indicating the maximum weight and number of persons that may be lifted. Copies of the welding x-rays and engineering drawings must be kept on site.

Any work involving the use of a man basket, suspended scaffold or boatswain's chair must be carried out under the supervision of a competent person who has been appointed in writing.

A man basket, suspended scaffold or boatswain's chair must be thoroughly inspected (examined for damage) by a competent person prior to use (every time the equipment is used) and the results of each inspection must be recorded in a register. The crane or hoist as well as all lifting equipment (tackle) that is used to suspend the man basket, suspended scaffold or boatswain's chair must be tested and inspected as stipulated according to applicable Legislation.
All suspended scaffold erectors, operators and inspectors must be appointed in writing and proof of competency must be provided.

Persons carrying out welding or flame cutting work from within a man basket or suspended scaffold or from a boatswain's chair must take precautions to ensure that they do not accidentally cut or burn through the cables or wire ropes that are suspending them.

14.12 Working near water

All applicable legislation concerning working near water must be complied with at all times, but not limited to OSHAct, Diving Regulations, SAMSA etc. Each contractor carrying out work near water must develop, document and implement Safe Work Procedures that are aligned with the requirements of this specification as well as any applicable legislation, standards and codes. A task specific risk assessment for the relevant work to be carried out near should be conducted before any such work commences and submitted to the Transnet Project Manager or Representative for approval before any work can commence. The Risk assessment should be reviewed periodically. All potential hazards involved in the work to be carried out near water e.g. drowning, plant/equipment falling into water, non-complaint to SAMSA standards should be identified and mitigated.

Health and Safety documents for such work should include, but not be limited to:

- Competencies of operators and conditional reports/assessments of all plant involved in working near water.
- Methodology for carrying out such work;
- Formulation of method statements/risk assessments/safe work procedures; and
- Emergency preparedness e.g. contingence plans, rescue plans, evacuation plans

Lifting equipment/mobile plant should be kept a safe distance from dangerous locations e.g. openings, edges close to the water. Lifting equipment/mobile plant carrying out work near water should be fixed and securely anchored. The operating zone should be clearly demarcated. No lifting equipment/mobile plant should be allowed to operate beyond its safe working load and capacity. The suitability of the ground on which the lifting equipment/mobile plant will be stationed should be identified before work commences with these activities.

14.13 Falling Objects

In the process of planning work activities, the risks associated with falling objects (i.e. materials, tools or equipment) must be assessed and appropriate control measures must be identified, implemented, and monitored taking the following hierarchy of controls into consideration:

- Preventing objects from falling – by using containment sheeting, toe boards, lanyards to secure tools (to a person or to the structure), ropes or chains to secure equipment (to the structure), lift boxes, brick cages, etc. and by properly securing loads when lifted by crane or hoist;
- Protecting people from falling objects – by establishing barricaded exclusion zones, installing catch platforms or catch nets, displaying warning signage, and posting safety watchers and / or traffic controllers; and
- Personal Protective Equipment (particularly safety helmets and safety boots) – protective equipment is a last line of defence and must be worn.

Where overhead work is being carried out, barricading must be erected around the work area (at the level at which the work is taking place and at every level below including ground level) to prevent persons from entering such an area and potentially being struck by falling objects. Wherever hazards related to falling objects exist, appropriate warning signage (i.e. "Overhead Work In Progress" and "No Unauthorised Access") must be prominently displayed.

No items are permitted to lie loose in elevated positions (e.g. nuts and bolts must be securely stored) and good housekeeping standards must be maintained at all times. No tools, equipment, material, debris, waste, etc. may be dropped from height. Objects must be lowered or chuted in a safe and controlled manner.

14.14 Scaffolding

14.14.1 Training, Competency and Supervision

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

It is the Scaffolding Supervisor's responsibility to ensure that all persons carrying out such work are suitably trained and experienced. A certificate of competency issued by a reputable (i.e. accredited and approved) training provider must be produced for each Scaffolding Supervisor and each Scaffolding Erector and Inspector.

14.14.2 Erection and Dismantling of Scaffolding

Only approved scaffolding components may be used to erect a scaffold. Scaffolding must be erected, modified and used in accordance with the manufacturer's guidelines or recommendations, and in strict compliance with all applicable legislation and standards.

A free-standing scaffold must not exceed a height of three times the smallest dimension of its base. Scaffolds with a height to base width ratio of more than 3:1 must be restrained from tipping over by guying, tying, or bracing. Guy wires and ties prevent scaffolding from tipping away from the building or structure, and braces are rigid supports that prevent the scaffolding from tipping into the building or structure.

Scaffolding must be secured to the structure every 6 metres vertically and every 9 metres horizontally (as a minimum). Adequate underpinning, sills or footplates must be provided for scaffolds erected on filled or otherwise soft ground (including sand or gravel).

If the scaffolding is to be load bearing (i.e. other than normal access and workplace storage) then full calculations and a design must be prepared and authorised in writing by a structural engineer. The load limits specified by the scaffolding manufacturer may not be exceeded under any circumstances.

Scaffolds must be plumb and level at all times. All scaffolding components must be in good condition (i.e. undamaged and free of corrosion). All scaffolding components must be properly connected or secured and scaffolding must be effectively braced (diagonal bracing).

Each person erecting, maintaining, altering or dismantling scaffolding must use fall protection at all times (i.e. a full body safety harness with two shock absorbing lanyards fitted with scaffold hooks). The work must be planned to enable every Scaffolding Erector to be securely anchored at all times. A suitable lanyard length (not exceeding 2 metres) must be selected taking the potential fall distance and height of attachment (height of anchorage point) into account. If the lanyard is too long or the anchorage point is too low, the person may hit the ground, a platform, or objects below him before the lanyard is able to break his fall.

The area around the base of a scaffold must be barricaded to prevent unauthorised access into the work area. When scaffolding is erected or dismantled on a level, platform, or floor lying above ground level and the potential exists for components to fall to levels below the level on which the scaffolding is positioned, then the area directly below the scaffolding on each of those levels must also be barricaded. Appropriate warning signage (i.e. "Overhead Work In Progress" and "No Unauthorised Access") must be prominently displayed.

Hoists, lifts and approved material baskets must be used (where available) to lift scaffolding components to elevated positions.

No scaffolding components, tools, or any other material may be dropped from height or thrown from one level to another. Components, tools and materials must be lowered or lifted in a controlled manner. Chutes may be considered for use.

Each tool must be secured to the wrist, harness or structure by means of a lanyard. A tool bag (around the waist or over the shoulder) may be used for carrying tools up and down a scaffold structure. Tools or equipment may not be carried by hand up or down a structure, as both hands must be used for climbing. If necessary, a rope must be used for lifting or lowering tools or equipment.

While a scaffold is being erected or dismantled, no scaffolding components may be stacked on the scaffold structure unless it has been designed for that purpose. Any loading of a scaffold structure must be authorised in writing by a structural engineer.

For special scaffolding, a design must be prepared by the appointed Scaffolding Supervisor and this design must be authorised in writing by a structural engineer before the scaffolding is erected. Scaffolding may not stand on steel grating unless the grating is adequately supported from below. Scaffolding must rather stand on the structure that supports the grating.

Empty drums, crates or bricks may not be used to prop up, support or anchor scaffolding. Before scaffolding is erected in close proximity to an electrical installation or live conductors, an electrical engineer (employed by Project or the client) must inspect the area and determine whether or not the scaffolding must be earthed. Should the scaffolding require earthing, this must be done as soon as possible while the scaffolding is being erected.

Scaffolding may not be erected if it is raining or in winds stronger than 32 km/h.

A green tag (displaying the words, "Scaffold Safe for Use") or a red tag (displaying the words, "Danger: Do Not Use Scaffold") must be prominently displayed on each scaffold at all times. The tag must be positioned close to the base of the ladder or staircase provided for safe access. The wording on the tags must be in English and any other language commonly used on site.
As a minimum, a green tag must display the Scaffolding Supervisor's name, the date that the scaffold was erected, and the date that the scaffold was last inspected.

Only an appointed Scaffolding Supervisor may attach, change, update the information on, or remove these tags.

Scaffolding must not be:

- Left partially erected or partially dismantled except for normal work stoppages (for example, over weekends);
- Left in an unsafe condition (if scaffolding is unavoidably in an unsafe condition, barricading must be in place to prevent unauthorised access and the required red tags must be prominently displayed on the scaffold structure); or
- Moved or altered while work is in progress.

Mobile scaffolding must be equipped with brakes, which must be engaged at all times when the scaffolding is in use. A scaffold may not be moved if any person is on the structure.

14.14.3 Safe Access

Safe and convenient access must be provided to every scaffold platform by means of properly installed ladders or approved stairways, which must remain unobstructed at all times. Climbing up or down a scaffold on the braces or ledgers is forbidden.

All ladders used to access scaffolding must be securely attached to the scaffold structure. Hook-on and attachable ladders must be specifically designed for use with the type of scaffolding being used.
If a ladder is used to access a scaffold platform at a height greater than 1.5 metres above the ground, then the ladder must be secured internally (i.e. within the scaffold structure) and there must be an opening (closed with a trap-door) in the platform at the top of the ladder.

If the scaffold platform is at a height of less than 1.5 metres above the ground, then the ladder may be attached externally provided the guard rails around the platform are modified to allow access (the opening in the guard rails must be kept closed using a self-closing gate). No person may climb over or through the guard rails to gain access to a platform.
If a vertical ladder used on scaffolding is more than 5 metres in length it must be equipped with a ladder cage extending from a point 2 metres from the base of the ladder to a height of 1 metre above the platform (or the uppermost platform) that the ladder is providing access to.

The requirement for a ladder cage may be waived if platforms are provided at height intervals not exceeding 4 metres, with the vertical ladder secured on the inside of the scaffolding framework and an opening (closed with a trap-door) in each platform. Vertical ladders must be braced at three metre intervals (as a minimum) to prevent undue movement.

All vertical ladders providing access to a platform must be left in place for as long as the scaffold remains in place and must be inspected as part of the scaffold structure.
Any deviation from the requirements stipulated above must be subjected to a risk assessment and the nominated project management representative must authorise the deviation in writing.

14.14.4 Scaffolding Platforms

Safe work platforms must be provided. Every work platform must be complete (i.e. from ledger to ledger and from transom to transom without any gaps) in order to prevent personnel, materials, tools, etc. from falling through the platform.

Every work platform must be constructed from manufactured steel scaffold boards (planks) of equal thickness (height). Timber boards are not permitted under any circumstances.
Each steel scaffold board must be securely hooked (fastened) onto the ledgers or transoms that support it.

On all sides except the one facing the structure, every scaffold platform must be provided with:

- Sturdy guard rails positioned 500mm above the platform floor (the mid rail) and 1000mm above the platform floor (the top rail); and
- Steel toe boards that are at least 150mm high and securely attached such that no gap exists between the toe boards and the platform floor.

Note: Wire mesh infill panels incorporating a toe board may be used instead of a mid-rail.

Scaffold platforms must be as close to the structure as is practicable (but not closer than 75mm) except where personnel need to sit on the edge of the platform while they work in which case the distance may be increased to no more than 300mm.

Scaffold platforms must, at all times, be kept free of waste, protruding objects, and any other obstructions. Platforms must be cleaned if necessary to ensure that they are maintained in a non-slip state.

14.14.5 Inspection of Scaffolding

Every scaffold structure must be inspected by a competent Scaffolding Inspector/Supervisor who is appointed in writing:

- Prior to use after erection, and at least weekly thereafter;
- After inclement weather (heavy rain, strong winds, etc.);
- After any incident resulting in jarring, tilting or overloading;
- After any alteration is made; and
- Before being dismantled.

On completion of an inspection, the Scaffolding Inspector/Supervisor must update the information on the scaffold tag.

A record of each inspection (date and time of inspection, location of scaffolding, findings, etc.) must be captured in a register. The register(s) must be maintained by the Scaffolding Inspector/ Supervisor(s) carrying out the inspections.

14.14.6 Using Scaffolding

The user of a scaffold (i.e. the responsible supervisor) must inspect the erected structure prior to acceptance and must ensure, as far as is reasonably possible, that the scaffold is safe and fit for purpose before allowing his team to make use of the scaffold.

In particular, the user must ensure that:

- The scaffold and the platforms have been constructed to meet the loading requirements of the work that is to be carried out (the Scaffolding Inspector/Supervisor must be consulted in this regard);
- The Scaffolding Inspector/Supervisor has checked that adequate ties and braces are in place;
- The work platforms are in the correct positions and are complete with toe boards and guard rails;
- Safe and convenient access has been provided (ladders and / or stairways); and
- A green ("Scaffold Safe for Use") tag has been attached to the scaffold by the Scaffolding Inspector/Supervisor.

Use of an incomplete or unsafe scaffold is prohibited. Unsteady or non-rigid scaffolds must not be used and inadequacies must be reported to, and rectified by the responsible Scaffolding Supervisor.

The user of a scaffold must ensure that every person in his team is aware that no alterations to the scaffold may be made by the team during the course of their work, and that if any alterations are required, they must be made by competent Scaffolding Erectors under the supervision of an appointed Scaffolding Supervisor.

