Freedom PARK
a heritage destination

an agency of the
Department of Sport, Arts and Culture

TENDER NO: FP 01/23 PO

NAME OF BIDDER: ……..

CSD NUMBER: ……..

Prepared by:
Freedom Park
Cnr Koch & 17th Ave
SALVOKOP
PRETORIA
0001
Tel: 012 336 4000

BID CLOSES	**DATE: 04 AUGUST 2023**

Only bidders registered on the central supplier database and with CSD Number will be considered for this tender as it is a requirement from National Treasury.

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BIDS ARE HEREBY INVITED FROM SUPPLIERS FOR THE FOLLOWING BID:

BID NO	DESCRIPTION	DEPART.	CONTACT PERSON	COMPULSORY BRIEFING SESSION	CLOSING DATE
FP01/23 PO	Appointment of a Service Provider for the Supply, Install and Commissioning of (HVAC), Airconditioning at the Gallery of Leaders, Freedom Park	Park Operations	Edward Buthelezi 012 336 4003	Date: 21 July 2023 Time: 10h00AM. Parking area next to restaurant	04 August 2023 . @11h00AM

BID DOCUMENTS CAN BE DOWNLOADED FROM :

www.freedompark.co.za and e-tender portal

SERVICE PROVIDER ARE TO COMPLY WITH FREEDOM PARK COVID 19 MEASURES BEFORE ENTERING THE SITE

Each Tender shall be enclosed in a sealed envelope, bearing the correct identification details, and shall be placed in the tender box located at
Freedom Park Administration Building
Cnr Koch & 7th Avenue
SALVOKOP
PRETORIA, 0001

Technical enquiries must be forwarded to Mr Ditiro Ramogayane Tel 012 336 4198 or e-mail to ditiro@freedompark.co.za

Supply Chain enquiries: Mr Edward Buthelezi, Tel 012 336 4003, e-mail edward@freedompark.co.za

Bids will remain valid for a period of 120 days after the closing date

Bids received after the closing date and time will not be considered. Freedom Park does not bind itself to accept the lowest or any other bid in whole or in part.

INDEX

1 VERY IMPORTANT NOTICE OF DISQUALIFICATIONS

A bid not complying with the peremptory requirements stated hereunder will be regarded as not being an "Acceptable bid", and as such will be rejected.

"Acceptable bid" means any bid which, in all respects, complies with the conditions of bid and specifications as set out in the bid documents, including conditions as specified in the Preferential Procurement Policy Framework Act (Act 5 of 2000) and related legislation as published in Government Gazette number 22549, dated 10 August 2001, in terms of which provision is made for this policy.

1. If any pages have been removed from the bid document, and have therefore not been submitted, or a copy of the original bid document has been submitted.
2. If the bid document is completed using a pencil. Only black ink must be used to complete the bid document.
3. The bidder attempts to influence or has in fact influenced the evaluation and/or awarding of the contract.
4. The bid has been submitted after the relevant closing date and time.
5. If any bidder who during the last five years has failed to perform satisfactorily on a previous contract with the Freedom Park or any other organ of state after written notice was given to that bidder that performance was unsatisfactory.
6. The accounting officer must ensure that irrespective of the procurement process followed, no award may be given to a person –
   (a) Who is in the service of the state, or;
   (b) If that person is not a natural person, of which any director, manager, principal shareholder or stakeholder, is a person in the service of the state;
   (c) Who is an advisor or consultant contracted with the Freedom Park in respect of contract that would cause a conflict of Interest?
7. Bid offers will be rejected if the bidder or any of his directors is listed on the Register of Bid 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
8. Bid offers will be rejected if the bidder has abused the Freedom Park Supply Chain Management System.
9 Failure to complete and sign the certificate of independent determination or disclosing of wrong information.

Failure to submit the above will lead to immediate disqualification.

Bidder Signature (compulsory)

CERTIFICATE OF AUTHORITY FOR SIGNATORY

Status of concern submitting tender (delete whichever is not applicable.)

COMPANY /PARTNERSHIP /ONE-PERSON BUSINESS / CLOSECORPORATION/ JOINT VENTURE

A. COMPANIES

If the bidder is a company, a certified copy of the resolution of the Board of Directors, personally signed by the chairperson of the board, authorizing the person to signs this bid to do so, as well as to sign any contract resulting from this bid and any other documents and correspondence in connection with this bid or contract on behalf of the company must be submitted with this Bid.

An example is shown below:

By resolution of the board of Directors on…….20….., Mr. / Ms …….

..……has been duly authorized to sign all documents in connection with

BID NO: **FP 01/23 PO**

SIGNED ON BEHALF OF THE COMPANY:

……..

IN HIS CAPACITY AS:

…….

DATE:
……

SIGNATURE OF
SIGNATORY: …….

WITNESSES:

1.

……

2.
……

B. PARTNERSHIP

The following particulars in respect of every partner must be furnished and signed by every partner:

Full name of partner	Residential address	Signature
……	……..	……..
……	……...	……
…….....	……	……

We, the undersigned partners in the business trading as ……

Hereby authorize …….. …… to sign this bid as well as any contract resulting from the bid and any other documents and correspondence in connection with this bid / or contract on our behalf.

……	…….	……
Signature	Signature	Signature
……	……	.,……..
Date	Date	Date

C. ONE-PERSON BUSINESS

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

……	……. ……
Signature	Date

D. CLOSE CORPORATION

If the case of a close corporation submitting a bid, a certified copy of the founding Statement of such corporation shall be included with the Bid, together with a resolution by its members authorizing a member or other official of the corporation to sign the documents and correspondence in connection with this bid or contract on behalf of the company must be submitted with this Bid.

An example is shown below:

By resolution of the members at the meeting on the …….200…….at ……Mr. / Ms ……whose signature appear below,

has been duly authorized to sign all documents in connection with

BID NO.FP 01/23 PO

SIGNED ON BEHALF OF THE CLOSE CORPORATION:

……..……..

IN HIS / HER CAPACITY AS: ……

DATE: …….

SIGNATURE OF SIGNATORY: ……

WITNESSES:1 . …….

2.……

Certificate of Authority for Joint Ventures

This Returnable Schedule is to be completed by joint ventures.

We, the undersigned, are submitting this bid offer in Joint Venture and hereby authorize

Mr. /Ms……. …., authorized

signatory of the company…….., acting in the capacity of lead partner, to sign all documents in connection with the bid offer and any contract resulting from it on our behalf.

NAME OF FIRM	ADDRESS	DULY AUTHORISED SIGNATORY
Partner		Signature. . . . . …. Name …… Designation …….
		Signature. . . . . …. Name …… Designation …….
		Signature. . . . . …. Name …….. Designation ……
		Signature. . . . . …. Name …….. Designation …….

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Appointment of a Service Provider for the Supply, Install and Commissioning of (HVAC), Airconditioning at the Gallery of Leaders, Freedom Park

SPECIFICATION OF HVAC WORKS FOR GOL FREEDOM PARK

SECTION-1

1.1 SCOPE (General)

This specification, together with the schedule of quantities and tender drawing(s) enclosed, covers the design, manufacture, assembly and testing at manufacturer's works, delivery to site, installation, testing & commissioning into service, carrying out all acceptance tests, for the HEAT PUMP Air-conditioning and ventilation systems for Freedom Park GOL in Pretoria in Gauteng Province.

1.2 LOCATION

The proposed building for Freedom Park is located at Corner Koch and 7th Avenue Salvokop, Pretoria, 0001

1.3 AREAS TO BE AIR-CONDITIONED AND VENTILATED ARE AS PER ENCLOSED DRAWINGS:

Refer to **drawings for HVAC A & B - BOQ**

1.4 BASIS FOR DESIGN AND SYSTEM PROPOSED:

1 .4.1 based on SANS 10400 air conditioning requirements, the following floor areas were considered for the provision of air conditioning system. A heat pump type of HVAC system using the zero-ozone depletion potential R410A refrigerant gas is proposed for the building owing to the higher efficiency and increased controllability.

Based on the local climatic conditions indicated below, the HVAC cooling loads were worked out based on simulation. This was the basis used to determine the size of the HVAC system.

