PART C: THE CONTRACT

C1.1: Form of Offer & Acceptance "Tenderers are required to complete the Form of Offer manually, and the amounts must correspond with the prices submitted electronically.

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

Name & signature of witness *(Insert name and address of organisation)* 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	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		
5		

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	**X7:** **Delay damages** **X18:** **Limitation of liability**
	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 National Ports Authority** **Port Control Building** **Ganteaume Crescent** **Port of East London** **5201**
	Having elected its Contractual Address for the purposes of this contract as:	**Transnet National Ports Authority** **Port Control Building** **Ganteaume Crescent** **Port of East London** **5201**
10.1	The *Project Manager* is: (Name)	**Siphokazi Mpetshwa-Masondo**
	Address	**Transnet National Ports Authority** **EMD Building,01 DR Zahn & Nuffield Road** **West Bank,** **Port of East London** **5201**
10.1	The *Port Engineer* is: (Name)	**Zanele Ntantala**
	Address	**Transnet National Ports Authority** **Port Control Building** **Ganteaume Crescent** **East London** **5201**
11.2(13)	The *works* are :	**Supply, Delivery, Removal of Existing UPS's, Installation, Testing, and Commissioning of Three (3) UPS Systems**
11.2(14)	The following matters will be included in the Risk Register	**:**
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		
11.2(9)	The *key date*s and the *condition*s to be met are:	***Condition* to be met**	***key date***
		1 Starting date	**August 2026**
		2 Completion date	
30.1	The *access dates* are	**Part of the Site**	**Date**
		1 Whole of the site	
31.1	The *Contractor* is to submit a first programme for acceptance within	**Two (2) weeks of the Contract Date.**	
31.2	The *starting date* is		
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	**25th (twenty fifth) 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 Rand Merchant Bank of South Africa.**	

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**
	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:	**Port of 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,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**	**Transnet has the right to terminate the contract for non-performance of Contractor based on service level agreement (SLA) that will be conducted weekly/monthly**
10	**Data for main Option clause**	
A	**Priced contract with Activity Schedule**	**No additional data is required for this Option.**
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	**eMendi Building N2 Neptune Road Off Klub Road Port of Ngqura Port Elizabeth 6100**
	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**	
X7	**Delay damages**	
X7.1	Delay damages for Completion of the whole of the *works* are	**R 205,00 per day**
X18	**Limitation of liability**	
X18.1	The *Contractor*'s liability to the *Employer* for indirect or consequential loss is limited to:	**Nil** **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:	**24 Months after Completion of the whole of the *works***
X18.5	The *end of liability date* is	

Z3 Additional clauses relating to Joint Venture

Z3.1 **Insert the additional core clause 27.5**

27.5. In the instance that the *Contractor* is a joint venture, the *Contractor* shall provide the *Employer* with a certified copy of its signed joint venture agreement, and in the instance that the joint venture is an 'Incorporated Joint Venture,' the Memorandum of Incorporation, within 4 (four) weeks of the Contract Date.
The Joint Venture agreement shall contain but not be limited to the following:

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

		extent to which and manner whereby this will be provided and/or guaranteed by the constituents from time to time; **v. the names of the auditors and others, if any, who will provide auditing and accounting services to the Joint Venture.**
Z3.2		**Insert additional core clause 27.6** **27.6. The *Contractor* shall not alter its composition or legal status of the Joint Venture without the prior approval of the *Employer.***
Z4	**Additional obligations in respect of Termination**	
Z4.1		**The following will be included under core clause 91.1:** **In the second main bullet, after the word 'partnership' add 'joint venture whether incorporate or otherwise (including any constituent of the joint venture)' and** **Under the second main bullet, insert the following additional bullets after the last sub-bullet:** • **commenced business rescue proceedings (R22)** • **repudiated this Contract (R23)**
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 only	
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.
11.2(14)	The following matters will be included in the Risk Register	
31.1	The programme identified in the Contract Data is	
A	**Priced contract with activity schedule**	
11.2(20)	The *activity schedule* is in	**C2, Pricing data**
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	