A scaffold may not be used:

- If a red tag is displayed indicating that the scaffold is not safe to use; or
- During inclement weather, defined as wind speeds greater than 32km/h, thunderstorms, or heavy rain.

Note: With due consideration of possible educational limitations, the contractor must ensure that all persons understand what green and red tags mean.

The area around the base of a scaffold must be appropriately barricaded to prevent unauthorised access into the work area. Appropriate warning signage (i.e. "Overhead Work In Progress" and "No Unauthorised Access") must be prominently displayed.

Loose tools and / or materials on scaffold platforms must be secured using lanyards, wire or fibre rope, or must be placed in secured containers. Where appropriate, "catch nets" may be installed as an additional safety measure to prevent materials or tools from falling to the ground.

The storage or placement of materials on scaffolding platforms must be kept to a minimum. Debris as well as tools and materials that are no longer required must be removed from all working platforms at least once per day.

Scaffolding platforms must be cleaned regularly. A heavy load may not be placed on a scaffolding platform unless the scaffold has been designed and constructed specifically for that purpose. Any loading of a scaffold structure must be authorised in writing by a structural engineer.

Scaffolds may not be used as hoisting towers or to support piping or equipment. Each person working from scaffolding must wear fall protection (i.e. a full body safety harness with two shock absorbing lanyards fitted with scaffold hooks) and must be securely anchored at all times.

All work must be carried out from properly constructed work platforms. Standing on railings or braces in order to perform work is forbidden. Drums, boxes and other makeshift substitutes for scaffolding may not be used under any circumstances.

Where work on an electrical system is to be undertaken from a scaffold, an electrical engineer (employed by Project or the client) must determine whether or not the

scaffolding structure requires bonding and earthing. The scaffolding may not be used until this has been determined, and if required, until the structure has been bonded and earthed.

14.14.7 Identification and Inspection of Scaffolding Components

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

Prior to erecting a scaffold, all scaffolding components must be carefully inspected by a competent Scaffolding Inspector/Supervisor.

Components found to be defective during an inspection must be conspicuously marked and removed to a suitably demarcated quarantine area for destruction, repair, refurbishment or removal from site. Deformed and bent wedges must be straightened and inspected for cracks before being put back into service.

14.14.8 Storage of Scaffolding Components

All scaffolding components must be stored in a demarcated storage area in such a manner that they are not exposed to environmental extremes and will not cause injury to persons. Suitable barricading or fencing must be erected and warning signage must be posted (e.g. No Unauthorised Entry).

Within a storage area, scaffolding components must be stacked such that pathways (750mm in width) are maintained between the stacks. Each stack must be stable and components must be neatly placed to ensure that no ends protrude into any pathway. The various components must be stacked separately.

The weight of scaffolding components must be considered when stacking them in elevated positions.

Any storage area for scaffolding components must be positioned such that it will not interfere with any onsite activity (including the operation of any plant or equipment), block any access way, or obstruct access to any plant or equipment. Before establishing a storage area, the location must be agreed with the nominated project management representative.

14.15 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.

14.16 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 heights;
- 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.

All costs associated with the Compliance to Permits section is for the Contractors account.

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.

14.17 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.

14.17.1 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.).

14.18 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.

14.18.1 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.

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.

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).

Grounding (earthing) and lightning protection systems and devices must be designed, engineered, selected and installed based on site-specific requirements where required.

14.18.2 Arc Flash Safety

Depending on the scope and nature of the work, a documented arc flash protection programme must be in place. The PPE required (specific to a task and the equipment on which the task is performed) and associated procedures to mitigate the hazard must be included.

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.

14.19 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.

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.

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 14-1 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.

14.20 Confined Spaces

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

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

As a minimum the risk assessment shall address the following:

- Isolation and lockout procedures required for chemical substances, mechanical or electrical energy, steam, pressure, heat, gases, liquids and solids;
- Venting, purging, draining and cleaning prior to entering the confined space;
- Hazards created by carrying out particular tasks or through the use of chemical substances in the confined space. Task-Based (or Issue-Based) Risk Assessments and/or Written Safe Work Procedures must be available for work in confined spaces - in particular for abrasive blasting, welding, flame cutting, grinding, chemical/steam cleaning, rubber lining and painting;
- Entry, exit and escape routes as well as barricading;
- The electrical safety, intrinsic safety and other safety specifications of equipment to be used in the confined space (explosive atmospheres must be considered);

- The need to test for presence of toxic/asphyxiant substances, radioactivity, oxygen, temperature extremes and flammable substances prior to entry and during the performance of work;
- Provision of suitable mechanical ventilation and personal protective equipment e.g. lifejackets etc. and in particular the use of respiratory protection such as compressed air breathing apparatus; and
- A ventilation rate suitable for general use must take into account factors such as air contaminant type, rate of generation, rate of oxygen depletion, temperature, efficiency of ventilation distribution and contaminant removal from the breathing zone. Therefore each situation needs to be evaluated on its own merit by a risk assessment that will select a combination of ventilation method and respiratory protection that suits the particular circumstances. This must be achieved by consultation between competent operations personnel, engineers and a ventilation specialist.

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

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

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

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

- Compressed air breathing apparatus is required;
- There is a high risk of fires or explosions;
- The atmosphere can rapidly become unsafe for breathing purposes if the mechanical ventilation fails;
- There is a high risk of flooding or engulfment;
- Narrow tunnels or pipes are entered or where exit or escape routes cannot readily be accessed;
- Work is done in remote areas; and

- A single person, who cannot be observed directly or is isolated from other workers, does the work.

Where testing for toxic/asphyxiate substances, radioactivity, oxygen, temperature extremes and other health hazards as well as for flammable substances is carried out, it may only be done by persons trained, tested and certified competent in writing to do so. The ventilation method and quantity must be adequate to ensure oxygen levels and explosive or toxic gas levels remain within acceptable defined limits. Where ventilation is required, this must be covered by an approved documented procedure.

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

Where breathing apparatus or respiratory equipment is required, the contractor's Health and Safety Officer must be consulted with regard to the specification and selection of suitable equipment. All persons required to use respiratory protection must be medically fit and trained in the correct use of the equipment.

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

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

14.21 Arc Welding

All welding machines must be fitted with voltage reducers. The supply cable to every welding machine must be correctly rated and fitted with an approved plug to be used only with an approved matching plug socket. The electrical circuit to every plug socket must be protected by a correctly rated circuit breaker and a supply voltage rated earth leakage unit. Welding cables must be properly insulated and correctly rated for the welding machines on which they are to be used.

Welding cable terminals must either be covered with a properly designed, constructed and installed cover so that inadvertent human contact with the terminals is impossible, whether the cables are connected or not, or the welding cables must be fitted with insulated plugs so that inadvertent human contact with any live part is impossible when the cables are plugged into the machine. Also the plug socket should be such that when the cables are not plugged in, inadvertent contact with a live part of the socket is impossible.

Earth cable clamps and electrode holders must be of an approved type. Earth clamps and electrode holders must be fixed to welding cables with eye terminals and bolts. All welding machines and safety devices must be subjected to regular planned maintenance and a monthly electrical inspection. The inspection must include a test to ensure that the voltage

reducer is functioning properly, by measuring and confirming that the open circuit output voltage is reduced.

Before using a welding machine, the welder must ensure that he is wearing all the required and approved protective clothing and equipment:

- Persons assisting the welder must also wear all of the required personal protective Welding hood;
- Leather welding gloves;
- Safety boots with steel toe protection;
- Flame resistant overalls; and
- Any other clothing or equipment necessary to perform his work safely and efficiently.

When changing electrodes or moving the earth clamp, the welder or his helpers must wear gloves to avoid possible skin contact with live electrical parts and to prevent burns. When attaching welding cables to the terminals of the welding machine, the welder or his helpers must wear gloves, or preferably, the machine should be switched off to avoid possible electric shock.

Helpers who may be holding the work piece being welded must wear gloves and protective goggles. Where practicable the welder should place protective screens around the area where he is welding, to prevent injury to the eyes of passers-by.

The welder must ensure that the earth cable follows the shortest practical route between the welding machine and the work piece. The earth connection must be directly between the welding machine and the work piece and no building or other structure must form part of the earth return path.

As far as is practicable, the welder should avoid welding under wet or damp conditions. If this is unavoidable, the following precautions should be taken:

- Use only oil filled or other watertight type welding machine;
- Keep the electrode holder as dry as is practical;
- Keep as dry as possible. Stand on an elevated surface out of the water and wear watertight boots and a rain suit. Also ensure that the gloves are in good condition, free of holes.

Under conditions that result in high perspiration levels, the following measures should be implemented:

- Use an insulated electrode holder;
- Change clothing regularly (if possible);
- Use insulated material like rubber mats and/or timber tuck board to separate yourself from the work piece;
- Wear dry gloves on both hands during welding;
- Use fans and air-conditioning to reduce humidity and temperature; and
- Use an observer capable of responding in an emergency.

When working inside metal vessels or under other conditions where parts of his body may come into contact with conducting surfaces, the welder must take precautions to insulate himself from such surfaces.

When working in confined spaces, the welder must take steps to ventilate the area to prevent inhalation of fumes, which may endanger his health and the health of any assistants. Engine powered welding machines must not be used in any place that is not very well ventilated since the welder and his helpers may be overcome by carbon monoxide fumes.

The welder should take the necessary precautions when welding objects that may catch alight, explode or release poisonous fumes or gases.

14.22 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.

14.23 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.

14.24 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.

14.25 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.

14.26 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 30kPa, and then only with effective chip guarding and personal protective equipment in place. The 30kPa 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.

14.27 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.

14.28 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.

14.29 Explosive Powered Tools

All operators shall be trained by the contractor. The contractor shall ascertain that the explosive charges to be used are of the correct strength for the purpose.

Projectiles from explosive powered tools shall NOT be driven into:

- Tile, terracotta, glazed brick, glass, marble, granite, thin slate or other brittle substances;
- High tensile steel, cast iron or steel hardened by heat treatment; or
- Concrete that contains aggregate that will not pass wholly through 25mm mesh screens.

Under no circumstances shall a tool be fired in such a manner as to cause the projectile to fly free. Suitable safety glasses and hearing protection shall be worn by operators when firing an explosive powered tool.

At all times when a tool is being used, the operator shall display clearly legible signs at or near the place where the tool is in use. Sign should read: WARNING: EXPLOSIVE POWERED TOOL IN USE – KEEP CLEAR. The operator shall warn all other employees in the vicinity of the area in which the tool is about to be used.

Tools shall never be stored in a loaded state. Cartridges and tools shall be stored separately in lockable containers. A logbook must be kept of the number of cartridges used and returned.

14.30 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.

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.

14.31 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.

14.32 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. Correct lifting techniques must be used at all times when lifting a load manually.

The following, but not limited to, 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 on 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).

14.33 Demolition Work

Demolition work must be carried out as per the requirements of Construction Regulations, 2014, Regulations 14.

The contractor must appoint a competent person in writing to supervise and control all demolition work on a project site.

14.34 Temporary Works

The contractor must appoint a temporary works designer in writing to design, inspect and approve the erected temporary works on site before use.

The 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. The 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 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 must be 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.

14.35 Structure

The 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;
- 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.

14.36 Personal Protective Equipment

Applicable legislation, standards, procedures and safe work procedures (such as but not limited to Construction Regulations, General Safety Regulations, Client HS Specification) 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 the 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, safety information boards or a Safety Data Sheet (SDS).

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).

Contractors 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.

14.36.1 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.

14.36.2 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.

14.36.3 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.

14.36.4 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.

Respirator zones identified 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 Safety Data Sheets (SDSs), 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.

14.36.5 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.

14.36.6 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.

14.36.7 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.

14.36.8 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 fire-fighting, 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 fire-fighting 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.

14.36.9 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.

14.36.10 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.

14.36.11 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).

14.36.12 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.
- Working near water – SABS approved life jackets, life rings in close proximity.

14.36.13 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).

14.37 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;
- 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, including the evacuation of all persons in the vicinity. Suitable fire-fighting 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.

14.38 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 fire-fighting equipment. The type, capacity, positioning, and number of fire-fighting 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.

Fire-fighting 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 fire-fighting 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.

Fire-fighting 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 fire-fighting equipment.

Access to fire-fighting 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 fire-fighting appliances and alarm points are located. The contractor must ensure that his employees (and those of any appointed sub-contractors) are trained in fire-fighting procedures and the use of fire-fighting 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. 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.

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 determents 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 fire-fighting procedures and the use of fire-fighting 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 fire-fighting equipment must not be used on electrical equipment or burning liquids.

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.

14.39 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.

14.40 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.

14.41 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.

14.42 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.

14.43 Facilities

Sanitary conveniences must be provided and maintained at a rate of at least one shower facility for every 20 workers, at least one toilet facility for every 10 workers, separate male and female changing facilities and sheltered eating areas.

Where chemical toilets are provided, one toilet for every 10 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 from an approved source. 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. Occupational Health and Hygiene

The contractor must ensure that the exposure or potential exposure of his employees to any of the following stressors is assessed and measured:

- Noise;
- Thermal stress (heat and cold);
- Particulates (dust);
- Silica (free crystalline silica);
- 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 refurbishment 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).