1.4.2 BUILDING THERMAL DESIGN

1.4.2.1 Roof Construction
U-VALUE (W/m2K) = 0.4

1.4.2.2 Wall Construction
U-VALUE (W/m2K) = 1.122

1.4.2.3 Floor Construction
U-VALUE (W/m2K) = 1.1

1.4.2.4 Penetration
a) Glazing 6.38mm Solar value

Light Transmission	40%
Light Reflection	11%
Solar Total Elimination	63%
Solar Reflection	12%
Solar Absorption	68%
Solar Direct Transmission	23%
Solar Total Transmission	37%
Shading Coefficient	0.42
U Value W/m2 C	3.4%
Sound Control	

1.4.3 INTERNAL LOADS CONSIDERED:

The design is based on CSIR report 300 “Climatic and other design data for Evaluating Heating and Cooling requirements in Buildings” with the view of the following weather parameters:

The following weather parameters for the town of Pretoria shall be used on the project:

- ❖ Elevation (1339m)
- ❖ Design DB Temperature (35.1˚C)
- ❖ Design WB Temperature (17.6˚C)
- ❖ Set temperature (23 ±1˚C)
- ❖ Maximum DB temperature (36˚C)
- ❖ Relative Humidity, RH (50%)
- ❖ Barometer (86 .380 kPa)
- ❖ Outside air speed (5m/s)
- ❖ Each air conditioned space is to have individual controls
- ❖ Minimum energy requirements will be in accordance with section 803.2.1 of the 2003 IECC (International Energy Conservation Code)
- ❖ All rotating equipment particularly fans, should be designed in such a way that they statically and dynamically balanced.

DESIGN PARAMETERS

- Lighting load: 10 W per sq.m
- Equipment load: 80 W per sq. m
- Occupant densities: Offices 12 m2/person
- Boardrooms/meeting Rooms 2.5 m2/person
- Canteen/Tea Rooms 5 m2/person TV
- Common Rooms 5 m2/person
- Server Room 12 m2/person
- Indoor Conditions for Air Conditioning Areas: Temperature: 22 ± 2 °C
- RH: Not exceeding to 55 % RH

1.5 SCOPE

The air-conditioning and ventilation system shall mainly consist of the following equipment and accessories (as per Schedule of Quantities):

1.5.1. It is proposed to provide a heat pump HVAC system by providing R410A refrigerant (or equivalent CFC free refrigerant) heat recovery outdoor units, located on the roof.

1.5.2. Fan Coil Units

1.5.3. Fresh air fan
1.5.4. Insulated refrigerant piping, Indoor Units Wired Control & power cabling.
1.5.5. Electrical power & control panel.
1.5.6. Condensate drain piping system.
1.5.7. Galvanised Iron fresh air ducting insulated on the outside.
1.5.8. Any other components or works necessary for the satisfactory completion of the work shall be in the scope of the HVAC Contractor including Some Civil/Builders work related to HVAC works e.g. opening and closing of holes etc.

2. SECTION 2

GENERAL SPECIFICATION

2.1 SCOPE

This scope under general conditions together with the tender drawings, and the schedule of quantities covers the design, manufacture, assembly and testing, packing for transport to site, transport, loading and unloading, handling of equipment at site, erection, testing and commissioning into service, carrying out all the acceptance tests and handing over the heat pump HVAC System to Client.

2.2 BUILDING CONSTRUCTION

The building details are available with the Client. Agents may collect relevant data for reference.

2.3 MATERIALS AND WORKMANSHIP

All materials used shall conform to the requirements of materials specified in this specification and Green Building Council of South Africa (GBCSA). Where material requirements are not specified, they shall conform to the applicable standards and codes approved by the Client. All materials shall be new, free from defects and first class in all respects. Parts shall be free from flaws and objectionable imperfections and shall be machined true in a workman like manner. No deviation from the specified materials is permissible unless otherwise by written consent by the Mechanical Engineer or Client representative. Wherever materials are not specifically called out, they shall be properly selected by the contractor to the best standards for the particular application and with the prior approval of the Engineer.

2.4 STANDARDS & CODES

The design, manufacture and performance of all equipment shall comply with all current applicable statutory regulations and safety codes in the locality where the equipment will be installed. The equipment shall also conform to the requirements of the latest editions of applicable SABS/ CIBSE and ASHRAE standards and any clearances if required. The contractor shall refer to the relevant sections of this specification for equipment standards and codes. Nothing in this specification shall be construed to relieve the contractor of his responsibility.

2.5 TENDER DRAWINGS

2.5.1 A List of the Tender Drawings which have been prepared by the Mechanical Engineer showing the locations & system equipment layout and schematic diagrams for the VRF HVAC system works are enclosed.

2.5.2 The equipment layout, duct layouts & pipework as shown in the drawings represent a feasible scheme based on spaces available and the necessary equipment. The contractor may rearrange the setup in the space(s) allocated subject to the approval of the Engineer and the Client

2.5.3 On completion of the works, the contractor shall be required to submit Six (6) off hard copies of “As built drawings" including a readable soft (electronic) copy of the drawings cut on a CD to be kept by the Client.

2.5.4 Where the drawings and specifications conflict, the more stringent shall be followed. The instructions of Engineer or its representative shall be final & binding. The Tenderers shall point out all discrepancies between the drawings and the specifications in their offer and shall explicitly specify / confirm any works not included in the scope. Nothing extra shall be paid for on any other account thereafter unless otherwise instructed by the Engineer or Client.

2.6 NSTRUCTIONS

The contractor's proposal must include everything required to make the installation a complete working system with all statutory approvals whether or not specifically shown and specified including all labour and materials, transportation etc. necessary for the complete installation of everything described and provided to complete the system and ready for Owner's use. It shall be the responsibility of the tenderer to check the suitability & site constraints for installing all the systems on site.

The contractor shall include any apparatus, appliances, materials and labour which may be necessary to complete the works in accordance with the intent or purpose of these specifications and as instructed by the Engineer. The execution of the project shall be carried out by the contractor without extra cost irrespective of whether explicitly specified in and/or indicated on the drawings, or not.

The works shall be done in conformity to the specifications, accompanying the drawings and with the requirement of the General, Architectural, Structural plans, and other regulatory and statutory bodies including the Department of Health, if required.

2.7 INSPECTION AND TESTING (GENERAL)

2.7.1 The contractor shall perform all tests and inspections necessary to ensure that the materials and workmanship conform to the requirements of the contract including fabrication drawings approved by the Department or their authorized representatives.

2.7.2 The Engineer or His/her authorized representative shall have access to the contractor's or sub-contractor's works at all reasonable times to determine compliance with the provisions of this specification and/or to witness the contractor's inspection and tests.

2.7.3 All tests covered by this specification shall be subject to inspection and approval by the Mechanical Engineer.

2.7.4 The contractor shall maintain records of all inspection works carried out on his works or his sub-contractor's works. Copies of such records shall be made available to the client upon request and shall become the property of the Client. A procedure for the repair of defects shall be submitted to the Client for approval, prior to any repair modifications being made.
If the previous quality test and inspection are impaired by the subsequent repairs, the work shall be re-inspected and re-tested to the satisfaction of the Purchaser or his authorized representative. Equipment found unsatisfactory as to workmanship or material shall be removed by the contractor and replaced to the satisfaction of Mechanical Engineer at no extra cost.

2.7.5 All materials of components, castings, equipment, piping, instruments etc. shall be tested and inspected in the presence of the Engineer or his authorized representative. Test certificates of all imported components shall be made available for approval of the Mechanical Engineer.

2.7.6 Final acceptance shall be after the equipment is installed and tested on site to give satisfactory performance.

2.7.7 The Contractor shall provide the Mechanical Engineer, necessary equipment and tooling instruments, drawings and personnel etc. required for inspection of the work.

2.7.8 Strict measures of quality control shall be exercised throughout the work.

2.7.9 Static and dynamic balancing of all rotating parts shall be conducted in the presence of the Mechanical Engineer or his authorised representative.