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:			

PART 2: PRICING DATA

Document reference	Title	No of pages
C2.1	Pricing instructions: Option A	1
C2.2	Activity Schedule	4

C2.1 Pricing Instructions: Option A

1. The *conditions of contract*

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

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

Identified and defined terms	11 11.2	(20) The Activity Schedule is the *activity schedule* unless later changed in accordance with this contract. (22) Defined Cost is the cost of the components in the Shorter Schedule of Cost Components whether work is subcontracted or not excluding the cost of preparing quotations for compensation events. (27) The Price for Work Done to Date is the total of the Prices for • each group of completed activities and • each completed activity which is not in a group A completed activity is one which is without Defects which would either delay or be covered by immediately following work. (30) The Prices are the lump sums for each of the activities on the Activity Schedule unless later changed in accordance with this contract.

1.2. Measurement and Payment

1.2.1 The Activity Schedule provides the basis of all valuations of the Price for Work Done to Date, payments in multiple currencies, price adjustments for inflation and general progress monitoring.

1.2.2 The amount due at each assessment date is based on **completed activities and/or milestones** as indicated on the Activity Schedule.

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

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

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

1.2.6 Activities in multiple currencies are separately identified on both the Activity Schedule and the Accepted Programme for each currency.

1.2.7 The tendered total of the prices as stated in the Contract Data is obtained from the Activity Schedule summary. The tendered total of the prices includes for all direct and indirect costs, overheads, profits, risks, liabilities and obligations relative to the Contract.

C2.2 Activity Schedule Price to be completed manually and electronically

ITEM NO.	DESCRIPTION	UNIT	QTY	Rate	Price
A.	**Health and Safety Requirements**	-			
A.1.1	Health and Safety Requirements (as per T2.2.14)	Sum	1		
A.1.2	**Contractual Obligations**	-			
A.1.2.1	Disconnecting, removal of existing UPS sets from buildings as per the scope of work	Each	3		
Sub-total	**A**				
B	**UPS MACHINE AND INSTALLATION**	-			
B.1.1	Supply of 30KVA.	Sum	1		
B.1.2	Installation of 30 KVA.	Sum	1		
B.1.3	Testing and commissioning of 30 KVA.	Sum	1		
B.1.4	Supply of 20KVA.	Sum	1		
B.1.5	Installation of 20 KVA.	Sum	1		
B.1.6	Testing and commissioning of 20 KVA.	Sum	1		
B.1.7	Supply of 10KVA.	Sum	1		
B.1.8	Installation of 10 KVA.	Sum	1		
B.1.9	Testing and commissioning of 10 KVA.	Sum	1		
B.1.10	Delivery Cost for all Three (3) UPS's	Sum	1		
Sub-total-B					
C	**GENERAL ITEMS**				
C.1.1	Issue a Certificate of Compliance for each UPS's	Each	3		

ITEM NO.	DESCRIPTION	UNIT	QTY	Rate	Price
Total Direct Cost- C					
D.	**SUB-TOTAL: A+ B+C=D (EXCL.VAT)**				
E.	**ADD 15% VAT (IF APPLICABLE)**				
F.	**TOTAL PRICE (INCL. VAT)**				

N.B TOTAL PRICE TO BE CARRIED OVER TO THE FORM OF OFFER & ACCEPTANCE

PART C3: WORKS INFORMATION

PART C3: WORKS INFORMATION

Document reference	Title	No of page
	This cover page	1
C3.1	*Employer's* Works Information	15
	Total number of pages	**16**