TRANSNET Health and Hygiene Department is required to provide the following monitoring services where relevant and required:

- 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

TRANSNET Health and Hygiene must provide the contractor with a project specific health risk assessment in respect of existing Occupational Health Risk on Sites.

The contractor must conduct an Occupational Health Risk Assessment in respect of their project activities. The contractor will be required to appoint an Approved Inspection Authority (AIA) for Occupational Hygiene to conduct Occupational hygiene Surveys should such a need arise.

15.1 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 prior to work commencing for the first time in any area.

Emergency lighting must be provided in all indoor workplaces that do not 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 not be less than 20 lux.

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.

All lighting on site must comply with the requirements of the Environmental Regulations for Work Places GNR2281 of 16 October, 1987.

15.2 Noise

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;
    - Audiograms for each overexposed employee at a frequency determined by the OMP;
    - 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 (AIA).

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 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, as a minimum:

- 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.

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 actions 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.

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.

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.

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 earplugs and earmuffs 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 approved 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.

15.3 Particulate and Gas / Vapour Exposure

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, SO2, NH3, 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.

15.4 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 NH4 > 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.

15.5 Hazardous Chemical Substances

No chemical substance may be brought onto site unless it has been approved for use by the nominated project management representative. The contractor must develop and maintain a hazardous chemical substance register specifying as a minimum the type and volumes of substances on site.

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 minimum information to the nominated project management representative for review PRIOR to bringing the substance onto site:

- A detailed 16-point Safety Data Sheet (SDS) 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 SDS; 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 SDS) are readily available on site.

The contractor must ensure that a Safety Data Sheet (SDS) is obtained for each chemical substance brought onto site. A file, or files, containing all of the SDS'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 SDS'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 SDS's);
- Determining precautions and safe practices for transportation, use, handling, storage and disposal (including PPE requirements) (using the SDS's);
- Determining first aid and emergency response requirements / procedures (using the SDS's);
- Maintaining the SDS 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 as described by this Specification. 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.

15.6 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.

15.7 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 any incidents (all persons involved), and whenever there is reasonable suspicion. Alcohol and drug testing must 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 are required to 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). The contractor must take note that employee medicals for this project must include a drug test;
- Periodic (Surveillance) Medical Examination – to assess the on-going 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).

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 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.

15.8 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 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.

15.9 COVID-19 Management

The Contractor must ensure compliance to COVID-19 management protocols as gazetted by South African Government legislation and Hazardous Biological Agents Regulations.

15.10 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, as a minimum:

- 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.

16. 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.

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 surrounding Port users and tenants, 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) when project needs require, and following any emergency situation, to ensure that it remains appropriate and effective.

At each project work site, as a minimum:

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

16.1 Fire Fighting

The contractor must ensure that Fire Fighting requirements are complied with.

16.2 First Aid and First Aid Kits

The contractor must ensure that First Aiders are trained and appointed as described in this Specification and in accordance with relevant legislative requirements.
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 weather-proof 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.

No tablets or medication are to be stored in the first aid box.
No tablets or medication to be administered by first aiders or other personnel to employees who are not feeling well or have been injured.

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.

17. Management Review

A review of the contractor's Health and Safety Management System must be undertaken as required within the project timeframe 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.

18. 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.

19. Contractor / 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 as required by this Specification. 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.
All health and safety requirements imposed by the Client onto the Contractor is applicable to all sub-contractors as well.

20. Incident (Occurrence) Management

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 briefly in the contractor's Health and Safety Management Plan and in detail in the Incident Management Procedure.

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

An incident must be reported on the same work day or shift on which it occurs and preliminary details must be recorded and a TRANSNET Incident Flash Report must be completed and submitted within 24 hours to the relevant TRANSNET representative. Depending on the Actual Consequence, 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), work must cease and must only resume once the necessary actions (including the re-evaluation of any relevant risk assessments) have been taken to eliminate or reduce the risk of recurrence. Work must only be permitted to recommence once formal authorisation has been granted by the Project Construction Manager. In the case of incidents with an Actual Consequence of Major or Catastrophic, work must not be permitted to recommence until authorisation has been granted by the relevant government authorities (i.e. the South African Police, the Department of Employment and Labour).

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

All significant incidents 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 other methodologies approved by the Project Health and Safety Manager may be used.

Each incident (including near-miss incidents) must be investigated.
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 TRANSNET Project Health and Safety Representatives 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 a stipulated time frame as determined by the nominated project management representative.

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.

21. Non-conformance

Non-conformance Reports (NCR) will be issued to Contractors upon the identification of non-compliances to this specification. NCR's will be issued to Contractors for their response and implementation of corrective actions. NCR's must be closed out within a 48hour period depending on the severity of the non-conformance.

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

- Non-compliances;
- 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.

22. 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.

22.1 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 minimum 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-miss, FAI, MTI and LTI);
- Lost Time Injury Frequency Rate (LTIFR) (project to date and 12-month rolling);
- Details of all new incidents for the reporting period and the corrective actions taken or to be taken;
- Feedback (progress updates) on all open incidents and outstanding corrective actions;
- Status and feedback on any employee that may have been injured and has not yet returned to work;
- Details of all health and safety training carried out during the reporting period;
- Number of SOCs (Safety Observations and Coaching) carried out during the reporting period;
- SOC trends identified and proposed action for the coming week or month to maintain positive trends and / or address negative trends;
- Details of all audits, inspections and site visits carried out during the reporting period, and the corrective actions taken (or to be taken) to address all non-conformances;
- Feedback (progress updates) on all open non-conformances and outstanding corrective actions;
- Number of Toolbox Talks conducted during the reporting period (monthly);
- Number of Planned Task Observations (PTOs) 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-miss, 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.

22.2 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 Representative 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 Manager/Practitioner, the contractor must carry out an internal audit on a monthly basis to assess compliance with the project health and safety requirements (including the requirements of this specification and the 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 Representative on a monthly basis.

The contractor must carry out internal health and safety inspections as follows:

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

All audits and inspections must be carried out by competent persons who have been appointed in writing.
A schedule of planned audits and inspections must be compiled and maintained ensuring that:

- All work areas and all activities are covered at regular intervals;
- All applicable legal requirements are complied with; and

- Areas or activities with significant associated hazards or risks receive greater attention.

23. Reference Documents

1. Occupational Health and Safety act, No 85 of 1993 and Regulations
2. Compensation for Occupational Injuries and Diseases Act, No 130 of 1993
3. TIMS – Contractor Management Procedure 014

Annexure C: Baseline Risk Assessment

Baseline Risk Assessment

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1. Definitions and Abbreviations

ABBREVIATION	DESCRIPTION
DSTI	Daily Safe Task Instruction
HME	Heavy Mobile Equipment
MDS	Material Data Sheet
PPE	Personal Protective Equipment
SWP	Safe Work Procedure

1.1 Project Background

Transnet National Ports Authority (Employer) currently owns and operate the ship repair facilities located along the South African coastline. The Princess Elizabeth Graving Dock facility located at the Port of East London was commissioned in 1946. The Dry Dock is located on the upstream of the Buffalo River and has capacity to handle vessels up to 190 m (LOA). The Dry Dock is core to the ship repair industry and economic growth of the Eastern Cape.

The Dry Dock has undergone major upgrades in the past 6 years to improve safety, reliability, and capacity to ensure the port continues to offer dry docking service for vessel calling the port for repairs.

The Dry Dock has four (4) Jib Cranes which have been in operations for over 70 years since the commissioning of dry dock. Two Jib Cranes are located on either side of the Dry Dock (portsideand starboard side). Their primary function, amongst others, is the loading and unloading of equipment between dockside and vessel. The existing Jib Cranes have varying capacities, i.e.,4Ton, 4.5Ton, and two (2) 15Ton. Two of these Jib Cranes, Crane 50 (4Ton) and Cranes

67 (15Ton), have since been taken out of operation due to structural concerns and constant mechanical breakdowns. The remaining two (2) Jib Cranes, Cranes 68 (15Ton) and Crane 68 (4.5Ton), have limited capacity to service all the requirements of the graving dock, as a result, there is a need for the Employer to replace Two Jib Cranes with 15Ton Jib Cranes to improve the current operational constraints and improve safety within the dry dock facility.

2. Project Scope

The scope of goods and services that the Supplier will be required to perform involves:

- The design, fabrication, delivery, erections, testing and commissioning of Two 15Ton Jib Cranes
- The decommissioning and removal of Two (2) existing jib cranes to an area designated by the Employer.
- Upgrade of the existing electrical supply to ensure compatibility with new Jib Cranes
- Training of crane operators and maintenance personnel



Figure 1: Port of East London with the ship repair facilities showing the cranes around the Dry Dock

3. Risk Assessment

Risk Assessment Title	Baseline Risk Assessment for the Design, Manufacture, Supply, Delivering, Installation, Testing and Commissioning of Two (2) Portal Jib Cranes at the Port of East London for a Period of 16 Months

Risk Assessment Team				
	Name	Designation	Contact Number	E-mail
Facilitator	Sharifa Ahmed	Health and Safety Manager	083 400 6108	@transnet.net
Team Member 1	Thandiswa Mbanzi	SHEQ Officer	(043) 700 2115	@transnet.net
Team Member 2	Nolonwabo Zamani	Project Manager	083 564 8452	@transnet.net
Team Member 3	Yandisa Siralalala	Construction Manager	060 569 4491	@transnet.net
Team member 4	Siyabonga Gadu	Principal Project Manager	081 036 7548	@transnet.net

Activities Covered
This baseline risk assessment focusses on the high-level health and safety hazards and risks anticipated during construction taking into consideration all construction methods.
Geographical location: Within the Port of East London, Eastern Cape

Risk Controls
Legal requirements pertaining to the specific task step's control measures are assumed to be implemented and will not be repeated in the baseline risk assessment. Proposed Risk Controls focus on unique risks anticipated, and/or specific client requirements.

Scope of Risk Assessment
The risks identified are those that will have a direct effect on the contractors during construction but also those that could have a detrimental effect on the project directly or indirectly from a time delay and / or cost point of view.

	Hazards, Associated Risks, and Ratings						
	Task Steps / Short risk name	**Hazards**	**Associated risk event**	**Risk controls**	**Risk rating with controls**		
					L	**C**	**R**
	Occupational Health & Hygiene						
1.	Noise - Working close or adjacent to the moving of construction plant (equipment and machinery), and public/port vehicles	Noise exposure due to operation or working in close proximity of noisy mobile plant, equipment/machinery (i.e., drilling machine, grinders).	Overexposure to noise levels - Short and long term may result in potentially permanent health impact (noise induced hearing loss)	Occupational hygiene monitoring and medical surveillance. Hearing conservation programme. PPE (Ear protection-ear muffs) Compliance to Project Health and Safety Specification	**Possible**	**Major**	**High**
2.	Working in extreme temperatures/ adverse weather conditions	Exposure to extreme ambient temperatures during winter and summer days, UV exposure, windy/rainy conditions	Overexposure may result in health conditions such as heat exhaustion and hypothermia. Lung/chest/eye infections from particles being blown into eyes and inhaled	Occupational hygiene monitoring and medical surveillance. Specialised PPE (e.g. lined gloves, balaclavas, eye protection, dust masks/specialised FFP1/FFP2), Compliance to Project Health and Safety Specification (i.e.	**Possible**	**Minor**	**Medium**

	Hazards, Associated Risks, and Ratings						
	Task Steps / Short risk name	**Hazards**	**Associated risk event**	**Risk controls**	**Risk rating with controls**		
					L	**C**	**R**
				drinking sufficient potable water). Weather forecast updates			
3.	Ergonomics – including Manual handling	Working on awkward work positions (i.e. restricted space). Use of self-improved /improper tools and machinery. Heavy load manual handling; repetitive work	Musculoskeletal injuries due to manual handling, bending, twisting, prolonged, muscle strains; fatigue	Compliance to Project Health and Safety Specification (i.e., lifting techniques), Task based risk assessment, DSTI and Toolbox Talks, Correct lifting and handling practices and ergonomic awareness.	**Rare**	**Moderate**	**Low**
4.	Dust Particles – i.e., demolition, drilling, grinding	Excessive exposure to solid dust airborne particles from construction activities.	Inhalation exposure to solid dust results in Respiratory infection (potentially permanent health impact). Lung Irritation / damage to eyes/ red eyes.	Compliance to Project Health and Safety Specification, Occupational health assessment; Hygiene monitoring; Medical surveillance;	**Possible**	**Major**	**High**

	Hazards, Associated Risks, and Ratings						
	Task Steps / Short risk name	**Hazards**	**Associated risk event**	**Risk controls**	**Risk rating with controls**		
					L	**C**	**R**
				Dust suppression; FFP2 dust masks and safety goggles. Ergonomics			
5.	Vibration and fumes – demolitions activities, HCS related activities	Exposure to vibrations as well as fumes emitting from various construction activities such as drilling, demolition and associated plant/equipment. Fumes from various HCS used.	Vibrations from various plant/equipment can result in carpal tunnel syndrome/white finger vibration as well as have an effect on employees kidneys; Inhalation exposure to fumes results in Respiratory infection (potentially permanent health impact). Lung Irritation / damage to eyes/ red eyes.	Compliance to Project Health and Safety Specification, Occupational health assessment; Hygiene monitoring; Medical surveillance; FFP2 masks and safety goggles and all other required PPE	**Possible**	**Major**	**High**
6.	Communicable and other infectious diseases (e.g.	Contact with an infected person or area; Sneezing or coughing without closing the mouth; Unhygienic practices;	Fatalities and diseases	Training on communicable and infectious diseases during DSTI and Toolbox talks; Practice	**Possible**	**Major**	**High**