2.7.10 The contractor shall submit the following documents before acceptance: Six(6) sets of

2.7.10.1. All the tests observations.

2.7.10.2. All the operation & maintenance manuals.

2.7.10.3. Leaflet & literature

2.7.10.4. Test Certificate

2.7.10.5. Guarantee Certificate

2.7.10.6. Person to be contacted during Guarantee period.

2.7.10.7. As-built drawings with soft copy.

2.8 TESTS ON SITE

2.8.1 During site fabrication, the pipe branches, elbows etc., shall be inspected and the joints and connections are to be checked before they are assembled in position. After assembly, the system shall be checked for leakages, vibrations and noise

2.8.2 After the complete erection of the system with all accessories installed on site, these shall be tested as per applicable CIBSE codes (unless otherwise specified) to check and access their functional performance. The tests shall be conducted on site in the presence of the Mechanical Engineer or his representative. Such tests shall include but not limited to the following:

(a) To check the capability to deliver rated capacity, power consumption and performance factors after the installation of the entire piping, ventilation, ducting systems etc.

(b) To check the capability of piping systems to deliver rated flow capacities after the installation of the Valves & entire piping networks.

(c) To check the proper and continuous reliable operation of the system equipment & controls regulating the equipment for a period of minimum seventy two (72) hours, after the complete installation of system.

(d) Leak testing of the pipework, fittings, connections etc. as applicable

(e) To check noise and vibrations etc.

(f) Any other tests as required to check compliance with specification and system requirements by statutory bodies, DID & any other local authority for these systems in serv

2.8.3 All the required instrumentation, consumables & services for the above tests shall be provided by the contractor at no extra cost and are deemed to be included in the contractor’s offer

2.9 TESTING, BALANCING AND COMMISSIONING

Comprehensive pre-commissioning, commissioning as well as quality monitoring and control shall be carried out on all the mechanical systems including VRF units, fans, air distribution systems and DX air handling units in a systematic manner and in accordance with the latest CIBSE Commissioning Codes. Fans, air distribution systems shall be commissioned in accordance with CIBSE codes M & A. On completion of the contract, the contractor shall be required to provide training and system knowledge to the building owner/manager by submitting a documented design intent, As-built drawings, Operational and Maintenance Manuals as well as Commissioning Reports. In addition, the contractor shall provide training on all the systems to the building owners' building management staff. Full testing and commissioning procedures for individual equipment and for the entire systems shall be submitted.

The training provided must include the following:

- ❖ Review of controls setup, programming, alarms and troubleshooting;
- ❖ Review of O&M manuals;
- ❖ Building Operation (start up, normal operation, unoccupied operation, seasonal changeover, shutdown);
- ❖ Measures that can be taken to optimize energy efficiency;
- ❖ Occupational Health and Safety (OH&S) issues;
- ❖ Maintenance and servicing requirements and sourcing of replacements; and
- ❖ Obtaining and addressing occupant satisfaction feedback.

2.9.1 OLERANCES

The indoor climate factors and air flow rates, heating, cooling and humidifying performances, electrical characteristics and other design data shall be measured at the ventilation system design air flow rate. Tolerances of the measured values in respect of the selection of the measuring equipment are given in the following table:

PARAMETER	UNCERTAINTY *
Air flow rate, each individual room	± 20%
Air flow rate, each system	± 15%
Smoke extract	0-20%
Supply air temperature	± 2°C
Relative Humidity [RH]	± 15% RH
Air velocity in occupied zone	± 0,05 m/s
Air temperature in occupied zone	± 1,5°C
A-weighted sound pressure level in the room	± 3 Dba

The uncertainties include the permitted deviations from the design values as well as any measuring error.

If the performance of the system requires closer tolerances, this shall be specially defined in the documentation of the system. If product standards, national or local regulations require closer tolerances, this shall be adhered to.

2.10 SPARES AND TOOLS

2.10.1 Spares:

The contractor shall offer a complete list of recommended spare parts for the equipment supplied along with the cost related to the items required for a period of three years satisfactory maintenance of the System

2.10.2 Tools:

All special tools required for the operation and maintenance of the system shall be supplied by the contractor at an agreed cost.

2 .11 GUARANTEES

2.11.1 Equipment Guarantee:

The contractor shall guarantee the trouble free & efficient performance of the System for the design capacity. One year period (12 months excluding shut down period due to fault) from the date of acceptance will be treated as the Maintenance and Guarantee Period. The contractor shall attend to all the faults and replace all defective materials (including consumables like refrigerant oil etc.) free of cost during the guarantee period. Major equipment parts shall be guaranteed for a further one year, from the date of replacement. Any leakage of lubricants due to defective manufacturing or bad workmanship shall also be made good by the contractor at no additional charge.

2. 11.2 The contractor shall further guarantee the system for optimum operation, and that the power consumption shall not exceed, under any operating conditions the value specified in the Technical Data Sheets.

2. 11.3 No inspection & clearance either in verbal or written shall relieve the contractor of any of his responsibilities & guarantees

2.12 TECHNICAL DATA

Technical data for all equipment shall be furnished to the Mechanical Engineer as and when required.

2.13 AFTER SALE SERVICE

The contractor shall ensure adequate and prompt after sales service in the form of maintenance personnel and spares as and when required with a view to minimizing the system break down period. Adequate measures shall be taken by the contractor to ensure that all spares are readily available during the normal economic life span of the system.

2.14 INSURANCES

The bidder shall insure at his own cost all the men and materials during Transit from his factory to the execution site till the systems are handed over to the Client including damage done to others as per work order specification, schedule of quantities, and drawings. The more stringent shall only be followed.

3. SECTION – 3a

BUILDING

VENTILATION AND AIR-CONDITIONING

VENTILATION

All rooms shall be ventilated and lit in accordance with and as required by the National Building Regulations and SANS unless otherwise specified. Building to be designed for optimum natural ventilation and lighting.

Artificial Ventilation

The following minimum air changes and fresh air requirements shall apply where artificial ventilation is required and supplied.

SPACE HEATING

All areas shall be supplied from Fan coil units with linear diffusers. The outdoor units to be located outside shall feed all the Fan coil units. Supply air fans shall be installed that supply fresh air to the building.

TECHNICAL SPECIFICTION FOR VARIABLE REGRIGERANT FLOW SYSTEMS

3.1 SYSTEM DESCRIPTION

Heat Pump HVAC is an air conditioning system configuration where there is one outdoor air cooled condensing unit linked or connected to multiple indoor units. The evaporators (indoor units) are each provided with Wired Remote Control in Open plan areas. The system shall be equipped with a Micro-Processor which shall enable the entire HVAC system to monitor

(a) Temperature of air in the room / area served by any indoor unit.
(b) Indication of the number of indoor units and outdoor units working
(c) On / off of individual indoor units.
(d) shall be possible to change the setting of temperature of indoor units.
(e) shall be possible to change the setting of temperature of indoor units.
(f) shall be possible to change the setting of temperature of indoor units.

3.2 AMBIENT CONDITIONS

The system shall be capable of operating within a wide range of ambient temperatures. The Condensing units shall be capable to provide cooling within an ambient temperature range of – 50 degrees C to 320 degrees C DB. The regulation of refrigerant flow is to be achieved by Scroll Compressors head pressure control (by varying fan speeds) & hot gas bypass connections etc.

3.3 REFRIGERANT

The entire condensing units and evaporating units shall be factory assembled and tested. The units shall come with an initial charge of the Zero Ozone Depletion potential refrigerant, R410a or any other refrigerant with the same Ozone Depletion Potential of zero. Any additional refrigerant required shall be added on site without any extra cost to the client. Loss / leakage of refrigerant gas due to defects of equipment or workmanship shall also be re-filled up at no extra cost during construction and up to and including the Maintenance and Guarantee period.

3.4 REFRIGERANT PIPING DISTANCE LIMITS

The entire condensing units and evaporating units shall be factory assembled and tested. The units shall come with an initial charge of the Zero Ozone Depletion potential refrigerant, R410a or any other refrigerant with the same Ozone Depletion Potential of zero. Any additional refrigerant required shall be added on site without any extra cost to the client. Loss / leakage of refrigerant gas due to defects of equipment or workmanship shall also be re-filled up at no extra cost during construction and up to and including the Maintenance and Guarantee period.