C3.1 *EMPLOYER'S* WORKS INFORMATION

Contents

PART C3: WORKS INFORMATION 1
SECTION 1 3
1 Description of the *works* 3
SECTION 2 ENGINEERING AND CONTRACTORS DESIGN 4
SECTION 3 4
3.1. SCOPE OF WORKS 4
3.2. TECHNICAL SPECIFICATIONS 6
3.3. TECHNICAL REQUIREMENTS 10
3.4. ADDITIONAL REQUIREMENTS 14
3.5. GENERAL 14
3.6. GUARANTEES 15
3.7. COMPLETION, TESTING AND CORRECTION OF DEFECTS 15
3.8. SAFETY 15
3.9. ENVIRONMENTAL RESPONSIBILITY 16

SECTION 1

1 Description of the *works*

1.1. Executive overview

TNPA, Port of East London, has three (3) existing UPS located in the Port Control server room, Port Admin server room, and Grain elevator server room. The area is access controlled and all security and safety protocols must be adhered to.

UPS for Port Control server room and Port Admin server room were purchased in February 2011 and Grain elevator server room UPS was purchased in April 2018.

The life span of these UPSs has ended as normally UPS's life span is 7-10 years and the Port environmental conditions affects these UPSs.

Furthermore, due to change in technology, when there is faulty equipment, replacement parts are no longer available in the market. This poses a risk in the operations of server rooms if there can be a major fault, the UPSs cannot be repaired.

It is necessary that this UPSs should be replaced to ensure that the power is not interrupted during power outages and loadshedding.

The UPSs shall work conjointly with existing standby generators that which shall switch-on automatically immediately when the power goes off before the generator is on as the standby diesel generator takes seconds to be on, ensuring that there are not interruptions or damage to equipment.

The *works* that the *Contractor* is to perform *involve:*

- removal of old uninterruptible power supplies (UPSs),
- Supply, delivery, installation and testing of new UPSs

1.2. Employer's objectives

Port Control Building, Port Admin building, and Grain elevator are equipped with server rooms accommodating critical equipment which ensures continuity of operations in the Port.

The objective is to procure new UPSs to replace old UPSs to ensure no interruptions to operations and protection of server equipment during power outages or faulty equipment.

2. SECTION 2 ENGINEERING AND CONTRACTORS DESIGN

There are no detailed designs to be performed in the project however the appointed *Contractor* will have to perform works strictly in accordance with:

2.1.1. Standards adherence

The bidder shall be aware that the standards to be adhered to are not limited to the listed below ones, should the bidder be the successful bidder.

2.1.2. Relevant standards and sans standards

- SANS 10111 (Latest): Engineering drawing
- The Occupational Health and Safety Act and Regulations (Act no. 85 of 1993 as amended)
- Any municipal by-laws and regulations
- The local authority requirements
- The earthing of low voltage distribution systems – SANS 10292
- The National Building Regulations – SANS 10400
- SANS 10142 – Code of Practice for the wiring of Premises

3. SECTION 3

3.1. SCOPE OF WORKS

3.1.1. Old/Existing UPS

- The scope of works includes the removal of the existing UPS from the stipulated areas. The removal of the existing UPS to be conducted by the appointed Contractor.
- The sizes of existing UPS are as follows:

NAME OF THE BUILDING	NAME OF THE UPS	NUMBER OF THE UPS	SIZE OF THE UPS
Port Admin	Tescom	1	30KVA
Port Control	Tescom	1	20KVA
Grain Elevator	PSS	1	10KVA

- The UPS to be transported and placed by the appointed Contractor at the location to be indicated by the electrical personnel.

3.1.2. New Uninterruptible Power Supplies (UPS's)

- The Contractor to supply, deliver, install, test and commission three (3) uninterruptible power supplies (UPS) at various areas in the Port of East London.