	Hazards, Associated Risks, and Ratings						
	Task Steps / Short risk name	**Hazards**	**Associated risk event**	**Risk controls**	**Risk rating with controls**		
					L	**C**	**R**
	COVID-19, HIV/AIDS, etc.)	unprotected sexual practices		social distancing; Washing of hands regularly; use of face masks; Employees reporting to management when sick; Drink plenty of water and keep hydrated, Practice protected sex e.g. use protection Hazardous Biological Agents to be identified and monitored			
	Site Establishment						
7.	Transportation of personnel to site	Sub-standard/un-roadworthy vehicles; Driver under the influence of intoxicants; incompetent/unlicensed drivers; speeding by driver; overcrowding of vehicles, loading	Road accidents with potential for injuries and fatalities; property damage	Use of Vehicles to comply with the National Road Traffic Act (No. 93 of 1996); Compliance to Project Health and Safety Specification,	**Possible**	**Critical**	**High**

	Hazards, Associated Risks, and Ratings						
	Task Steps / Short risk name	**Hazards**	**Associated risk event**	**Risk controls**	**Risk rating with controls**		
					L	**C**	**R**
		equipment and tools with employees, vehicle not fitted with seat belts.					
8.	Use of equipment and tools	Improper use of tools and equipment Incompetent/untrained operators/users Substandard tools and equipment No safeguards where required Homemade tools, no SWP.	Pinch points, cuts, laceration incidents (caught by, in between) resulting in LTI's, medical treatment cases or First Aid Injuries; damage to property.	Compliance to Project Health and Safety Specification; Correct tools for the job and correct use of the tools; All tools and equipment to be numbered and placed on registers and inspected when required by competent persons; Operators/users to have competency/training and experience. All machine guarding to be in place before equipment is used;	**Likely**	**Major**	**High**

	Hazards, Associated Risks, and Ratings						
	Task Steps / Short risk name	**Hazards**	**Associated risk event**	**Risk controls**	**Risk rating with controls**		
					L	**C**	**R**
				PPE (use of suitable gloves mandatory, eye protection).			
9.	Lifting Operation- Placement of containers/offices	Incompetent crane drivers/operators and riggers performing lifting activity; Heavier loads exceeding lifting capacity of cranes; No rigging studies done before lifts where required; Mobile cranes /lifting equipment not in safe and serviceable condition; No valid inspections and load test certificates available; Sub-standard lifting tackle equipment being used may cause loads to fall; Incorrect	Objects falling onto people (employees) and or property resulting in Fatalities, Injuries and Property Damage from crane failure, unfavourable conditions, incompetent operators; Property damage to existing buildings, cars, vegetation.	Compliance to Project Health and Safety Specification; Crane operator and rigger competency to be verified before activities take place. Rigging studies to be done where required. Ground stability, weights and placement of outriggers to be verified and ensured. Load test certificates and Inspections by competent persons to be in place prior.	**Possible**	**Critical**	**High**

	Hazards, Associated Risks, and Ratings						
	Task Steps / Short risk name	**Hazards**	**Associated risk event**	**Risk controls**	**Risk rating with controls**		
					L	**C**	**R**
		use of Lifting tackle may cause load to fall; Use of mobile cranes in high wind conditions; Employees falling from top of containers while tying/untying ropes; Uneven/unsuitable ground surfaces on which crane will stand.		Ensure registration and verification of LMI's and LME's. Wind monitoring tools to be available. Employees to undergo formal height work training.			
10.	Underground services	Failure to detect or undetected existing ground services; Live underground services (i.e. electrical cables and water pipes)	Electrocution by live electrical wires; Damage to cables and services results in disruption to operations and services; Fires, explosions and water wastage from damaged cables pipes.	Permit system must be followed; Survey and detection results to be made known; Additional use of detection equipment where required. Updated drawings indicating services, manual proof trenching.	**Possible**	**Major**	**High**

	Hazards, Associated Risks, and Ratings						
	Task Steps / Short risk name	**Hazards**	**Associated risk event**	**Risk controls**	**Risk rating with controls**		
					L	**C**	**R**
11.	Employees Facilities	Failure to provide employees facilities on site (i.e. eating and ablution facilities)	Health, hygiene and environmental sicknesses (i.e. food poisoning)	Compliance to Project Health and Safety Specification; Awareness Training on health and hygiene requirements; Comply to Facilities Regulations; site layout plan to be approved by Transnet.	**Unlikely**	**Moderate**	**Medium**
12.	Temporary Electrical Installations	Incompetent Installers; Unsafe installations due to faulty wiring; Lack of insulation & openings; Substandard electrical tools (e.g. portable electrical grinders, drills) being used; Contact with live electrical conductors	Fatality and Injuries resulting in permanent disabilities (electrocution, burns etc.) and property damage	Compliance to Project Health and Safety Specification; Ensure competency of electrical installers and use of certified equipment. Inspections of installations and fire safety equipment by competent inspectors. Task Risk assessment with SWP and work	**Possible**	**Critical**	**High**

	Hazards, Associated Risks, and Ratings						
	Task Steps / Short risk name	**Hazards**	**Associated risk event**	**Risk controls**	**Risk rating with controls**		
					L	**C**	**R**
		Failure to adhere to isolation and lockout procedures		permits; Issuing of COC upon completion			
13.	Stacking and Storage	Incorrect control of stacked materials; incorrect method of stacking materials/articles may cause injury to Employees and property damage	Medical Treatment Injury Lost time injury Damage to property	Compliance to Project Health and Safety Specification and legislative requirements; PPE compliance; Appointment of stacking and storage personnel.	**Rare**	**Moderate**	**Low**
14.	Site Access	Failure to obtain site access certificate; Failure to provide security or unauthorised person entering site. Failure to test for intoxication	Injuries, property damage/loss and theft	Compliance to Project Health and Safety Specification; Security Management Plan including Site Access Control Plan; Mandatory alcohol testing	**Possible**	**Minor**	**Medium**

	Hazards, Associated Risks, and Ratings						
	Task Steps / Short risk name	**Hazards**	**Associated risk event**	**Risk controls**	**Risk rating with controls**		
					L	**C**	**R**
	Project Construction Activities						
15.	Designers - Use of Temporary Works (scaffolding etc.)	Incompetent erectors and inspectors when building support structures; incomplete support structures (1.e. no access ladders, no toe boards, insufficient bracing); overloading support structures; support structures not erected as per drawings; no CR 12 (temp work designer) appointee or incompetent CR 12;	Incidents resulting in fatalities, injuries such as cuts, lacerations due to sharp edges, property damage from structures and material falling, Possible fatalities	Compliance to Project Health and Safety Specification; temporary works to comply with SANS 10085 (scaffolding) and Construction Regulations; Competent and certified temporary works personnel to be appointed; inspections of temporary work as required, Temporary work design and drawings to be signed off by structural engineer competent CR 12 appointee and constructed accordingly.	**Possible**	**Critical**	**High**

	Hazards, Associated Risks, and Ratings						
	Task Steps / Short risk name	**Hazards**	**Associated risk event**	**Risk controls**	**Risk rating with controls**		
					L	**C**	**R**
16.	Use of mobile Plant (i.e. HME - TLB, tipper trucks, water trucks, cranes)	Defective mobile plant, incompetent operator, open/uneven surfaces; collision with Port equipment; intoxicated operator; medically unfit operator; lack of plant inspection and service history; man/machine interface; congested areas; speeding of operators; collision of operators with Port users; property damage caused by operators	Multiple injuries/fatalities; property damage	Compliance to Project Health and Safety Specification, legislation, policies and procedures; Client inductions to be conducted before work to commence; Pre-use and daily inspections of Plant; Plant to be checked and approved for site before plant mobilisation on site, plant service history to be available; Competence verification of operators; valid medical assessments; solid barricading of potential hazards; daily alcohol testing of all personnel; required PPE to be worn and especially reflector vests	**Possible**	**Major**	**High**

	Hazards, Associated Risks, and Ratings						
	Task Steps / Short risk name	**Hazards**	**Associated risk event**	**Risk controls**	**Risk rating with controls**		
					L	**C**	**R**
				for high visibility; appointment of spotters/flagmen at strategic locations as per traffic management plan; designated walkways for personnel to prevent plant/people interface; speeding checks to be conducted by the Port at ad hoc times and locations.			
17.	Excavation as and where required, and Trenching (i.e. foundation)	Inclement weather (poor visibility conditions i.e. fog, rain, blind spots); mechanical failure of machines (brakes, steering, park brake, leaks, exc.); Machines not in safe and serviceable condition;	Collisions resulting in fatality, Injuries resulting in permanent disabilities, property damage, collapsing of excavation resulting in injuries and fatalities.	Project health and safety specification; Ensure competent, trained personnel are used. Dedicated pedestrian walkways where practical;	**Possible**	**Major**	**High**

	Hazards, Associated Risks, and Ratings						
	Task Steps / Short risk name	Hazards	Associated risk event	Risk controls	Risk rating with controls		
					L	C	R
		Unprotected excavations; Unsafe Access and Egress into and from excavations; Loose objects on the side walls of excavations; Underground services being struck/damaged;		Adequate barricading of excavations; Safe access and warnings. Inspections of excavations by competent and appointed persons to ensure compliance including checks pertaining to inclement weather; Excavators/TLB used for excavations where plant is required; Competent and certified operators; Detection to be conducted where uncertainty exists prior to use of any mechanical excavation equipment and must			

	Hazards, Associated Risks, and Ratings						
	Task Steps / Short risk name	**Hazards**	**Associated risk event**	**Risk controls**	**Risk rating with controls**		
					L	**C**	**R**
				where possible have underground services isolated; Adequate supervision to stop all excavation work at the first visible sign of foreign material (e.g. electric cable sheath, PVC piping material).			
18.	Backfilling	Movement of machinery (TLB); dust emissions; noise; improper use of tools.	Injuries/fatalities, property damage, lung infections	Dust suppression methods to be implemented; Trained flagmen/spotters to be appointed; all tools to be inspected before use and to be placed on registers	**Possible**	**Minor**	**Medium**
19.	Concrete Work (Pouring)	Improper handling or working with concrete (i.e. contact with eyes or skin);	Skin and or eye irritation; Back pain; Incidents (collision) resulting in fatalities	Project health and safety specification; Medical Surveillance (Fitness for Duty Certificate);	**Rare**	**Minor**	**Low**

	Hazards, Associated Risks, and Ratings						
	Task Steps / Short risk name	**Hazards**	**Associated risk event**	**Risk controls**	**Risk rating with controls**		
					L	**C**	**R**
		Holding of concrete weighted equipment; Incompetent concrete mix operator; Spillages of concrete		Employee Dossier; Concrete mix equipment inspection; DSTI and Toolbox Talk; Use of correct PPE (i.e. long sleeve overall, footwear, eye and hand protection etc); Spotter for concrete truck mixer; Supervision; Communication of the MDS relating to concrete/cement.			
20.	Working at elevated position (i.e. above water and height work from scaffolding/ ladders)	Working on unprotected edges; Incorrect methods of getting materials, equipment or tools from	Slipping and falling from height resulting in injuries, drownings leading to fatalities; Injuries/fatalities/ property damage due to temporary structures	Project health and safety specification; fall protection plan to be developed and employees to be trained on it; Use fall protection and prevention	**Possible**	**Critical**	**High**

	Hazards, Associated Risks, and Ratings						
	Task Steps / Short risk name	**Hazards**	**Associated risk event**	**Risk controls**	**Risk rating with controls**		
					L	**C**	**R**
		and to ground (i.e. throwing); Working during inclement weather conditions (rain and high winds); medically unfit and untrained employees working at heights, Slippery surfaces due to water splashes; Unsafe and incorrect erection of working at height platforms; Poor housekeeping leading to accumulation of waste and loose materials;	collapsing; property loss due to tools/equipment falling into water. Damage to property from falling plant/equipment; Inclement weather causing unstable working platforms resulting in injuries and fatalities and property damage	equipment (i.e. guardrails, solid barricade, harnesses); Working platforms to be designed as per drawings and legislative requirements; Platforms to be erected by competent, trained and appointed employees; formal working at heights training; rescue plan, lifejackets, valid medicals to include working at height assessments; weather conditions to be monitored and documented.			
21.	Hot Works – Welding, Grinding, Cutting	Incompetent Operators; Substandard Electrical Tools (e.g., Portable Electrical Grinders, Drills,	Injury requiring medical treatment Lost Time Injuries	Project health and safety specification;	**Possible**	**Moderate**	**High**

	Hazards, Associated Risks, and Ratings						
	Task Steps / Short risk name	Hazards	Associated risk event	Risk controls	Risk rating with controls		
					L	C	R
		Welding Machines, Generators) being used; Performing hot work activities in wet weather conditions; Oil/Fuel leaking generators	Fatalities, fires and explosions; Environmental issues	Daily electrical equipment/tools inspection by a competent person; Verified competency training for any person operating electrically driven tools and equipment; All electrical equipment run from portable generators to be double insulated; Generators to be inspected daily; Proper earthing processes to be followed for all activities; All tools to be inspected and checked before use including use of correct cutting disk and backing plates; Grinders may			