3.4 REFRIGERANT PIPING DISTANCE LIMITS

The system shall be capable of refrigerant piping runs up to 150m between the condensing unit and indoor units with a 50m level difference without any oil traps or double risers. The oil equalizing line should be inside the Condensing unit, to avoid ‘inverted’ oil traps at site. The level difference between indoor units connected to the same refrigerant circuit can be extended to 40m

3.5 REFRIGERANT PIPEWORK

The scope of Refrigerant Piping work shall include the supply, delivery, installation, testing and commissioning of all interconnecting pipework between the condensing units and the indoor units. Quality seamless refrigerant copper tubes with brazed connections and the appropriate distribution joints and headers shall be used. The piping shall be routed in such a manner, that brazed joints in the refrigeration piping are kept to a minimum. Test results and / or reports of refrigerant pipes to be provided as per:

- ❖ CIBSE: Guide B; Heating, ventilating, air conditioning and refrigeration
- ❖ SANS 1123:2007: Pipe flanges
- ❖ SANS 12400:2011: The application of the National Building Regulations.
- ❖ SANS 60204: Safety of machinery - Electrical equipment of machines
- ❖ OHS Act No. 85 of 112123: Occupational Health and Safety Act No. 85 of 112123

All refrigerant pipes are to be tested for conformance to relevant standards.

3.6 JOINT ORIENTATION

Install the proprietary distribution refrigeration pipe joints and headers in an appropriate orientation in accordance with the manufacturer's specifications and recommendations to enable correct distribution of refrigerant. The distribution joints shall be factory insulated with pre-formed sections of expanded polystyrene or equivalent.

3.7 CLEANLINESS OF PIPING

All pipe work must be kept clean and free from contamination to prevent unnecessary system down time. All pipe ends must be capped and sealed and kept so until immediately prior to making a joint.

3.8 PRESSURE TESTING

On completion of the entire refrigerant pipe work installation, the pipework shall be pre-pressure tested and repaired if necessary and further pressure tested to hold 1.5 times of working pressure for a minimum 24 hours with dry nitrogen prior to insulating the joints. After satisfactory testing, the refrigerant pipes shall be evacuated and dehydrated to (- 755 MM HG) and hold for one to four hours depending on the pipe length.

3.9 ADDITIONAL CHARGE

Additional refrigerant charge weight must be calculated based on the actual length of the refrigerant pipe work. The refrigerant charging process must be carried out with an appropriate charging station and under the supervision of the Mechanical Engineer.

3.10 PIPING INSULATION

Insulate all suction lines in the Refrigerant pipe work with slip on closed cell. Nitrile Rubber electrometric pipe insulation having a wall thickness of not less than 15mm. Insulation must be protected when exposed to the atmosphere by special paint & mechanical covering. Glue all insulation (after pressure and leak testing) to provide a complete seal to prevent any condensation.

3.11 FIXING PIPE WORK

Fix and support pipe work at a minimum of 2.5 meter centres including a suitable saddling arrangement. Cover the exposed Refrigerant pipes on the terrace with openable GI Cable trays / walk able platform.

3.12 INDOOR UNITS

The indoor units shall be Fan coil units as shown in drawings and site constraint. All indoor units shall be provided with wired controllers.

ELECTRONIC EXPANSION VALVE

Each indoor unit shall be fitted with an electronic expansion valve which controls the refrigerant flow in response to the load variations in the room. The electronic expansion valve is to be controlled via a computerized controller which senses the return air temperature, refrigerant inlet and outlet temperatures. During the cooling operation the electronic expansion valve controls the refrigerant superheat degree at the evaporator.

INDOOR UNIT FANS

Direct driven DIDW multi-blade type blowers shall statically and dynamically balanced to ensure low noise and vibrations during operation. The noise level shall not exceed 35 DBA.

COOLING COILS

To be direct expansion constructed from copper tubes expanded into Aluminium fins to form a rigid mechanical bond.

3.13 SUPPLY AIR DISCHARGE LOUVERS

The indoor units shall be provided with auto swing of the supply air louvers for fan coil units. The louvers should be capable of providing continuous swing operation or to be fixed in any direction required.

3.14 UNIT CONTROL BOARD

It shall Include in the indoor unit a printed circuit board complete with, address switches for a variety of operation controls, emergency operation switch and fault / operation indication LED's. The fan motors shall be thermally protected.

3.15 UNIT CASING

The indoor unit casing (ceiling mounted units) to be fully insulated and sealed to prevent condensation.

3.16 CONDENSATE DRAIN

The Drain connection of each indoor unit to the main Header should be of Min.25mm dia. The header pipe should be of 25mm dia. The drain pipe should be of hard PVC, whereas the connection of the indoor unit to the hard PVC pipe / GI pipings shall be with flexible braided pipe. The drain piping should be directed to storm water drainage pipes and the cassette type units shall be provided with condensate drain water pump it should lift the water to the drain headers automatically.

3.17 UNIT CONTROL

In case of individual and group control, set the addresses of each indoor unit to minimize commissioning time. In case of centralized control, set the addresses by the remote controller.

3.18 CONDENSING UNITS

To be fully weather proofed, factory assembled and pre-wired with all necessary electronic and refrigerant controls. Construct the casing from mild steel panels coated with a baked enamel finish and powder coatings. The condenser coil fins shall be provided with a corrosion resistant finish.

3.19 LARGER CONDENSING UNITS

Incorporate minimum 2 compressors in condensing units above 7.5 HP with at least one variable speed Scroll type compressor.

3.20 MODULER DESIGN

Allow for side by side installation by the modular design of the condensing units

3.21 FAN MOTOR SPEED CONTROL

The condensing unit fan motors to have at least two speed operations to maintain constant head pressure control in all ambient temperatures and modes of operation.

3.22 COMPRESSORS

Compressors shall be highly efficient hermetic scroll/inverter type. The Scroll shall be compressors with electronic controls, capable of loading and unloading to follow the variations on cooling oads, using the latest axial compliant sealing technology. The microprocessor panel should incorporate control for precise monitoring of status of the system. The electromagnetic interference & conversion losses shall be minimized.

3.23 REFRIGERANT CIRCUIT

The refrigeration circuit shall be completed for the condensing units with refrigeration compressors, motors, fans, condenser coils, electronic expansion valve, solenoid valves, 4 way refrigerant valve, distribution headers, capillaries, filters, shut down valves, service ports, receivers and accumulators and all other components which are essential for safe and satisfactory operation.

3.24 SAFETY DEVICES

Provide the following safety devices as a part of the outdoor unit. High pressure switch, fuses, crank case heater, fusible plug, over current protector.

3.25 OIL RECOVERY

Equip the unit with an oil recovery system to ensure stable operation for systems with long refrigerant piping.

3.26 CO NT R O L

Use computerized control to maintain a correct form of temperature. For the indoor units incorporate an on /off switch, fan speed selector, thermostat setting and liquid crystal display which indicates temperature setting. Operational mode, malfunction codes etc.

3.27 INDOOR UNIT CONTROL

Accomplish by the use of individual controllers for each indoor unit.

3.28 F A U L T DIAGNOSIS

The system shall be equipped with a diagnostic function for quick and easy maintenance and service

3.29 NOISE LEVEL

The contractor shall ensure that systems provided shall not cause or exceed following noise levels:

1. 1 m away from outdoor units - 70 dba

2. 1 m away from indoor units - 35 dba

Contractor should clearly state any special treatment if necessary to achieve above noise levels.

3.30 VI B RA T I O N LEVELS

The contractor shall ensure that systems shall not cause or exceed the vibration levels and they shall be within limits as per standards.

3.31 REFRIGERANT JOINTS (REFNETS)

All the refrigerant joints shall be proprietary in nature from the main VRF supplier. It should have one inlet and two outlet connections, both for suction and liquid line of respective size of the refrigerant piping along with its insulation. The refrigerant joint should be designed and supplied by the supplier of VRF indoor and outdoor unit manufacturer.