- The UPS unit shall consist of a rectifier/charger, inverter, and manual bypass switch.
- The application of the UPS shall be solely to supply power when it has been cut-off and ensure interference free power at Stipulated areas. Equipment requiring this supply is very critical, which is sensitive to frequency deviations, voltage transients and voltage dips. The UPS system shall compensate for the variations in the input supply as any irregularities will affect the load. The UPS shall comprise of the following major components:

    - PFC Rectifier
    - Battery charger
    - Inverter
    - Battery
    - Automatic bypass (Via a static switch)
    - User and communications interface
    - Battery management system

- The UPS shall be based on six-pack IGBT technology with built-in thermal monitoring and frequency chopping mode to dynamically optimise efficiency and power quality.
- The UPS shall accept high crest factors (3:1) without derating to ensure correct operation with computer loads.
- The UPS machine shall be equipped with completely sealed; maintenance free 10- year batteries rated for 30 minutes at full load rated 0.8 pf or 0.9 pf. The battery back shall be split into 4 strings each controlled via separate isolators, to allow each string to be serviced independently, without affecting operation of the UPS.
- The Contractor shall supply and install cabling, sub-DB (if the existing cabling does not meet the capacity of the new UPS and or sub-DB is not sufficient or is affected) and all accessories such as connectors, mounting brackets, cable ducts and trays etc., required by the system to ensure successful operation of UPS. The Contractor to calculate and provide the correct cable sizes as per SANS 10142-1.
- The Contractor will be responsible for making good in all trades, damage or disturbances to the building, installation, concrete surfaces, and other existing services may have been interrupted during installation.
- The Contractor will be responsible for keeping the site tidy during the construction of the system and shall remove from the site all rubble and litter resulting from the work.

3.2. TECHNICAL SPECIFICATIONS
UPS 3S 30KVA 400V (E3SUPS30KH)- Port Admin

Main Input Voltage	400 V AC 3 phases
Input voltage	415 V
Maximum input current	55 A
Load power factor	0.9 leading to 0.9 lagging
Cos phi	0.99
Input voltage limits	304...400 V
Network frequency	50 Hz
Output voltage	400 V AC 3 phases
Rated power in W	30 kW
rated power in VA	30 KVA
Bypass type	Built-in maintenance bypass
Crest factor	3 : 1
Harmonic distortion	Less than 3 %
Maximum configurable power in VA	30 KVA
Maximum configurable power in W	30 kW
Output overload operation	10 minutes at 125% and 60 seconds at 150%
UPS type	Double conversion online
Output frequency	50 Hz sync to mains
Complementary	
Maximum short-circuit current	10 kA
Battery type	Lead-acid external
Control panel	Touch Screen LCD User Interface
UPS connectivity	Optional network management card 3
Colour	White (RAL 9003)
Height	77 cm
Width	25 cm
Depth	80 cm
Product weight	60 kg
USB compatible	Yes
Provided equipment	Dust filter Installation guide
Range of product	Easy UPS 3S
Environment	
Ambient air temperature for operation	0…40 °C
Ambient air temperature for storage	-15…40 °C
Storage altitude	0…14999.8 m

IP degree of protection	IP20
Relative humidity	0…95 % non-condensing
Storage Relative Humidity	0…95 % non-condensing
Acoustic level	63 dBA
Heat dissipation	1410 W
Operating altitude	0...3281 ft
Batteries & Runtime	
Battery type	External battery system
Number of battery filled slots	0
Number of battery free slots	0
Packing Units	
Unit Type of Package 1	PCE
Number of Units in Package 1	1
Package 1 Height	101.5 cm
Package 1 Width	98.2 cm
Package 1 Length	40 cm
Package 1 Weight	77 kg

UPS 3S 20KVA 400V (E3SUPS20KFBS)-Port Control

MAIN	
Main Input Voltage	400 V AC 3 phases
Input voltage	220 V
Maximum input current per Phase	61 A
Maximum Short Circuit Withstand (Icw)	10 kA
Input Total Harmonic Distortion	Less than 4% for full load
Load power factor	0.9 leading to 0.9 lagging
Cos phi	0.99
Input voltage limits	304...400 V
Network frequency	50Hz
Output voltage	400 V AC 3 phases
Other Output voltage	400 V
Rated power in W	20 kW
rated power in VA	20 KVA
Bypass type	Built-in maintenance bypass
Crest factor	3 : 1
Harmonic distortion	Less than 3 %
Maximum configurable power in VA	20 KVA
Maximum configurable power in W	20 kW