	Hazards, Associated Risks, and Ratings						
	Task Steps / Short risk name	**Hazards**	**Associated risk event**	**Risk controls**	**Risk rating with controls**		
					L	**C**	**R**
				only be used on solid surface; All electrically driven tools must be double insulated and must have a dead man switch fitted; Fire extinguisher and fire fighter to be available during execution. Hot work permit must be applied for before execution.			
22.	Painting	Repetitive movements Paint splashes in the eye Exposure to paint fumes Paint spillages Skin irritation Incompetent painter	Back injuries Eye injuries Inhalation/pulmonary problems Dermatitis Environmental Pollution	Frequent rest breaks and rotation of activities; All mandatory PPE to be worn with additional PPE depending on the specific activity; SDS of the various HCS to be obtained and communicated to all employees working with	**Likely**	**Minor**	**Medium**

	Hazards, Associated Risks, and Ratings						
	Task Steps / Short risk name	**Hazards**	**Associated risk event**	**Risk controls**	**Risk rating with controls**		
					L	**C**	**R**
				the substances; paint trays, drip trays and plastic sheets to be used to prevent paint spillages on the ground, only competent painter to do the job.			
23.	Construction within operational areas.	Congested work areas; man/machine interface;	Fatalities, injuries, property damage.	Construction methodology to identify procedures of staggered operational/construction areas. Signages to be placed informing affected people of the construction activities and the hazards. Communications to be sent out informing the tenants/affected people about the construction activities taking place.	**Possible**	**Critical**	**High**

	Hazards, Associated Risks, and Ratings						
	Task Steps / Short risk name	**Hazards**	**Associated risk event**	**Risk controls**	**Risk rating with controls**		
					L	**C**	**R**
24.	Contractor Interface	Numerous contractors working within restricted areas; Contractors exposed to construction activities from other Contractors	Fatality, Injuries resulting in permanent disabilities, property damage.	Compliance to Project health and safety specification and Client inductions; Alignment between various contractors through frequent meetings chaired by the Client, contractors to do site specific induction and indicate in their SHE plans how will they control interface on site.	**Possible**	**Critical**	**High**
25.	Close out of construction activities	Poor housekeeping	Injuries, falls, slips and trips, property damage	Adherence to project health and safety specification; close out checklist to be conducted before product handover to Client	**Possible**	**Minor**	**Medium**

	Hazards, Associated Risks, and Ratings						
	Task Steps / Short risk name	**Hazards**	**Associated risk event**	**Risk controls**	**Risk rating with controls**		
					L	**C**	**R**
				Site need to be in a clean condition and all redundant/waste removed.			
26.	Driving inside the Port/Port traffic	Incompetent drivers; LV not in safe and serviceable condition; Uneven road conditions; Speeding; Fatigue; Poor visibility - dust/sun	Fatality, Injuries resulting in permanent disabilities, property damage.	Project health and safety specification; Ensure drivers are competent including random verification; Daily inspections of vehicles; Ensure selection of correct vehicle type for conditions - including tyre selection; Fatigue management plan; Signage; Emergency Preparedness Plan.	**Unlikely**	**Critical**	**High**

Monitor and Review the Risk Controls
It is important to monitor risk controls and review risk assessments regularly. Review is required when there is a change in the process, relevant legal changes, and where a cause for concern has arisen. Reviews could be scheduled on an annual basis. If the risk assessment has substantially changed a new risk assessment is warranted.

4. Risk Matrix

Likelihood	Consequence				
	Insignificant	Minor	Moderate	Major	Critical
Almost Certain	Medium	Medium	High	Extreme	Extreme
Likely	Low	Medium	High	High	Extreme
Possible	Low	Medium	High	High	High
Unlikely	Low	Low	Medium	Medium	High
Rare	Low	Low	Low	Low	Medium

Assessed Risk Level	Description of Risk Level	Action Required
Low	If an incident were to occur, there would be little likelihood that an injury would result	Undertake the activity with the existing controls in place
Medium	If an incident were to occur, there would be some chance that an injury requiring First Aid would result	Additional controls may be needed
High	If an incident were to occur, it will be likely that an injury requiring medical treatment would result	Controls will need to be in place before the activity is undertaken
Extreme	If an incident were to occur it, it would be likely that a permanent or death would result	Consider alternatives to doing the activity. Significant control measures will need to be implemented to ensure safety

Likelihood	Desciption of Likelihood		Consequence	Description of Consequence
1. Rare	Will only occur in exceptional circumstances		1. Insignificant	No treatment required
2. Unlikely	Not likely to occur within the foreseeable future, or withing the project lifecycle		2. Minor	Minor injury requiring First Aid treatment (e.g. minor cuts, bruises, bumps)
3. Possible	May occur within the foreseeable future, or within the project lifecycle		3. Moderate	Injury requiring medical treatment or lost time
4. Likely	Likely to occur within the foreseeable future, or within the project lifecycle		4. Major	Serious injury (injuries) requiring specialist medical treatment or hospitalisation
5. Almost Certain	Almost certain to occur within the foreseeavle future or within the project lifecycle		5. Critical	Loss of life, permanent disability or multiple serious injuries

Annexure D: Intergrated Legal Register

CONTRACTOR ENVIRONMENTAL AND SUSTAINABILITY SPECIFICATION GUIDELINES

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SUMMARY VERSION CONTROL

VERSION NO.	NATURE OF AMENDMENT	PAGE NO.	DATE REVISED
3.0	• Addition of reference documents (section 3) • Inclusion of additional definitions • Removal of DEA and replacing it with DFFE • Removal of Transnet EO and replacing with Transnet Environmental Resource (PER) • Inclusion of additional abbreviations • Inclusion of minimum environmental requirements for construction (section 5) • Inclusion of details of site inspections/audits (table 1) • Inclusion of Records Management	6-7 7-10 11 12 12-23 23 45	June 2023

Note: Only latest amendments and/or additions are reflected in italics in the body of the document.

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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

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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

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.
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.

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Contractor Environmental and Sustainability Specification Guidelines	A set of minimum environmental standards for all Transnet SOC Ltd-managed construction sites.
Environmental Aspect	Element of an organization's activities or products or services that interacts or can interact with the environment.
Environmental Impact	Change to the environment whether adverse or beneficial, wholly or partially resulting from an organization's environmental aspects.
Environmental Risk	The product of the likelihood and severity of an unforeseen occurrence/incident/aspect and the impact it would have, if realised, on the environment.
Fauna	A group of animals specific to a certain region or time period.
Flora	A group of plants specific to a certain region or time period.
General waste	Waste that does not pose an immediate hazard or threat to health or to the environment; and includes:- (a) domestic waste; (b) building and demolition waste; (c) business waste; (d) inert waste;
Indigenous vegetation	Plants that naturally occur in an area.
Liquid waste	Waste that appear in liquid form such as used oil, grease and/or contaminated water or waste water.

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Method statement	A document that describes how the Contractor will apply environmental management measures associated with a particular activity during construction.
Monitoring	Determining the status of a system, a process or an activity
Natural Vegetation	All existing species, indigenous or otherwise, of trees, shrubs, groundcover, grasses and all other plants found growing on the site.
Responsible Authority	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.
Rehabilitation	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.
Scope of Work	The construction work for which the Contractor has been appointed in terms of the Contract with Transnet.
Sensitive area	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).

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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 contractor's 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;

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	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
DEFF	Department of Environment, Forestry and Fisheries
EA	Environmental Authorisation
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
CESSG	Contractor Environmental and Sustainability Specification Guidelines
EO	Environmental Officer

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Acronym	Meaning In Full
EMP	Environmental Management Plan
EMPr	Environmental Management Programme
EGF	Environmental Governance Framework
NEMA	National Environmental Management Act 107 of 1998
NEM:BA	National Environmental Management: Biodiversity Act 10 of 2004
NWA	National Water Act 36 of 1998
PER	Project Environmental Resource
PES	Project Environmental Specification
PM	Project Manager
SAHRA	South African Heritage Resource Agency
SDS	Safety Data Sheet
SHEQ	Safety, Health, Environment and Quality
TRANSNET	Transnet SOC Ltd

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5. MINIMUM ENVIRONMENTAL REQUIREMENTS FOR CONSTRUCTION

5.1 Tender Documents

Any construction-related tender issued to the market must include:

- Transnet Integrated Management System Policy Statement;
- The Transnet Construction Environmental Management Standard Operating Procedure (CEM SOP);
- The Contractor Environmental & Sustainability Specification Guideline; and
- The Project Environmental Specification (PES).

Any construction-related tender must be recommended for issue by the Transnet Project Environmental Resource/s 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:

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- 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

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- 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;

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- 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 PER. 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 PER and Transnet PER and provide these details to his EO.

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The Contractor's EO must develop an appropriate environmental file for approval by the Transnet PER, 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

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- 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 PER.

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.

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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 PER based on the Contractor's activity-based environmental risk assessment will be written submissions by the Contractor to the Transnet CM and PER 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 PER 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 PER, with the addition of the ECO on authorized projects, thereby indicating that the works will be carried out according to the methodology described therein.

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Activities may only commence once the Environmental Method Statements have been approved by the Transnet CM, Transnet PER 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 PER and Transnet CM prior to implementation.

To enable timely approvals, the environmental method statements will be submitted to the Transnet CM and Transnet PER 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 PER or ECO.

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 PER 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 PER 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;

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- 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 PER 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 PER 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 PER. The Transnet PER 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 PER shall advise the Transnet PM to issue a Defects Notification to the Contractor accordingly. The Contractor shall correct the non-

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conformance (defect) within the timeframes specified in the report and notification and submit proof of such correction to the Transnet PER.

The Transnet PER 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 PER 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 PER 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.

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Table 1: Details on Environmental Inspections/Audits (where Transnet is the Inspected Party/Auditee, respective Contractors must give full cooperation).

Place	Inspector/Auditor	Inspected Party/ Auditee	Inspection/audit frequency
Construction Site	Contractor's Environmental Officer	Contractor	Daily/Weekly Inspection
Project (including all construction sites).	Transnet Project Environmental Resource/Project Environmental Manager	Contractor	Monthly Inspection
Project (including all construction sites)	Transnet Environmental Specialist: Assurance	Transnet Project Environmental Resource	As stipulated on the annual audit plan
Project (as defined in Environmental Authorisation)	Environmental Control Officer	Transnet (represented by Transnet Environmental Resource)	As stipulated in the Environmental Authorisation
Project (as defined in Water Use Authorisation)	Independent Auditor	Transnet (represented by Transnet Environmental Resource)	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 PER. Monitoring shall

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be conducted as per the Contractor's approved EMP and all required records shall be maintained by the Contractor.

The Transnet PER 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 PER prior to each inspection.

5.15 Contractor's Environmental Performance

The Transnet PER 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;

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- 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 PER 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 PER. 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.

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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.

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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**

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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:

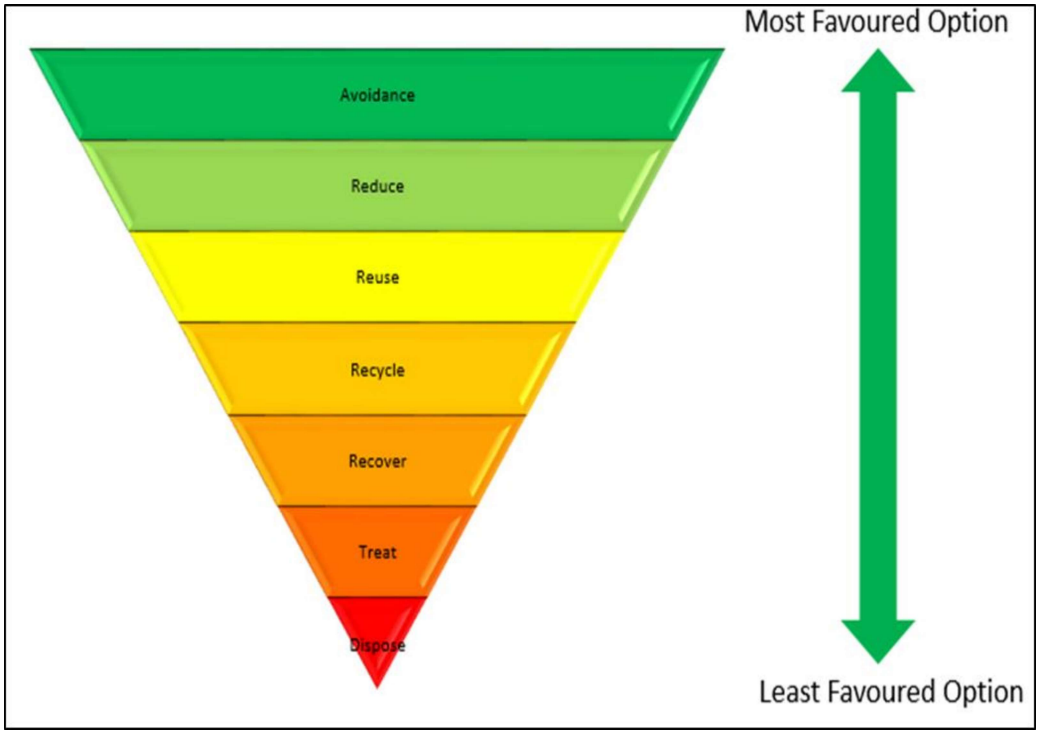


FIGURE 1: THE WASTE MANAGEMENT HIERARCHY

(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

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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;

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- 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 PER 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

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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.