3.32 CENTRAL REMOTE CONTROLLER

Central Remote Controller shall be supplied as specified in the Schedule of Quantities.
Following functions shall be possible;

- Control not less than 64 indoor units in each controller and not less than 16 outdoor units in each controller
- Zone control
- Malfunction code display
- All the functions available with wired remote controller
- It should be possible to wire the remote to 1200 m

3.33 FRIGERANT PIPING

Piping shall be refrigerant grade hard copper piping as required. Pipe jointing shall be done using special fittings. Refrigerant pipe joints supplied by VRF manufacturer shall be provided where required.

Piping jointing shall be of the brazed type. The piping shall be tested at 30 kg/cm2. The indoor and outdoor units shall be connected with refrigerant piping. All piping connections for the units should be performed inside the unit. The refrigerant piping should be insulated with 112 mm thick Nitrile rubber insulation.

Brazing shall be carried out to the compliance of SANS 12238 using silver soldered brazing rods. Purge gas shall be nitrogen, 1212% pure. Purge gas flow rate shall be in the range of 5 to 20 SCFH (8.5 to 34 CM/hr) and flow continuously during the brazing process. Purge gas shall flow until the brazing is cool to the touch.. Compression fittings will not be accepted on refrigerant pipe work. After insulation of the complete piping the same shall be tested with nitrogen at 450 psi pressure. All records shall be kept in accordance with CIBSE commissioning codes. Upon leakage of joints after testing, the contactor shall be responsible for the remedial costs and the work shall be done to the satisfaction of the engineer.

After successful pressure the pipe work the same shall be vacuumed and vacuum shall be maintained for 8 hours, vacuum shall be achieved using a vacuum pump. The vacuum shall be broken by refrigerant. This exercise shall be carried out twice before the department's representative before charging the refrigerant in the circuit.
All connections of refrigerant piping shall be in high grade copper of refrigeration quality.

4. SECTION – 4

TECHNICAL SPECIFICATION FOR AIR DUCTS

4.1 SHEET METAL WORK (DUCT WORK) (Wherever applicable)

The Contractor shall supply, install and test all metal duct work complete with air balancing and commissioning as shown in drawings. All such working drawings shall be approved by the Engineer or his Representative. The duct work shall commence only after such approval is obtained from the Engineer.

4.1.1 Duct work Sheet Metal

Duct shall be made of galvanized steel sheets. Galvanized steel sheets shall conform to:

SANS 1238:2007-2005 :	Cotton eyelet fabric
SANS 12173-2003 :	**The installation, testing and balancing of air- conditioning ductwork**
SANS 1222:	**20012 : Metal roofing tiles**
SANS 1238:2005 :	**Air-conditioning ductwork**
SANS 1123:2004 :	Fire dampers
SANS 12400:2011 :	The application of the National Building Regulations.
SANS 60204 :	Safety of machinery - Electrical equipment of machines

OHS Act No. 85 of 112123: Occupational Health and Safety Act No. 85 of 112123 as amended.

4.1.2 Installation

The duct fabrication and installation shall generally conform to **SANS 1238:2005**. The Contractors shall provide and neatly erect all sheet metal work a as shown on drawings as may be required to carry out the intent of these specifications and Tender drawings. All necessary allowances and provisions shall be made by the Contractor for beams, pipes or other obstruction in the buildings whether or not the same shown on the drawings. Where necessary to avoid beams or other structural work or plumbing or other pipes or conduits, the ducts shall be transformed, divided or curved to one side the required area being maintained. All metal work in dead or furred down spaces shall be erected in time at no occasion to delay to other contractors work in the building.

Ducting over false ceiling shall be supported from the slab above and from beams.In no case shall the duct be supported from the false ceiling hangers or be permitted to rest on ceiling. If a duct cannot be run as shown on the drawing the Contractor shall install the duct between the required points by any path available subject to the approval of the Mechanical Engineer.

All ducts shall be rigid and shall be adequately supported and braced where required with standing seams, tees or angles should be of ample size to keep the ducts true to shape and prevent buckling vibrations or breathing.

All joints shall be made air tight and all interior surfaces shall be smooth. Bends shall be made with a radius not less than one half the widths or the duct or with scientifically designed interior curved vanes, as approved. The vane shall be so placed that the aspect ratio of each of the individual elbow formed by the vanes will be about five.

All sheet metal connection, partitions and plenums required to continue the flow of air to and through the filters and fans, shall be constructed of 18G galvanized steel sheets thoroughly stiffened with adequate thick MS angle iron braces and fitted with all necessary doors and as required by the Engineer-in- charge to give access to all parts of the apparatus. Doors shall not be less than 450mm x 450mm in size.

Where metal ducts or sleeves terminate in woodwork, brick or masonry openings, air tight joints shall be made by means of closely fitted heavy flanged collars.

Doors shall be set in ducts and air plenums for access to pipes dampers, coils, valves, etc. Doors shall be provided with suitable latches. All access doors in the duct work shall be air tight.

The Fresh air handling units / HRV units, supply air grilles shall be connected to duct work by inserting at air inlet and air outlet double canvas sleeve / flexible air ducts as required. Each sleeve shall be 120 mm long minimum securely banded and bolted to duct and units. Each sleeve shall be made smooth and the connecting duct work rigidly held in line with unit inlet or outlet.

Duct shall be supported by means of painted MS rod or angle (min.12 mm dia) or angle suspenders hung from RCC slab by means of expansion bolts or anchor fasteners min. 12 mm dia.

4.1.3 Testing and commissioning

After the ducting installation is completed, all duct system shall be tested and commissioned for air leakage, structural arrangement and joint air tightness as per CIBSE Code A. The contractor shall test all the ducting, joints and others very carefully in the presence of Engineer-in-charge or his representative. Any test without Engineer-in-charge's approval will be treated as null and void.

The entire air exhaust system shall be balanced to the air quantities as designed & the final balance of air quantities shall be recorded, submitted to the Engineer-in-charge for approval. Air balancing operation shall be supervised by qualified competent representative of the contractor who shall be present at the job site continuously for such work.

The volume of air captured at every hood shall be determined by the use of revolving vane anemometer and shall be used along with the stop watch to determine average velocity over the grille face. The louver setting of the grilles and deflection shall be fixed as to provide most uniform, draft-less distribution over the entire area served. Anemometer calibration correction factor and grille flow rate factor shall be taken into account while computing air delivery.

4.1.4 Painting

Ducts, hangers, supports, diffusers and grilles wherever required shall be painted with two coats of approved epoxy paint over epoxy primer.

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Ducts, hangers, supports, diffusers and grilles wherever required shall be painted with two coats of approved epoxy paint over epoxy primer.

4.1.5 Schedule of thickness for Duct work as per SANS 1238:2005

Max. Side (mm)	Thickness of Sheet		Type of Transverse joint connections	Bracing
	GI Sheet	Aluminium Sheets		
Up to 300	0.63	0.80	S-Dive, pocket or Bar slips, on max. 2.5 m	None
301 to 600	0.63	0.80	S-Dive, pocket or Bar slips, on max. 2.5 m	None
601 to 750	0.63	0.80	S-Drive, pocket or Bar slips on 2.5m centres	25 x 25 x 3 mm M.S angles. 1.2 m from joint
751 to 1200	0.80	1.00	S-Drive, pocket or Bar slips on 2.5m centres	25 x 25 x 3 mm M.S angles. 1.2 m from joint
1201 to 1500	0.80	1.00	S-Drive, pocket or Bar slips on 2.5m centres	40 x 40 x 3 mm M.S angles. 1.2 m from joint
1501 to 2250	1.00	1.50	40 x 40mm Angle connections or 40mm pocket or 40mm bar slips	40 x 40 x 3 mm diagonal angles or 40 x 40 x 3mm
2251 & above	1.25	1.80	50 x 50mm Angle connections or 40mm pocket or 40mm bar slips	40 x 40 x 3 mm diagonal angles or 40 x 40 x 3mm

5. SECTION – 5

Technical Specification for Electrical works

GENERAL DESCRIPTION

The electrical works pertaining to this VRF air conditioning works i.e. medium voltage power panel (wall mounted or floor mounted) & installation of Power & control cables etc. shall be as per the relevant SABS & International relevant standards.