Output overload operation	10 minutes at 125% and 60 seconds at 150%
UPS type	Double conversion online
Output frequency	50 Hz sync to mains
Complementary	
Maximum short-circuit current	10 kA
Battery type	Lead-acid external
Control panel	Touch Screen LCD User Interface
UPS connectivity	Optional network management card 3
Colour	White (RAL 9003)
Height	55.1 in (140 cm)
Width	15.0 in (38 cm)
Depth	37.8 in (96 cm)
Product weight	291.01 lb (US) (132 kg)
USB compatible	Yes
Provided equipment	Dust filter Installation manual
Range of product	Easy UPS 3S
Environment	
Ambient air temperature for operation	0…40 °C
Ambient air temperature for storage	-15…40 °C
Storage altitude	0…49212.6 ft (0…15000 m)
IP degree of protection	IP20
Relative humidity	0…95 % non-condensing
Storage Relative Humidity	0…95 % non-condensing
Acoustic level	68 dBA
Heat dissipation	1400 W
Operating altitude	0...4921 ft
Batteries & Runtime	
Battery type	External battery system
Battery Voltage	+/- 120 V
End of Discharge Battery Voltage	+/- 96 V
Packing Units	
Unit Type of Package 1	PCE
Number of Units in Package 1	1
Package 1 Height	62.8 in (1595 mm)
Package 1 Width	47.2 in (1200 mm)

Package 1 Length	31.5 in (800 mm)
Package 1 Weight	363.8 lb(US) (165 kg)

UPS 3S 10KVA 231V (E3SUPS10KFBS)- Grain Elevator

MAIN	
Main Input Voltage	231 V AC single phases
Input voltage	231 V
Maximum input current per Phase	31 A
Maximum Short Circuit Withstand (Icw)	10 kA
Input Total Harmonic Distortion	Less than 4% for full load
Load power factor	0.9 leading to 0.9 lagging
Cos phi	0.99
Input voltage limits	220...231 V
Network frequency	50 Hz
Output voltage	231 V AC single phases
Other Output voltage	220 V
Rated power in W	10 kW
rated power in VA	10 KVA
Bypass type	Built-in maintenance bypass
Crest factor	3 : 1
Harmonic distortion	Less than 3 %
Maximum configurable power in VA	10 KVA
Maximum configurable power in W	10 kW
Output overload operation	10 minutes at 125% and 60 seconds at 150%
UPS type	Double conversion online
Output frequency	50 Hz sync to mains
Complementary	
Maximum short-circuit current	10 kA
Battery type	Lead-acid external
Control panel	Touch Screen LCD User Interface
UPS connectivity	Optional network management card 3
Colour	White (RAL 9003)
Height	55.1 in (140 cm)
Width	15.0 in (38 cm)
Depth	37.8 in (96 cm)
Product weight	120 kg
USB compatible	Yes

Provided equipment	Dust filter Installation manual
Range of product	Easy UPS 3S
Environment	
Ambient air temperature for operation	0…40 °C
Ambient air temperature for storage	-15…40 °C
Storage altitude	0…49212.6 ft (0…15000 m)
IP degree of protection	IP20
Relative humidity	0…95 % non-condensing
Storage Relative Humidity	0…95 % non-condensing
Acoustic level	65 dBA
Heat dissipation	700 W
Operating altitude	0...4921 ft
Batteries & Runtime	
Battery type	External battery system
Battery Voltage	+/- 120 V
End of Discharge Battery Voltage	+/- 96 V
Packing Units	
Unit Type of Package 1	PCE
Number of Units in Package 1	1
Package 1 Height	62.8 in (1595 mm)
Package 1 Width	47.2 in (1200 mm)
Package 1 Length	31.5 in (800 mm)
Package 1 Weight	335.1 lb(US) (152 kg)