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- 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 PER.

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;

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- 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.

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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 PER.

If the area is in confined or high (elevated) areas, a protection plan must be issued for approval by the Transnet PER.

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 PER 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;

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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 PER.
- Any surface water flows off-site must be approved by the Transnet PER. 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.

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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 PER 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;

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- 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 PER 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 PER 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.

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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 PER. 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.

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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.

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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 PER.

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 PER 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

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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 PER.

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

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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 PER.

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.

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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 PER.

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 PER and the land-owner.

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.

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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 PER.

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 PER.

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.

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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 PER 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.

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The Contractor's EO will submit these documents to the Transnet PER on a frequency as agreed to with the Transnet PER, except where documents have remained unchanged in which case written notification to this effect must be provided to the Transnet PER. 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 PER 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.

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Annexure E: Contractor Environmental and Sustainable Specification

STANDARD OPERATING PROCEDURE

CONSTRUCTION ENVIRONMENTAL MANAGEMENT

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SUMMARY VERSION CONTROL

VERSION NO.	NATURE OF AMENDMENT	PAGE NO.	DATE REVISED
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Note: Only latest amendments and/or additions are reflected in italics in the body of the document.

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1. PURPOSE

1.1 The purpose of this Standard Operating Procedure (SOP) is to define how environmental management will be practiced on any construction project 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 throughout the lifecycle of the asset.

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 Contractor Environmental and Sustainability Specification Guidelines (CESSG) 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 project under the management of Transnet SOC Ltd or its Construction Agent.

3. REFERENCE DOCUMENTS

Name	Applicable Section
Constitution of South Africa, Act 108 of 1996	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.
Capital Governance and Assurance Policy	Entire document
Capital Governance and Assurance Framework	Entire document
Capital governance and Assurance Manual	Entire document.
PLP Manual – Execution	Entire document
National Environmental Management Act, 107 of 1998	Section 2 National Environmental Management Principles (4) (viii), (e), (h), (j) and (p).
National Water Act, 36 of 1998	Section 164, Permissible Water Use Section 19
National Environmental Management: Waste Act, 58 of 2008	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
Environment Conservation Act, 73 of 1989	Section 20
Occupational Health and Safety Act, 85 of 1993	Asbestos Regulations, 2001 Government Notice R155 in Government Gazette 23108 of February 2002

Name	Applicable Section
	General Safety Regulations-Reg. 2 (2) PPE
GNR 326, 7 April 2017 as amended, EIA Regulations	Chapter 15
Integrated Management System – Policy Statement Procedure (TRN-IMS-GRP-PROC-002)	Whole document
Integrated Management System – Competency, Awareness and Training Procedure	Whole document
Integrated Management System[1] – Document, Data and Record Management Procedure (TRN-IMS-GRP-PROC-010)	Whole document
Integrated Management System – Occurrence and Non-Conformance Management Procedure (TRN-IMS-GRP-PROC-013)	Whole document
Transnet Environmental Risk Management Strategy and Framework	2015:42
Environmental Management Systems ISO 14001: 2015	Clause 5, 6, 7, 8, 9 and 10

[1] Management of certain documents, data and records will be in accordance with NEC3 – Engineering and Construction Contract prescripts

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4. DEFINITIONS AND ABBREVIATIONS

4.1 DEFINITIONS

Compliance	The action or fact of complying with legislation or regulations.
Conformance	The action or fact of conforming to this standard and other internal Transnet policies, procedures, guidelines and best practice.
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.
Contractor Environmental and Sustainability Specification Guidelines (CESSG)	A set of minimum environmental standards for all Transnet SOC Ltd-managed construction sites.
Corrective Action	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.
Emergency	Sudden unforeseen event needing immediate or prompt action.

Environment	Surroundings in which the Contractor operates, including air, water, land, natural resources, flora, fauna, humans and their interrelations.
Environmental Aspect	Element of an organization's activities or products or services that interacts or can interact with the environment
Environmental Authorisation (EA)	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).
Environmental Impact	Change to the environment whether adverse or beneficial, wholly or partially resulting from an organization's environmental aspects
Environmental Management Plan (EMP)	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.
Environmental Management Programme (EMPr)	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
Environmental Risk	The product of the likelihood and severity of an unforeseen occurrence/incident/aspect and the impact it would have, if realised, on the environment

Incident/Occurrence	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.
Non-conformance	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.
Non-compliance	Contravention to environmental legislative requirements.
Project Environmental Specification (PES)	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.
Sub -Contractor	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.

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4.2 ABBREVIATIONS

Acronym	Meaning in Full
CESSG	Contractor Environmental and Sustainability Specification Guidelines
CM	Construction Manager
CV	Curriculum Vitae
CEM	Construction Environmental Management
DFFE	Department of Forestry, Fisheries and the Environment
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
ECO	Environmental Control Officer
EO	Environmental Officer
EMI	Environmental Management Inspectorate
NCR	Non-conformance Report
NEMA	National Environmental Management Act 107 of 1998 (as amended)
PER	Project Environmental Resource
PES	Project Environmental Specification
PLP	Project Life-cycle Process
PM	Project Manager

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Acronym	Meaning in Full
SAHRA	South African Heritage Resources Agency
SOP	Standard Operating Procedure
SHEQ	Safety, Health, Environment and Quality
Transnet	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 Environmental Resource/s;
- Certifying site access to the Contractor;
- Giving instructions to the Contractor on recommendation from the Transnet Environmental Resource/s (e.g. defects, non-conformances etc.); and
- Certifying site closure to the Contractor.

5.3 Transnet Project Environmental Resource

5.3.1 The Transnet Project Environmental Resource (PER) will be responsible for ensuring that this SOP and associated specifications or requirements are complied with. The Transnet PER will report functionally to the relevant PM.

5.3.2 The specific tasks will include:

- Preparation of the PES;
- Tender evaluation, development of environmental criteria and adjudication thereof;
- Liaison with the relevant environmental Competent Authorities;

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- Review and approve site layout plan including any subsequent revisions thereof;
- Environmental Induction of Contractor's staff;
- Generate an inspection checklist prior to construction commencement;
- Review and Sign off Method Statements prepared by Contractor;
- Prepare environmental monitoring protocols/checklists to be used during construction;
- Prepare monthly conformance audit reports, including sign-off on Monthly Inspection Reports;
- Conduct monthly observation & inspections of all work places based on the approved inspection checklist;
- Audit conformance to Method Statements;
- 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;

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- 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;
- Conduct any environmental incident investigations;
- Coordinate and/or facilitate any environmental monitoring programmes e.g. EMI Inspections, ECO Audits, Transnet Environmental Assurance Audits etc.
- Collate information received, including monitoring results into a monthly report that is supported with photographic records to the Transnet CM and Transnet PM showing progress against targets; and
- Report environmental performance of the project on a monthly basis through relevant governance channels.

5.3.3 The tasks stipulated above may be conducted by one or more Project Environmental Resource, depending on the scale, complexity and sensitivity of the environment. Discretion to be taken by the Environment Lead within the area of control of the project site.

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 PER.

5.4.2 The specific tasks during the construction stage will include:

- Reviewing the monthly reports compiled by the Transnet PER;
- 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.

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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 PER 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 PER 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 PER (either daily or weekly);

Annexure F: General Agreement for 15 Ton Electric Travel Crane

15 TON ELECTRIC TRAVELLING CRANES

FOR GRAVING DOCK, SIMONSTOWN, SOUTH AFRICA

GENERAL ARRANGEMENT

DRG. No. W.5376

HEIGHT OF LIFT AT MINIMUM RADIUS 9'-5"

30'-0" MINIMUM RADIUS

65'-0" MAXIMUM RADIUS

4 PARTS 2 CIRC STEEL WIRE ROPE

B & A SAFE LOAD INDICATOR

73'-0" JIB CRS

2 DERRICKING SCREWS R.H. & L.H. THREADS

15'-0" TAIL RADIUS

15 TON TRAVELLING SERVICE CRANE

OPERATOR'S POSITION

7½ TONS PIG IRON BALLAST SUPPLIED BY ADMIRALTY

DERRICKING MOTOR

DERRICKING WORM GEAR

SLEW MOTOR

SLEWING WORM GEAR

TAIL RADIUS 15'-0"

HOISTING MOTOR

TRAVELLING MOTOR

ISOLATING SWITCH

14'-6" CLEARANCE

43'-0" RAIL TO JIB FOOT PIN

HEIGHT OF LIFT ABOVE RAIL LEVEL AT MAXIMUM RADIUS 73'-0"

RANGE OF BLOCK BELOW RAIL LEVEL 81'-0" AT MINIMUM RADIUS

15'-0" TRACK CRS

SPEEDS	MOTORS
HOISTING 15 TONS AT 40 FEET PER MINUTE	60 B.H.P.
HOISTING 7½ TONS AT 80 F.P.M. (CHANGE GEAR)	
SLEWING 15 TONS AT 1 REV. IN 3 MINS.	12 B.H.P.
DERRICKING 15 TONS FROM MAX. TO MIN. RAD. IN 5¼ MINS.	15 B.H.P.
TRAVELLING 15 TONS AT 50 FEET PER MINUTE	15 B.H.P.

CURRENT SUPPLY — 380/400 VOLTS 50 CYCLES 3 PHASE

SLEWING MOTOR

17'-6" DIA PATHWAY

TRAVELLING MOTOR

CABLE DRUM HOLDING 250'-0" CABLE

CABLE DRUM BRAKE LEVER

CABLE DRUM RECOILING WEIGHT

2'-6" DIA RAIL WHEELS CAST STEEL CENTRES ROLLED STEEL TYRES

RAIL CLIPS

4'-0" 2'-6" 2'-2" 4'-0" 20'-0" CRS 4'-0" 2'-6" 2'-0" 4'-0"

32'-0" WHEELBASE

RAIL CLIPS

S.A.R. DRG. No. W.5376

DWR 60/8

ORDER No	No OFF	PURCHASER	DATE OF ORDER	DRGS BY	TESTED BY
5415-16	2	ADMIRALTY	27-11-43		

COWANS, SHELDON & Co LTD CARLISLE

SUBJECT GENERAL ARRANGEMENT

FOR 15 TON ELECTRIC TRAVELLING CRANE

SCALE	½" = 1'-0"			
DATE	16-11-44			
DRN BY	TRACED BY	CHKD BY	ISSD BY	
J.G.R.	M.C.	G.C.		

Annexure G: Standard Operating Procedure: Construction Environmental Managment

TRANSNET

GENERAL QUALITY REQUIREMENTS FOR CONTRACTORS AND SUPPLIERS

Document Number	TNPA-QUAL-REQ-014.1
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1. Purpose

This Specification outlines the minimum requirements to ensure that products and services supplied to TRANSNET are manufactured, provided, constructed or installed in accordance with all specified requirements as defined in the Contract, all associated specifications, drawings, codes and standards.

2. Definitions / Abbreviations

Term, Abbreviation	Meaning
Contract:	Formal document evidencing agreement between *Employer* and *Contractor* for supply of on site or off-site services (generic term used for Purchase Orders, Contracts and Service Orders in this Standard).
Contractor:	The party to a *contract* that provides services to the *Employer* (Generic term used for Vendors, Suppliers, Contractors, Consultants, etc.).
Contractor Documentation Schedule (CDS)	A schedule specifying the *Employer's* requirements for the document types to be submitted by the *Contractor* at various stages of the *Contract* and the timing of the submissions.
Data:	All drawings/documents/data/information/DPs and IOMs required to be supplied under the *Contract*.
Data Pack (DP):	A compilation of manufacturing data, certification, inspection and testing records prepared by the *Contractor* to verify compliance with the Contractual requirements.
Employer:	The party to a *Contract* or Purchase Order to whom the goods are supplied or for whom the work or services are performed. In the context of this document, Transnet Capital Projects is the *Employer*.
Field Inspection Checklist (FIC):	A document that details the checks, requirements and test parameters for each type of equipment to permit field installation and pre-commissioning of the equipment
Inspection Release Report (IRR):	A document issued to the *Contractor* by TRANSNET advising release of materials for shipment. This does not relieve the *Contractor* of its obligations in accordance with the Terms and Conditions of the *Contract*.
Inspection Waiver Report (IWR):	A document issued to the *Contractor* by TRANSNET advising that TRANSNET has waived final inspection for the materials listed in this document. The issue of this report does not preclude further inspections by TRANSNET. It is issued without prejudice and does not relieve the *Contractor* from the guarantees and obligations included in the *Contract*.
Installation and Operating Manual (IOM):	A document prepared by the *Contractor* providing relevant information applicable to the installation and maintenance of the specific equipment, including data relating to consumables (e.g., Oils, etc.)
ISO 9001:2015 terms	"shall" indicates a requirement
Non-Conformance (NC)	Material, product or workmanship which is not in accordance with the requirements of the *Contract.*
Non-Conformance Report (NCR):	A document initiated by either TRANSNET or the *Contractor* advising that certain materials/products/workmanship provided by the *Contractor* do not conform to the required standards and specifications.
Project Quality Plan (PQP):	A document that outlines the *Contractor's* strategy, methodology, resources allocation, Quality Assurance and Quality Control coordination activities to ensure that Goods and Services supplied meet or exceed the requirements defined in the *Contract* drawings, codes and standards.