5.1 CONDUIT AND ACCESSORIES

The type of conduit and accessories required for the service, i.e. whether the conduit and accessories shall be of the screwed type, plain-end type or of the non-metallic type and whether metallic conduit shall be black enamelled or galvanised, is specified in Part 2 of this specification.

Unless other methods of installation are specified for certain circuits, the installation shall be in conduit throughout. No open wiring in roof spaces or elsewhere will be permitted.

The conduit and conduit accessories shall comply fully with the applicable SABS specifications as set out below and the conduit shall bear the mark of approval of the South African Bureau of Standards.

a) Screwed metallic conduit and accessories: SABS 1265, parts 1 and 2.
b) Plain-end metallic conduit and accessories: SABS 1265, parts 1 and 2.
c) Non-metallic conduit and accessories: SABS 1250

All conduit fittings except couplings, shall be of the inspection type. Where cast metal conduit accessories are used, these shall be of malleable iron. Zinc base fittings will not be allowed.

Bushes used for metallic conduit shall be brass and shall be provided in addition to locknuts at all points where the conduit terminates at switchboards, switch-boxes, draw- boxes, etc.

Draw-boxes are to be provided in accordance with the “Wiring Code” and wherever necessary to facilitate easy wiring. For light and socket outlet circuits, the conduit used shall have an external diameter of 20mm. In all other instances the sizes of conduit shall be in accordance with the “Wiring Code” for the specified number and size of conductors, unless otherwise directed in part 2 of this specification or indicated on the drawings.

Only one manufactured type of conduit and conduit accessories will be permitted throughout the installation.

Running joints in screwed conduit are to be avoided as far as possible and all conduit systems shall be set or bent to the required angles. The use of normal bends must be kept to a minimum with exception of larger diameter conduits where the use of such bends is essential.

All metallic conduits shall be manufactured of mild steel with a minimum thickness of 1,2mm for plain-end conduit and 1,6mm in respect of screwed conduit. Under no circumstances will conduit having a wall thickness of less than 1,6mm be allowed in screeds laid on top of concrete slabs**.**

Bending and setting of conduit must be done with special bending apparatus manufactured for the purpose and which are obtainable from the manufacturers of the conduit systems. Damage to conduit resulting from the use of incorrect bending apparatus or methods applied must on indication by the Department’s inspectorate staff, be completely removed and rectified and any wiring already drawn into such damaged conduits must be completely renewed at the Contractor’s expense.

Conduit and conduit accessories used for flameproof or explosion proof installations and for the suspension of luminaires as well as all load bearing conduit shall in all instances be of the metallic screwed type.

All conduit and accessories used in areas within 50 km of the coast shall be galvanised to SABS 763.

Tenderers must ensure that general approval of the proposed conduit system to be used is obtained from the local electricity supply authority prior to the submission of their tender. Under no circumstances will consideration be given by the Department to any claim submitted by the Contractor, which may result from a lack of knowledge in regard to the supply authority's requirements.

5.2. CONDUIT IN ROOF SPACES

Conduit in roof spaces shall be installed parallel or at right angles to the roof members and shall be secured at intervals not exceeding 1,5m by means of saddles screwed to the roof timbers.

Nail or crumpets will not be allowed.

Where non-metallic conduit has been specified for a particular service, the conduit shall be supported and fixed with saddles with a maximum spacing of 450 mm. The Contractor shall supply and install all additional supporting timbers in the roof space as required.

Under flat roofs, in false ceilings or where there is less than 0,12m of clearance, or should the ceilings be insulated with glass wool or other insulating material, the conduit shall be installed in such a manner as to allow for all wiring to be executed from below the ceilings.

Conduit runs from distribution boards shall, where possible terminate in fabricated sheet steel draw-boxes installed directly above or in close proximity to the boards.

5.3. SURFACE MOUNTED CONDUIT

Wherever possible, the conduit installation is to be concealed in the building work; however, where unavoidable or otherwise specified under Part 2 of the specification, conduit installed on the surface must be plumbed or levelled and only straight lengths shall be used.

The use of inspection bends is to be avoided and instead the conduit shall be set uniformly and inspection coupling used where necessary.
No threads will be permitted to show when the conduit installation is complete, except where running couplings have been employed.

Running couplings are only to be used where unavoidable, and shall be fitted with sliced couplings as a lock nut.

Conduit is to be run on approved spaced saddles rigidly secured to the walls. Alternatively, fittings, tees, boxes, couplings etc., are to be cut into the surface to allow the conduit to fit flush against the surface. Where conduits are to be embedded into any wall irregularities to avoid gaps between the surface and the conduit.

Crossing of conduits is to be avoided; however, should it be necessary purpose-made metal boxes are to be provided at the junction. The finish of the boxes and positioning shall be in keeping with the general layout.

Where several conduits are installed side by side, they shall be evenly spaced and grouped under one purpose-made saddle.

Distribution boards, draw-boxes, industrial switches and socket outlets etc., shall be neatly recessed into the surface to avoid double sets.

In situations where there are no ceilings the conduits are to be run along the wall plates and the beams.

Painting of surface conduit shall match the colour of the adjacent wall finishes.

Only approved plugging materials such as aluminium inserts, fibre plugs, plastic plugs, etc., and round-head screws shall be used for fixing saddles, switches, socket outlets, etc., to walls, wood plugs and the plugging in joints in brick walls are not acceptable.

5.4. CONDUIT IN CONCRETE SLABS

In order not to delay building operations the Contractor must ensure that all conduits and other electrical equipment, which are to be cast in the concrete columns and slabs, are installed in good time.

The Contractor shall have a representative in attendance at all times when the casting of concrete takes place.

Draw-boxes, expansion joint boxes and round conduit boxes are to be provided where necessary. Sharp bends of any nature will not be allowed in concrete slabs.

Draw and/or inspection boxes shall be grouped under one common cover plate and must preferable be installed in passages or male toilets. All boxes, etc., are to be securely fixed to the shuttering to prevent displacement when concrete is cast. The conduit shall be supported and secured at regular intervals and installed as close as possible to the neutral axis of concrete slabs and/or beams.

Before any concrete slabs are cast, all conduit droppers to switchboards shall be neatly spaced and rigidly fixed.

5.5.1 AXIAL FLOW FANS

Suitable galvanized steel mounting plates or bracket provided from the same manufacturer shall be used for fixing the fan.

5.5.3 CENTRIFUGAL FANS

For floor mounted arrangement, the fan shall sit on concrete plinth by builder with anti- vibration mountings.
For ceiling mounted arrangement, the fan shall sit on anti-vibration mountings fixed on steel mounting frame. Threaded suspension rods with locking nuts shall be used for level adjustment.

Anti-vibration mounting shall be selected to cater for different point load of the fan at four corners.

5.5.4 FAN COIL UNITS

5.5.4.1. Threaded suspension rods with lock nut and washer shall be used for ceiling mounted fan coil units for level adjustment.

5.5.4.2. Flexible joints shall be installed for air duct, water pipe, conduit and other services connection to the unit.

5.5.4.3. Sufficient access panels shall be provided at the supply air duct and the return air plenum for servicing the blower and duct heater. Demountable return air grille of minimum dimensions 600 mm × 600 mm shall be considered as an access panel subject to the approval of the Architect.

5.5.4.4. Power supply will be provided by electrical sub-contractor and terminated at fused connector unit adjacent to each fan coil unit, all cabling from the power source (e.g. connector unit) to the control box of the fan coil unit and fan coil room remote control and accessories at convenient position including the termination shall be carried out by the Contractor. G.I. metal boxes for housing the fused connector unit and all necessary conduit works inside ventilated ceiling or otherwise indicated shall be supplied and installed by the Contractor.

5.5.4.5. The location of the local control box shall be within 600 mm from the terminal box of the fan coil unit and the duct heater.

5.5.4.6. All units shall be selected to suit the limited space within the false ceiling, with due consideration to access for maintenance and servicing.