3.3. TECHNICAL REQUIREMENTS

3.3.1. AC to DC Battery Charger

- The UPS system shall be provided with a supply via the normal incoming cable from the diesel-driven standby plant in the event of a mains failure.
- The UPS control system shall be arranged to limit boost charging of the battery system when UPS is supplied from the standby supply. A voltage free N/O contact shall be provided to signal operation of the standby plant.
- A Battery System of sufficient capacity to supply the specified inverter load for the required time shall be provided. Each single/modular UPS unit shall be equipped with its own battery of the sealed lead-acid type, mounted, and wired in a cabinet identical in aspect to that of the UPS and shall have a service life of 10- years.
- The Contractor shall state the 10-hour discharge capacity of the batteries and the battery voltage at its terminals under various conditions.

3.3.2. DC to AC Inverter

- A solid-state DC to AC inverter providing a three-phase output within the specified output requirements from a DC source originating from the rectifier or battery output shall be provided. Self-commutated or load commutated and three single phase units phase controlled within 120 electrical degrees or three phase inverter bridges are acceptable. The inverter shall be fully rated to provide the specified output power between the upper and lower battery voltage limits.
- The inverter shall be adequately protected against excessive overloads or short circuits that may occur in the load.
- The UPS shall be capable of supplying for at least 10 minutes a load representing 125% of the rated load and 60 seconds a load is representing 150% of the rated load.
- The overload capacity shall be capable of considering temperature conditions for more than ten minutes, by allowing a continuous, 10% overload when the temperature is less than or equal to 200 C. The output of the inverters is of the transformer less type and the neutral shall be recreated electronically.
- The IGBT inverter bridge shall contain the necessary auxiliary circuitry to ensure satisfactory operation with non-linear loads such as saturating transformers or other rectifier bridges as well as loads with low power factors.
- The inverter shall be switched off as soon as the DC input reaches a predetermined minimum value.
- The output of the inverter shall be connected through a very high-speed electronic switch to the output busbar. The switch shall be capable of disconnecting the inverter when operating at full load at any power factor from the output busbar in less than 1 msec.
- The operation of the electronic switch shall be such that failure of the inverter wilt cause the switch to isolate the faulty inverter from the busbar without any disturbance to the load.
- A soft start circuit shall be provided at the input to the inverter to limit inrush current at switch on. The DC input to the inverter shall be fuse protected.
- An isolator shall be provided allowing the inverter and electronic switch to be isolated from the output busbar for maintenance purposes.
- The instrumentation, alarms and controls may be placed on either an inverter panel or the bypass switch front panel. All controls shall be arranged on a system schematic provided on the front panel to simplify the control and identification.

3.3.3. Auto Bypass Switch

- A very high-speed electronic bypass switch (static switch) shall be connected in parallel to the rectifier/inverter between the mains and output busbar. Transfer shall take place automatically without a break in the event of a major overload or on an internal inverter

fault on the condition that bypass source voltage and frequency are within specified tolerances and that the inverter is synchronised. Manually initiated transfer shall also be possible.

- The Static switch shall be equipped with an RC filter for protection against switching overvoltage's and lightning strikes. An input and output isolator shall isolate the switch for maintenance purposes.

3.3.4. Mechanical Bypass

- A manually operated, quick make, quick break, fault break load make isolator rated for the full output load of the system, shall be provided as bypass circuit from load to mains, enabling maintenance of the rectifier/inverter system and electronic switch.

3.3.5. Indications Controls and Alarms

- UPS system operation shall be facilitated by a user interface on each of the modular UPS units, comprising:
- The UPS should have a simple, user friendly system of control and indication.
- Start-up shall be limited to a few actions such as closing the input circuit breaker to automatically start the charger/ rectifier, closing the battery circuit breaker and a push-button to start the inverter.