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Term, Abbreviation	Meaning
Quality Assurance (QA):	A formal methodology designed to assess the quality of products or services provided.
Quality Control (QC):	A set of activities intended to ensure that quality requirements are being met.
Quality Control Plan (QCP):	A document outlining specific manufacturing/construction inspection and testing requirements, including responsibilities, test acceptance criteria, nomination of witness and hold points.
Technical Query Note (TQN):	A document used by the *Contractor* to formally clarify a Technical Query related to the scope of supply. This should not be used where a Non-Conformance Report has already been initiated.
TRANSNET:	Transnet SOE Limited
Works Information:	Refers to the *Works Information* as defined in the *Contract*

3. Applicable Documents

3.1 General

All work performed shall comply with the requirements of this Specification, the documentation referenced in the *Contract* and the latest revision/edition of the relevant Codes and Standards referenced herein.

3.2 Statutory Regulations

Occupational Health & Safety Act, Act No 85, of 1993 and Regulations as amended.

3.3 Codes; Standards and Procedures

Document No.	Title
ISO 9001: 2015	Quality management systems – Requirements
ISO 10005:2018	Quality Management systems- Guidelines for Quality plans
PROCEDURE 014	Contractor Management

4. Quality System

4.1 General

4.1.1 The Contractor will be responsible for all quality activities necessary to ensure the Work meets the requirements specified in the Contract and shall manage and coordinate all Quality aspects of the Work in accordance with the requirements of this Specification, together with the Contractor's PQP and QCPs once reviewed and accepted by TRANSNET.

4.2 Contractor Quality System Requirements

4.2.1 The *Contractor* shall have and maintain a documented Quality Management System. The *Contractor* may be required to demonstrate its use to TRANSNET. The *Contractor's* Quality Management System should be in accordance with the requirements of *International Standard ISO 9001:2015 Clause 4.4.1 Quality Management System and its process.*

4.3 Kick Off Meeting

4.3.1 After the *Contract* start date, and prior to manufacture or construction activities, TRANSNET will require a Kick-Off Meeting with the *Contractor* to discuss fully the importance of meeting TRANSNET's quality requirements. This meeting may be held as part of the *Contract* kick-off meeting for each package or may be a separate meeting, subject to the critical or complex nature of the work. This requirement for a pre-inspection meeting may be repeated when Sub-Contractors of key equipment are engaged.

Note: The above requirement must be applied in conjunction with ISO 9001:2015 Clause 8.4.3

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4.4 Contractor / *Supplier* Documentation Submittal Requirements

4.4.1 The *Contractor shall* make a formal submission of his Quality Documentation on award of the *Contract* and at the times defined in the *Contractor's* Documentation Schedule, included in the *Works Information* for the *Contract*.

4.4.2 The Contractor's responsibilities are defined in terms of *DOC-STD-0001* which outlines the standard requirements for preparation, submission, receipt, review, and collection of Technical and (or) Deliverable Documentation, as detailed in the Contractor Documentation Schedule (CDS).

4.4.3 TRANSNET uses the *Contractor's* Documentation Schedule (CDS), included in the *Works Information* for the *Contract*, to indicate those documents required to be submitted for information/review and/or acceptance.

4.4.4 The *Contractor* shall develop and maintain a comprehensive register of documents (*Contractor's* Documentation Register – CDR) that will be generated throughout the project. The CDR includes all quality-related documents. The CDR is a 'live' document and is submitted to TRANSNET for review following each revision by the *Contractor*. The CDR indicates the dates of issue of the documents considering sufficient time to allow for the TRANSNET review/acceptance cycle prior to the document being required for use. A sample of a CDR (DOC-FAT-0002) is issued by TRANSNET at the start of every *contract.*

Note: The above requirements must be applied in conjunction with ISO 9001:2015 Clause 8.4.3 Information for external providers

4.5 Project Quality Plan

4.5.1 Where specified, the *Contractor* submits a PQP to TRANSNET within the period stated in the CDS and in any event not later than 28 days after the *Contract* start date. The PQP details how the *Contractor's* Quality System will be applied to the Scope of Work specified in the *Contract*, and shall address the following:

a) Satisfying the technical and quality requirements of the Contractor's Scope of Work, and relevant elements of the applicable ISO 9001:2015 standard and should be developed with the reference to ISO 10005:2013 Guidelines.
b) Include all quality activities relevant to the Scope of Work, identifying all procedures, reviews, audits, controls, objectives, and records used to control and verify compliance with the specified Contractual requirements.
c) Include a listing of all special processes (e.g., welding and non-destructive testing, cube testing etc.) envisaged for use, including confirmation of personnel certification as required.
d) Include all proposed method statements (for site-based work activities).
e) Include a description of the Contractor's project organisation, with key positions and responsibilities identified and individuals named. The organisation structure shall also indicate the resources committed to the management and coordination of QA / QC activities.
f) Include a listing of all Quality Control Plans (QCPs), and associated Field Inspection Checklists (FICs), as applicable.
g) Identify in the PQP any Sub-Contractor/Sub-Supplier work. Sub-Contractor/Sub-Supplier plans are approved by the Contractor, and a copy forwarded to TRANSNET for information.
h) Include the proposed Authorised Inspection Authority (where applicable - for pressurised equipment and systems).
i) Include proposed quality records.

4.5.2 The PQP shall be controlled and re-submitted for approval when required to incorporate any change necessary during the *Contract* duration to ensure that the document is maintained as an effective control, change management and records. The change management will be done to an agreed policy or procedure.

Note: Where the *Contractor* is required to provide a PQP, no work shall commence until the PQP is accepted by TRANSNET.

Note: The above requirements must be applied in conjunction with ISO 9001:2015 Clause 8 Operations

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4.6 Procedures

4.6.1 The *Contractor's* PQP and procedures shall address the system elements and activities appropriate to the Scope of Work, in compliance with the specified Quality Standard.

4.6.2 Where specified, the *Contractor* shall submit copies of Quality Procedures for review. In addition, the *Contractor* shall ensure that copies of all Procedures relevant to the Scope of Work are available for reference by TRANSNET at each work location.

4.6.3 These will include, as applicable, the following:

a) Document Control, the *Contractor's* PQP shall provide a description of how documents provided by TRANSNET to the *Contractor* are to be managed. The description shall address as a minimum:
- Management tools and databases
- Receipt, registration and maintenance
- Internal and external distribution to Employer, third parties and Sub-Contractors
- Management of Codes, Standards and Specifications
- Internal review and approval routines and authorities
- How it is ensured that the correct revisions of documents are available at the point of use including retention periods for all documentation

Note: The above requirement must be applied in conjunction with ISO 9001:2015 Clause 7.5 Documented Information

b) Design Control procedure, where the *Contractor* is responsible for any aspect of design related to the Scope of Work, the Quality Plan shall describe the *Contractor's* methods and procedures for the control of these design activities.

Note: The above requirement must be applied in conjunction with ISO 9001:2015 Clause 8.3 Design and development of products and services

c) Procurement procedure, where the *Contractor* is responsible for any aspect of procurement related to the Scope of Work, the Quality Plan shall describe the *Contractor's* methods and procedures for the control of these activities.

5. Quality Audits

5.1 Contractor Audits

5.1.1 The *Contractor* shall Carry out audits in accordance with its Quality System at its own and Sub-Contractor's facilities to ensure project quality requirements are being achieved.

5.1.2 The *Contractor* shall include a QA Audit Schedule in the *Contractor* PQP submitted to TRANSNET prior to commencement of the Scope of Work. The Audit Schedule shall include all audits to be implemented by the *Contractor* and Sub-Contractor during the execution of the *Contract*.

5.1.3 The *Contractor* shall, where stipulated in the *Contract*, perform an audit within three months after the *Contract* start date and thereafter at a minimum frequency of three months. Audit reports are submitted to TRANSNET at the completion of each Audit. Where unsatisfactory performance is evident, TRANSNET will direct the *Contractor* to perform additional audits.

Note: The above requirements must be applied in conjunction with ISO 9001:2015 Clause 9.2 Internal Audit

5.2 Transnet Audit

5.2.1 Upon the appointment of the Contractor, the project Quality Officer will schedule and conduct the QMS Audit at the contractor's head office to assess the *Contractor's* ISO 9001:2015 Quality Management System status.

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5.2.2 TRANSNET reserves the right to perform quality audits or participate as an observer in *Contractor* audits to verify compliance with the Contractual requirements. The *Contractor* shall, within the time frame as agreed upon, correct any adverse audit finding advised by TRANSNET.

5.2.3 The *Employer* may, at own discretion, require a Quality Audit of sub-contractor(s) to ensure that the sub-Contractor(s) have the necessary management, facilities, skilled staff, and quality control facilities to carry out the Works to ensure compliance with the Works Information.

6. Quality Control Plans

Note the of requirements of 6.1 to 7.7 9must be applied in conjunction with ISO 9001:2015 Clause 8.5 Production and Service; ISO 10005:2018

6.1 Quality Control Plans

6.1.1 The *Contractor* shall prepare and submit QCPs to TRANSNET for review in accordance with the requirements of the Contract and PQP.

6.1.2 QCPs must clearly identify all inspection, test and verification requirements to meet the Contractual obligations, specifications, drawings and related details including destructive and non-destructive testing, acceptance criteria, witness and hold points.

6.1.3 The *Contractor* shall NOT commence fabrication or manufacture prior to review and approval of the applicable QCP by TRANSNET.

6.1.4 QCPs shall include reference to all tests specified in the *Works Information*.

6.2 Intervention Points

6.2.1 The QCP identifies points in the fabrication, manufacturing and/or installation process that are selected for inspection. These points are denoted by the following inspection codes:

a) Hold Point (H) — Inspection points in the manufacturing cycle, beyond which work shall not proceed without the specified activity, work or function being witnessed. Hold points require written notification to TRANSNET.

b) Witness Point (W) — An inspection point in the manufacturing cycle that will be witnessed or verified. If TRANSNET confirms it is unable to attend after being provided with the written notification, then manufacture may proceed. Witness points require written notification to TRANSNET.

c) Review Point (R) — A point at which products and quality records are verified and endorsed. Review points are not points that require notification to TRANSNET.

d) Surveillance (S) — An inspection point in the manufacturing cycle during which any activity, work or function is observed. No formal notification is required.

6.3 Field Inspection Checklists

6.3.1 For site installation and construction activities, the *Contractor* shall prepare Field Inspection Checklists (FICs) to permit inspection and testing of installed equipment and constructed facilities in accordance with the respective QCPs.

6.3.2 FICs are used to record the results of inspection and testing (where applicable). On completion, FICs are submitted to TRANSNET to confirm satisfactory completion of the tests and inspections at nominated QCP witness and hold points.

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7. Inspection and Testing

7.1 General

7.1.1 Inspection means all activities such as measuring, examining, testing, gauging one or more characteristics of material or service and comparing these with specified requirements to determine conformity.

7.1.2 TRANSNET may, at its discretion, perform surveillance inspections at the *Contractor's* premises, the premises of any Sub-Contractor or at the location of the Scope of Work.

7.1.3 Dependent on the nature of the Scope of Work and the frequency of inspections, TRANSNET may elect to have inspection personnel resident at the place of manufacture, fabrication, or assembly.

7.1.4 The Contractor shall ensure free entry and access is given to TRANSNET, certifying authorities and statutory authorities to inspect the Scope of Work and review procedures and quality records at all parts of the *Contractor's* and Sub-Contractor's premises, or at the location of the Scope of Work while any work or test is in progress.

7.1.5 The *Contractor* shall provide TRANSNET with all necessary tools, calibrated measuring equipment, safety equipment and workspace to verify or witness tests in progress.

7.1.6 While TRANSNET is at the *Contractor's* premises, the *Contractor* shall provide, free of charge, reasonable facilities including office facilities and reasonable access to a telephone, facsimile machine and computer connection point.

7.1.7 The *Contractor* shall provide written notice within a time frame as agreed upon, to allow the attendance of TRANSNET and other representatives at nominated witness and hold points.

7.2 Schedule of Inspection

7.2.1 The *Contractor* shall submit a Schedule showing the proposed dates for inspections and tests nominated in the QCP where witness and hold points are required. The Schedule shall be regularly updated with progress and issued to TRANSNET to show the current inspection and test status.

7.3 Contractor's Inspection

7.3.1 The Contractor shall, as a minimum, carry out the inspections as detailed in the Quality Control Plan and maintain the required records for verification by the Employer and/or Third-Party Inspection Authority.

7.3.2 For sub-contracted material or services, the Contractor shall ensure that controls are effective, including, where necessary, monitoring of the Subcontractor's works and retention of the necessary records.