5.5.4.7. All blowers and motors of fan coil units shall be demountable from the ceiling void for maintenance purpose without causing damage to the associated ductwork and insulation.

5.5.4.8. The condensate drain pan shall be of stainless steel and insulated for those fan coil units installed in records rooms and control rooms and other essential areas sensible to water damage. A second or additional larger stainless steel insulated drain pan shall also be provided underneath to avoid any possible dripping of condensate. A water overflow alarm indication shall be equipped at conspicuous place outside the room or connected to CCMS.

5.6.1 IN-LINE CENTRIFUGAL AND MIXED FLOW FANS

In-line centrifugal and mixed flow fans shall be mounted on a G.I. steel support. Threaded steel rod wit locking nuts shall be used for ceiling mounted purposes. Neoprene pad shall be provided for vibration isolation.

5.6.2 MECHANICAL ROOF EXTRACT UNITS

Mechanical roof extract unit shall be mounted on a vermin proof hard wood sill and concrete curb provided by builder with dimensions according to requirements of the manufacturer. All gaps between the mounting frame and structural base shall be sealed up properly.

5.6.3 PROPELLER FANS

Where propeller fans are mounted in a casing, the casing shall be longer than the length of the fan and motor. The casing shall be of galvanized steel or aluminium sheet or stainless steel as specified, and shall have flanged ends and an inspection door. A terminal box shall be mounted externally on the casing.

5.6.4 PROTECTIVELY COATED FANS AND FANS FOR CORROSIVE OR HAZARDOUS APPLICATIONS

All steel mounting brackets, bolts, washers and nuts shall be hot dip galvanized and painted with protective coatings to meet the appropriated corrosive environment.

5.6.5 ROTARY FANS

The installation of wall or ceiling mounted rotary fans shall follow the installation instruction of the fan manufacturer.

5.6.6 TERMINAL AIR CONTROL DEVICES

Terminal air control devices shall be mounted on a steel support. Threaded steel rod with lock nuts shall be used for ceiling mounted purposes. Neoprene pad shall be provided for vibration isolation. Fixture shall be installed on the steel support to govern the lateral movement of the unit.

The power supply to the unit shall refer to Sub-section B3.6.4, B3.6.5 and B3.6.6. Flexible duct connecting the inlet/outlet of the unit shall be fixed by omega clip or similar approved devices.

5.6.7 GRILLES AND DIFFUSERS

Grilles and diffusers shall be fixed on air duct by self-tapping stainless steel screw or purposely made spring or locking devices. Fixing the grille or diffuser by self- taping screw on the face panel exposed to view shall be avoided.
For linear diffuser or special made air fittings, lifting brackets or fixing devices shall be provided to facilitate site installation.

5.6.8 DOMESTIC EXHAUST FANS

The installation of domestic exhaust fans shall follow the installation instruction of the manufacturer or refer to contract drawings. All domestic fans shall be protected with safety guards.

6 SECTION 6

THERMAL INSULATION

6.1 GENERAL

In general, all ductwork and equipment shall be insulated if the air conveyed within the ductwork and the air external to it have a temperature difference which may cause an unwanted condensation or heat loss either on the duct surface or within the ductwork or result in unwanted thermal exchange between the external and inside air of the ductwork.

Thermal insulation shall be applied to chilled or hot water pipework distribution systems and to components within distribution systems such as valves, storage vessels, strainer and accessories.

All insulation shall fit tightly to surfaces to be covered, and all slabs and sections shall be built up close, butting edges being mitred, chamfered or shaped as necessary. Any minor interstices left in insulation shall be filled and sealed with granules embedded in suitable and approved adhesive compound.

Insulated pipes and ducts shall be supported on the outside of the insulation, with load spreading galvanised iron or corrosion treated steel metal plates of suitable size and thickness between the insulation and supports to prevent the insulation being crushed. A higher density load bearing quality insulation or hard wood block should be used at support points as recommended by the insulation manufacturer and as directed by the Engineer.

At the point of support, specially prepared blocks of hardwood or styrofoam material must be positioned to ensure the integrity of the vapour barrier and cladding where applicable by bonding the supports to the insulation.

All materials delivered to site shall be new, and where appropriate, colour coded and labelled at the factory to identify different grades, sizes and types. The insulation shall be protected from damage or deterioration before, during and after fixing. Damaged or compressed insulation should be replaced.

Immediately before applying insulation, clean all surfaces until these are free of rust, scale and grease, and are thoroughly dry. Under no circumstances should the insulation be applied to wet surfaces.

Any surface to be insulated, which shows any sign of rusting or damage, shall, prior to insulating, be thoroughly scrapped and wire brushed as necessary to remove all rust, scale, etc. Surfaces shall then be cleaned with appropriate solvent to remove all oil, grease and dirt prior to the application of two coats of grey epoxy primer paint and insulation. Only clean and dry insulation shall be applied in any case, and it shall be free from damage before application.

All materials including the thermal insulation itself, together with adhesives, paint, bands, sheeting, etc. shall be supplied with a reasonable margin for cutting, wastage and m a k i n g good damage and loss. All materials shall be stored in a suitable manner so as to prevent them from damage or deterioration before fixing.

All insulation shall be applied so as to give a smooth, homogeneous and lineable surface. All rigid sections shall be concentric, and accurately matched for thickness. Steps and undulations in the surfaces are not acceptable. Any sections or slabs having damaged ends will be rejected.

Continuous insulation shall be provided through all sleeves and insulation joints shall be staggered with respect to joints on the associated pipework or ductwork systems.

Insulation damaged for whatever reasons will be rejected.

Where thermal insulation is applied to the outside of piped and ducted services, equipment and plant used to convey, store or generate fluids or gases at temperatures lower than the design ambient dew point temperature indicated, a water vapour barrier shall be provided unless it can be demonstrated that the insulation material itself provide adequate barrier throughout its thickness to the approval of the Engineer. The separate type vapour barrier where employed shall not be pierced or otherwise damaged by supports or by the application of external cladding.

Where relevant, moisture and vapour barriers, whether applied to the ductwork, hangers or projections, shall be continuous and completely provided throughout the surface of the insulation, and the insulation complete with the barrier shall be properly and firmly bound on the duct or pipe surface by appropriate fixing provisions. Such fixing provisions shall in no way impair the insulation or the vapour barrier. The Contractor shall be responsible for any damage on the insulation or barrier found and any subsequent wetting of the insulation shall be the full responsibility of the Contractor.

Flexible connections on air conditioning ductwork shall be insulated with flexible blanket made from non-flammable material. The insulated blanket is to be wrapped with vapour barrier that conforming to S u b - section C11.4. The blanket shall be wrapped around the flexible connection, overlapped and secured in place by metal bands at both ends to the rigid ducts.

Minimum 12% of insulation installation workers worked in a project should have a certificate certifying that the installation workers have satisfactorily completed relevant thermal insulation installation courses organised by recognized organisations

6.2 TYPES OF THERMAL INSULATION MATERIALS APPLICATION

6.2.1 Phenolic Foam Insulation

For pipe insulation and pipe support, the phenolic foam joint shall be of unique Z-shape slip along the longitudinal joint sealed with adhesive and shall be provided with shiplap joints (male and female joint) at

both circumference ends. The shiplap joints shall be a minimum of 12mm long in contact with each other for thermal lock purpose and sealed with adhesive.

Rigid cut sections shall be used with factory applied Class 'O' facing for pipework. ‘Butt-joints’ of slabs shall be sealed with minimum 120 mm wide matching Class 'O' self adhesive tape as recommended by the insulation manufacturer. Overlap of factory applied Class 'O' facing for cut pipe sections shall be sealed with manufacturers recommended adhesive tape. All tapes shall be conformed to Sub-section C11.4.

Preformed factory fitting insulators cut to suit standard radius elbows, long bends and where available tees shall be used, otherwise, if not available, the Engineer’s permission may be sought to neatly cut and mitre the insulation to fit around fittings. In this latter case, great care must be taken to ensure that all mitred joints are a close fit and that the finish coat of aluminium foil adhesive tape is neatly applied.