    - A graphic display [at least quarter VGA and high resolution are preferable.
    - ON and OFF control buttons [independent of the display]
    - Status indications with mimic panel.

3.3.6. Alarm Indications

- Low Battery / Shutdown imminent
- Charger Fault
- Rectifier Fault
- Inverter Fault
- Mains 2 Fault
- Phase Rotation Fault
- Rectifier Temperature
- Inverter Temperature Fault
- Battery Circuit Open
- Thermal Overload
- Inverter Shutdown on Low Battery
- Overload
- Battery Fault
- Load Protected / Power Supply OK
- Load Protected / Minor Fault
- Load Protected / Battery Discharging
- Load on Automatic Bypass

3.3.7. Measurement Display

- Inverter output currents
- Inverter output frequency
- Voltage across battery terminals
- Battery charge or discharge current.
- Rectifier/charger input phase-to-phase voltages
- Rectifier/charger input currents
- Crest factor
- Active and apparent power
- Power factor of the load
- Battery temperature
- Battery percent charge
- Available backup time
- The remaining battery service life

3.3.8. Battery Monitoring

- The UPS shall be standard with the following enhanced battery protection.
- The charger cycle shall adapt to ambient temperature charges.
- The UPS via the battery monitor shall be protected against deep discharges.
- The battery monitor shall precisely measure the remaining backup time.
- The battery monitor shall do the following tests:

    - Battery circuit test every 12 hours.
    - Open circuit battery tests every month.
    - Partial discharge tests every 3 months.
    - Alarm indicating the end of battery service life.

- All the features of the battery monitoring testing shall be done automatic and manually.
- Any negative results or faults indications shall produce visual indications and shall send messages via the remote diagnostic service.

3.3.9. Advanced Communications

The UPS shall be supplied with management hardware and software for remote monitoring facilities via local area network i.e.

- Graphic monitoring of UPS status
- Detailed UPS parameter display
- Events log and graphical display
- Block and functional diagrams
- Notification of alarms via e-mail, SMS etc.

3.3.10. PCB Coating

The PCBs must be conformably coated to provide superior protection against:

Dust, Dirt, Abrasion, Fungus, Moisture, Chemicals, Mechanical stress, Shock and vibration, and salt air environment.

3.3.11. Service conditions

All electrical equipment shall be suitable for operating under the following conditions.

Environmental Conditions

Altitude	0 to 1800m without de-rating
Ambient temperature	0 to 40° C (Continuous)
Relative Humidity	Up to 95% (non-condensing)

3.4. ADDITIONAL REQUIREMENTS

- The system shall be offered complete in all respects, including all standard equipment normally offered by manufacturers, users manuals. Layout and interconnection diagrams, to all of which shall be specified in detail during the tendering stage.
- Any further items of equipment and accessories not listed above but considered essential by the tenderer, shall be detailed, and quoted for separately under the heading "Additional Requirements".
- Whether all essential renewable parts for the system will be readily available in the Republic of South Africa.

3.5. GENERAL

- The UPS equipment shall provide continuous interference free power to essential equipment.
- The equipment requiring the power is a critical load, which is sensitive to frequency deviations, voltage transients and voltage dips. The UPS system shall compensate for the variations in the input supply as any irregularities will affect the load.
- This aspect shall be carefully considered when executing UPS machines as the static UPS machines will be deployed to supply server equipment which has shown to have an extremely aggressive load profile.
- The UPS shall accept high crest factors (3:1) without derating to ensure correct operation with server equipment loads.
- The UPS shall comprise of the following major components for each system as numbered in the Detailed Technical section of this document:

- PFC Rectifier
- Battery charger
- Inverter
- Battery
- Automatic bypass [via a static switch]
- User and communications interface
- Battery management system

- The UPS shall be based on six-pack IGBT technology with built-in thermal monitoring and a Frequency chopping mode to dynamically optimise efficiency and power quality.
- Input power factor (pf) grater than or equal to 0.99

3.6. GUARANTEES

All equipment offered include batteries shall be guaranteed to be free of defects for a minimum period of 36 months or as per OEM supplier. Full details must be provided.