7.3.3 Signing-off of the Quality Control Plan progressively by all relevant parties is a mandatory requirement following the indicated inspection activity.

7.4 Readiness for Inspection

7.4.1 Material or services shall be deemed ready for inspection by the Employer and/or Project Manager only when:

a) The Contractor has firstly carried out his own inspection at the stage identified on the relevant Quality Control Plan and is satisfied that material, workmanship and services meet the specified requirements. Documented evidence shall be maintained by the Contractor including signing-off the Quality Control Plan.
b) The Contractor shall ensure that the latest revisions of approved drawings and/or procedures with evidence of acceptance by Transnet, his nominated representative or Third-Party Inspection Authority are available.

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7.5 Inspection Notification

7.5.1 The *Contractor* shall notify TRANSNET in writing for inspections or tests within the country, arrangements are confirmed at least two working days before the event. For inspection and tests outside of the country, arrangements are confirmed at least seven working days before the event.

Inspection notifications include the following essential information:

- Contract Number
- Location of Inspection or Test
- Nature of Inspection or Test
- Date and Time of Inspection or Test
- Name and telephone number of the *Contractor's* Representative.

7.6 Cancellation of Inspection

7.6.1 Contractors are advised that it is a condition of Purchase / Contract that all costs of Employer's representative and/or Third-Party Inspection Authority will be passed on to the Contractor for cancellation of inspection visits.

7.6.2 A visit is considered cancelled if:

a) The Contractor advises "readiness" for inspection and upon arrival of Employer's representative or Third-Party Inspection Authority, the material, or Services and/or the associated documentation is not ready; or
b) If Employer's personnel identify that material or services are to specification such that the Contractor's Inspector should have identified the non-conformity prior advising readiness for Employer's or Third-Party Inspection Authority inspection.

7.7 Inspection Waiver

7.7.1 Any Employer's Witness, or review or Hold point may, at the sole discretion of Employer, be waived, which will be followed by an inspection waiver report.

8. Fabrication Process and Factory Acceptance Test

8.1 Fabrication Process

8.1.1 It is the *Contractor's* responsibility to ensure that all processes which require prequalified procedures and/or work methods are tested and qualified before work begins at the manufacture's premises. This typically covers such activities as welding, non-destructive testing, special fabrication techniques and painting. When such procedures are requested, no work shall commence at the manufacturer's premises until procedures are approved by TRANSNET.

8.1.2 It is the *Contractor's* responsibility to ensure all operators are qualified for the processes in accordance with the procedure and/or applicable standards. Records of qualification of operators shall be maintained by the *Contractor* and made available to TRANSNET when requested.

8.1.3 Records of qualification of procedures and processes shall be maintained by the *Contractor* in accordance with the applicable procedure or code.

8.1.4 The Employer's representatives are also required to do inspections during fabrication to ensure that the fabrication process is in accordance with the designs, specifications, and standards to ensure the work meets the requirements specified in the Contract.8.1.1 Welding Procedures

8.1.5 Where the *Contractor's* Scope of Work includes fabricated weldments, Welding Procedure Specifications (WPS) defining the method, preparation and sequences to be adopted to achieve a satisfactory welded joint shall be provided for all weld types required in the execution of the *Contractor's* Scope of Work. The procedure shall only be submitted to TRANSNET when requested in the *Contract*.

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8.1.6 WPS includes all welding essential and non-essential variables for each process used, including appropriate test results. WPS comply fully with the standard or code pertaining to welding required in the execution of the *Contractor's* Scope of Work.

8.1.7 When requested in the *Contract*, a suitably marked "weld map" is completed by the *Contractor* for all items to be fabricated. A summary of WPS is prepared and, when used, is identified on the weld map.

8.1.8 Where TRANSNET approval is required, fabrication is not to commence until written approval of WPS and Welding Procedure Qualification Records (WPQR) is received by the *Contractor*. No welding fabrication will be accepted that is not covered by a TRANSNET approved WPS/WPQR.

8.1.9 Welding Procedure Qualification (WPQ) tests may be witnessed by TRANSNET and/or an independent inspection authority. Testing of the specimens prepared during the WPQ Tests is carried out by an approved testing laboratory, independent of both TRANSNET and the *Contractor*. In certain instances, a certificate to EN 10204 3.1 B may be required which will be clarified at Tender review and clarification stage.

8.1.10 Where actual weld deposit analysis and weld metal physical properties are required for procedure qualification, the information is taken from the procedure qualification tests. Data listed in the catalogues of the manufacturer of welding consumables is not acceptable.

8.1.11 Welders/welding operators are qualified in accordance with the relevant welding code prior to commencing production fabrication. Specific Welder Qualification (WQ) records will be reviewed by TRANSNET in the *Contractor's* works and should NOT be submitted for review.

8.1.12 A register of welders qualified to work shall be maintained by the *Contractor*.

8.2 Material Traceability

8.2.1 Where, and to the extent that material traceability is required, the *Contractor* shall provide its procedures for the maintenance of material identification throughout all phases of manufacture. Methods of identification, routines for re-stamping or stenciling as appropriate shall be defined and agreed with the *Employer*.

8.2.2 Adequate records shall be maintained throughout construction enabling traceability of key materials from final product back to original material certificates. The material traceability records shall form part of the DP.

8.2.3 The *Contractor* shall prepare a schedule of materials and equipment that are subject to traceability requirements.

8.3 Material Certification

8.3.1 Where specified in the Contract the following certificates shall be provided to TRANSNET and included in the DP.

a) *Type A:* A *Contractor's* certificate of compliance with the *Contract*. This certifies that the goods or services are supplied in compliance with the *Contract* without mention of any test results (EN10204 certificate 2.1).
b) *Type B:* A certificate issued by a laboratory or test facility independent of the *Contractor's* works. It shall quote test results carried out on the product supplied and state whether compliance with the relevant technical standard, code, etc., has been complied with. (EN10204 certificate 3.1B).
c) *Type C:* The same as Type B, the tests are to be witnessed by a third party (EN10204 certificate 3.1C).

8.4 Factory Acceptance Test

8.4.1 The factory acceptance test (FAT) is a process that evaluates the equipment during and after the assembly process by verifying that it is built and operating in accordance with design specifications.

8.4.2 The Contractor shall conduct a Factory Acceptance Test for all Plant's to be installed as part of the Works to be executed in this Contract prior to delivery to site. The Factory Acceptance Test shall be conducted in the presence of the Employer's representatives (Quality, Engineering and/or the Third-Party Inspection Authority).

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8.5 Inspection Release

8.5.1 At completion of the Scope of Work, either in total or in phases, TRANSNET may issue an Inspection Release Report (IRR) or an Inspection Waiver Report (IWR).

8.5.2 The issue of either an inspection release or waiver of inspection does not relieve the *Contractor* of its obligations under the *Contract*. The *Contractor* ensures that a copy of the release note and final expediting release note for transport, where appropriate, is attached to the delivery docket and accompanies the Work to the designated destination indicated in the *Contract.* Items delivered to TRANSNET without a copy of these documents may not be accepted.

8.5.3 A copy of the inspection release or waiver of inspection is included in the DP.

9. Non-Conforming Products

9.1 General

Note the requirements of 9.1 to 9.3 must be applied in conjunction with ISO 9001:2015 Clause 10.2 Nonconformity and Corrective action

9.1.1 The *Contractor* shall establish and maintain procedures to control material or products that do not meet the specified requirements.

9.1.2 All Contractor product and/or materials identified as not conforming to requirements shall be dealt with promptly as follows:

a) If the *Contractor* discovers material or product which is not in accordance with the requirements of the *Contract*, i.e., a non-conformance, the *Contractor* shall immediately initiate the non-conformance procedure in terms of the *Contractor's* Quality Management System, advise TRANSNET promptly, and provide a copy of the non-conformance report (NCR) to TRANSNET
b) If TRANSNET or its agent identifies a non-conformance, a TRANSNET NCR may be raised.

9.1.3 Originals of all closed out NCRs shall be included in the DP.

9.2 Defects

9.2.1 The project Quality officer will notify the NEC supervisor / Construction Manager of any defects observed and long them on the snag list.

9.3 Corrective and Preventative Action

9.3.1 If the Contractor proposes a disposition of any non-conforming materials or product which varies from the requirements of the Specification or *Contract*, such a proposal shall be submitted in writing to TRANSNET whose decision on the proposal shall be obtained in writing before the non-conforming material or product is covered up or incorporated into the Works, or is the subject of any other disposition.

9.3.2 The disposition of non-conformances which do not vary the requirements of the *Contract*, specification or drawings may be approved by the *Contractor* following discussion and agreement with TRANSNET.

10. Concession Requests and Technical Queries

10.1 Concession Requests

10.1.1 Where a *Contractor* requests a Concession to deviate from the requirements of the *Contract* or specified requirements, the *Contractor* raises the request for TRANSNET review and approval.

10.1.2 The Concession Requests shall clearly identify all elements of the proposed deviation together with any resulting technical, commercial and/or schedule impacts.

10.1.3 Completed original Concession Requests shall be included in the DP.

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Note: The above requirements must be applied in conjunction with ISO 9001:2015 Clause 8.7 Control of Non-Conforming outputs

10.2 Technical Queries

10.2.1 For clarification of technical issues (only), the *Contractor* may submit a Field Engineering Query (FEQ) to TRANSNET in accordance with the *Contract*.

10.2.2 The FEQ shall clearly identify all elements of the query, and all supporting documentation and/or drawings shall be attached where appropriate.

Completed original FEQ's shall be included in the DP.

11. Inspection, Measuring and Test Equipment

Note the requirements of 11.1 to 11.3 must be applied in conjunction with ISO 9001:2015 Clause 7.1.5.1 &7.1.5.2 General and Measurement traceability

11.1 Calibration

11.1.1 The *Contractor*, including its Sub-Contractors/Sub-Suppliers, shall ensure the calibration of test and measuring equipment is performed and maintained in accordance with the relevant *Contractor* procedures and/or the equipment manufacturer's specifications.

11.1.2 Where calibration is required by an external laboratory, the *Contractor* shall ensure that the facility selected for calibration possesses current certification. Calibration certificates shall contain a statement that the test equipment is accurate to within specified tolerances.

11.1.3 The Contractor should establish the frequency of calibration for each item of equipment (including jigs, fixtures or templates) and record the details in a 'Measuring and Test Equipment Register' (or similar).

11.2 Use of Inspection, Measuring and Test Equipment

11.2.1 The *Contractor* shall ensure that authorized equipment users:

a) Use the equipment in accordance with manufacturer's instructions, and accepted industry practices
b) Ensure the equipment is covered by a current calibration certificate
c) Conduct the measurements or tests in accordance with the equipment manufacturer's specifications or other relevant specification
d) Prior to commencement of each inspection or test activities:
   - Identify the measurements to be made
   - Determine the accuracy required
   - Select the appropriate inspection, measuring or test equipment for the scope of work.

11.3 Verification of Previous Test Results

11.3.1 Where the calibration status of the equipment is unknown, expired or has doubtful accuracy, the equipment shall immediately be quarantined, and tagged according to *Contractor's* Quality System procedures. The *Contractor* shall then arrange for either in-house or external calibration, and:

a) review all previous test results associated with the suspect equipment;
b) identify the inspections, measurements or tests required to re-validate the results;
c) ensure that suitable re-testing is performed with calibrated equipment;
d) record the results of the re-testing on the respective inspection and test documentation.

12. Quality Personnel Qualifications

12.1.1 The contractor shall nominate/appoint a Quality officer with minimum experience and qualifications specified in the Tender documents.

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12.1.2 The Contractor shall submit the CV and relevant qualifications of its nominated/appointed quality representative for the Project Manager's review and approval.

12.1.3 Should the approved qualify officer be no longer available, the contractor will notify the Project Manager in writing and upon agreement the contractor will provide the CV and qualifications of the proposed resource that is equivalent to the previously approved.

Note: The above requirements must be applied in conjunction with ISO 9001:2015 Clause 7.2 Competence

13. Quality Records

13.1.1 *Contractors* shall maintain Quality Records necessary to provide objective evidence that demonstrates and verifies achievement of the QA / QC requirements associated with the Scope of Work.

13.1.2 All Quality Records, including original source material test certificates and non-destructive test reports, shall be retained by the *Contractor* during the project, and be provided to TRANSNET at the times, and in the quantities specified in the *Contract*.

13.1.3 The *Contractor* shall collate all quality records in the Data Pack (DP) and submit the DP to TRANSNET in accordance with the *Contract* and all referenced standards and specifications. This DP shall be compiled progressively and shall be available for review at all phases of manufacture or construction activities.

13.1.4 The Scope of Work shall not be complete until the *Contractor's* DP, including the quality records from Sub-Contractors/Sub-Suppliers, has been reviewed and accepted by TRANSNET.

13.1.5 The *Contractor* compiles the DP progressively during the execution of the Scope of Work and makes the DP available for review by TRANSNET as required.

13.1.6 The *Contractor* shall retain a copy of all Quality documentation generated during the *contract*, including a copy of the complete DP, for his own records for a minimum period of five years after the completion of the work.

Note: The above requirements must be applied in conjunction with ISO 9001:2015 Clause 7.5.3 Control of Documented Information

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