3.7. COMPLETION, TESTING AND CORRECTION OF DEFECTS

The work to be done by the Completion Date stipulated:

- On or before the Completion Date the Contractor shall have done everything required to provide the works including the work listed as per the scope of work which is to be done before the Completion Date and in any case before the dates stated.
- The Employer cannot certify completion until all the work listed on the scope of work has been done and is also free of defects, which would have, in his/her opinion, prevented the Employer from using the works and others from doing their work.
- All remedial work regarding the closing of holes and making right any areas affected by the works will be done by the Contractor and approved by the Civil Supervisor before sign-off for the works.
- The appointed Contractor to issue certificate of compliance of each UPS installation work after the completion of the works.

3.8. SAFETY

The *Contractor* shall:

- shall accept his obligation to complying fully with Transnet safety requirements.
- provide a written Health and Safety plan.
- provide a basic risk assessment that covers the work to be undertaken.
- Always keep a safety file.
- provide proof of induction before the commencement of the work.
- keep a site diary and instruction book.
- be responsible to arrange occupations.
- TNPA reserves the right to audit the Tenderer's office and workshop.
- allow for induction before starting work.

3.9. ENVIRONMENTAL RESPONSIBILITY

The *Contractor* shall:

- Separate hazardous or non-hazardous waste and where practical, waste for recycling prior to disposing thereof.
- Also undertakes to minimize the amount of waste generated or released, whether it is hazardous or non-hazardous waste, as far as possible to reduce the impact on the Environment.
- Undertake to dispose of all waste generated, albeit hazardous or non-hazardous waste in a responsible manner and submit proof of all disposal documents to the Project Manager.

PART C4: SITE INFORMATION

PART C4: SITE INFORMATION

Document reference	Title	No of page
	This cover page	1
C4	Site Information	2
	Total number of pages	**5**

PART 4: SITE INFORMATION

Core clause 11.2(16) states

"Site Information is information which

- describes the Site and its surroundings and
- is in the documents which the Contract Data states it is in."

In Contract Data, reference has been made to this Part 4 of the contract for the location of Site Information.

1. Description of the Site and its surroundings

1.1. General description

The area where the *works* will be performed is within the Port of East London Boundary. Access to the Port of East London and *works* site is Port Control server room, Port Admin server room and Grain Elevator server room, see annexure A. Access must be subject to the National Ports Authority security requirements and regulations, which should be obtained for all *Contractors'* personnel at CRD building, security offices.

The *Contractor* personnel will be required to have Identity documents or driver's licence whenever they access the Site and ensure that the PPE in the form of Safety boots, overalls during removal and installation, reflector vest and hard hats are always clothed.

Normal working hours at the Port of East London are from 07:00 to 16:30, Monday to Friday, Inclusive. Transnet National Ports Authority has a strict Health and Safety policy in place. No person(s) may enter the site and undertake work on the site until undergoing the mandatory induction. The induction must be arranged by the Port personnel at no cost to the *Supplier*. Prior arrangement must be made with the *Purchaser*.

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

The appointed *Contractor* will perform work on the mention buildings with existing Uninterruptible Power Supply (UPS) on each building.

The project scope also involves the installation and testing of UPS in each area so the appointed *Contractor* will have to work carefully as the server room have critical equipment and also ensure that the existing structures or services are not damaged during installation of UPSs.

1.3. Subsoil information

N/A

1.4. Hidden services

The *Contractor* is to apply care not to damage existing services during decommissioning, of exiting UPSs, installation, testing and commissioning of new UPSs. See project specification for further requirements.

1.5. Other reports and publicly available information

The *Contractor* will have to notify TNPA electrical personnel when coming to work on site.

Annexure A

Grain Elevator Server Room

Port Control & Port Admin Server Rooms