Flanges and other protrusions shall be insulated by fabricating oversize preformed sections ordered to suit the diameter of the flange or adjacent pipe insulation whichever is the greatest. The oversized section shall overlap on to the adjacent pipe insulation by a minimum of 75 mm on each side.

Pipe supports shall fit around the outside of the insulation. The insulation at the support points shall be heavy density load bearing phenolic foam in preformed sections made to the same thickness as the adjacent pipe insulation. This shall be complete with the same external finish to Class 'O' as used on the adjacent standard pipe insulation.

Reference shall be made to the insulation manufacturer recommended support details to ensure correct load bearing and dimensions of high density foam inserts and associated galvanised metal plate supports are correct to spread the point loads involved.

All pipe insulation shall be zero ODP and GWP

6.2.2 Glass Fibre Insulation

All fibreglass insulation shall be completely sealed by effective vapour barrier and self adhesive foil tape as required by Sub-section C11.4.

All fibreglass insulation shall be completely sealed at all joints. All holes, tears, punctures, etc. made in the vapour barrier shall be completely sealed with the same specified foil tape. If damage in a defined area exceeding 5% of the insulation surface or duct or pipe, the Contractor shall be responsible for replacement with new one.

When pins are required to use to support the fibreglass blanket, all the pins must be fire resistant and sealed by same specified foil tape after installation.

The material shall be adhered to the ducts with moisture and fire resistant adhesive of an approved type. Where preformed fibreglass slabs are to be adhered to flat surfaces such as ductwork the method of fixing shall be approved by the Engineer before commencing work.

Glass fibre insulation shall be zero ODP and GWP

6.2.3 Flexible Closed Cell Elastomeric Insulation

The flexible closed cell elastomeric insulation sheet shall be supplied in rolls in dimensions recommended by the manufacturer for application in ductwork so that the top and bottom pieces overlap the sides. Adhesives shall be applied evenly to the entire contact surfaces if the elastomeric insulation sheet is not a self-adhesive sheet.

When shifting large bore flexible closed cell elastomeric tube which has become elliptical during storage, the slit shall be made in the flattened surface. If the Flexible Closed Cell Elastomeric Insulation is exposed to weather, inside plant room or services duct, protection finish coats recommended by the insulation manufacturer shall be applied.

All coatings must be supplied by the original insulation manufacturer and applied strictly following the manufacturer's installation manual to obtain the required result.

Elastomeric insulation shall be zero ODP and GWP

6.2.4 Polystyrene Insulation

Unless otherwise instructed by the Engineer, polystyrene insulation shall be covered in galvanised iron wire netting of 25mm mesh, 1mm dia. coated with 15mm cement plaster smoothed and finished with painting completion as Sub-section 11.8.

Polystyrene insulation shall be zero ODP and GWP

6.2.5 CFC, HCFC and HCF free Polyurethane Foam Insulation

Whenever the polyurethane foam insulation is used for pre-insulated duct system without galvanised iron sheet metal, the following guidelines should be followed:

Wherever necessary, the ducts must be provided with appropriate reinforcements to guarantee sufficient mechanical seal against a maximum internal pressure of 500Pa during operation. The maximum deformation of the duct must not exceed 3% of its width or 30mm in any case.

The joints between one duct and the next shall be performed using flanges with unexposed bayonet coupling and ensure the appropriate pneumatic and mechanical seal. Elbows shall be provided with tuning vanes wherever indicated.

The ducts shall be supported by appropriate supports at intervals of no more than 4m whenever the greater side of the duct is less than 1m, and intervals of no more than 2m whenever the greater side of the duct is more than 1m.

Accessories such as volume dampers, fire barriers or duct coil and etc., shall be provided with independent support in such a way that their weight does not beat on the ducts. Wherever indicated, the ducts shall be provided with appropriate test points for the sensors and inspection doors for cleaning and inspection all along the route.

Polyurethane insulation shall be zero ODP and GWP

6.3 PIPEWORK FITTINGS

Unless otherwise specified, all valves, flanges, strainers, expansion joints, etc., are to be insulated in conformity with the pipework in which they are incorporated, and to the same thickness. All such items where proper treatment on pipework connected to the puddle flanges in tunnel and trench is required shall be provided with relevant insulation filled 0.8mm thick hammered aluminium split boxes, arranged for easy removal, the box to enclose up to valve handle and to have a lid for valve access. The insulation on the pipes immediately adjacent to flanges, etc., shall be neatly swaged off to allow the insulated boxes to be removed without damage to the pipe insulation.

Valves, flanges, strainers, glands etc. are to be provided with insulation of similar type to that employed on rest of system (if appropriate to this purpose) fitted into galvanised steel or aluminium sheet split

boxes arranged for easy removal so that access to the valves, flanges etc. can readily be gained without damaging the general run of insulation.

For all chilled water fittings and accessories such as valves, strainers, etc., there shall be external protection of a box constructed with 0.8mm thick hammer aluminium cladding. The box shall be hinged at a point and fastened together on the other side with a quick action snap catches.

6.4 DUCT WORK AND AIR HANDLING PLANT - METHODS OF APPLICATION

6.4.1 Thermal insulation shall be applied to air distribution ductwork and to components within distribution systems such as fans, heater and cooler casings which convey conditioned air within plant rooms and up to and including all terminal points in the system.

Air distribution systems conveying conditioned, warmed or chilled air through conditioned spaces shall be insulated. Exhaust, ventilation or outdoor air passing any conditioned space should also be insulated. All ductwork (including re-circulation ductwork) conveying warmed or chilled air through unconditioned spaces or the open air shall be insulated.

Distribution systems conveying untreated outdoor air and exhaust air need not be insulated unless such air distribution passing conditioned space.

6.4.2 Fixing methods for insulation shall provide a minimum of direct metal paths which thermally bridge the insulation, particularly when the insulation is metal faced. The full insulating effect shall be maintained at connections and access openings and panels including the edges of such openings, fasteners and stiffeners either by means of purpose made boxes or by increasing the general thickness of insulation. Where insulation is applied in layers, all joints in all layers shall be staggered.

6.4.3 At all points of support, the insulation and outer covering and vapour seal shall be continuous and shall not be pierced or fouled by the supports. The insulation at supports shall be of the material with sufficient compressive strength to take up the loads transmitted to the supports.

6.4.4 Pre-formed slab insulation shall be applied with adjacent sides lapped to maintain a uniform thickness at corners. The insulation shall be fixed securely with adhesives conforming to ASTM C-1126-Type II and NFPA-120 A and by impaling on fasteners which must be galvanised iron metal studs' split prongs, plastics studs or other approved devices fixed to the thickness and weight of the insulating materials and finishes to be applied and shall be spaced at approximately 300 mm centres. Fastenings shall be finished flush with the surface of the insulation to which they are applied.

Adhesives shall be compatible with the insulation and in their dry state be non-flammable. In no circumstances shall adhesives be used which attack or dissolve the ductwork or insulation.

6.4.5 Aluminium foil or plastics faced pre-formed slab insulating materials shall be placed on the outside of ductwork with adjacent sides lapped to maintain a uniform thickness at corners. All joints shall be sealed with foil tape as indicated in Sub-section C11.4 and held in place with contact adhesive. The adhesive shall be suitable for the range of ambient temperature and humidity encountered. 6.4.6 Reinforcement of self-setting cement shall be 25 mm mesh, 1 mm dia. galvanised wire netting. Cement finishes applied to thermal insulation shall always be completely dry before the application of any sealing primer and final decorative coating. Cement application shall be planned and executed in sections to avoid joints between wet cement and cement already dried.

6.4.7 Where thermal insulation is protected against the effects of weather by plastics sheet or roofing felt, particular care shall be taken to ensure a watertight seal at all joints. The sheet material shall be adhered to the external surface of the insulation and all joints shall be lapped, secured and sealed by adhesives or solvent welding. All jointing and sealing materials and methods of application shall be to the recommendations of the sheet supplier.

Polyisobutylene sheet shall be not less than 0.8 mm thick and have a tensile strength not less than 3.4MN/m2.

6.4.8 Where an insulated duct passes through an external building element, adequate precautions shall be taken to prevent the entry of rainwater into the building. Details shall be submitted to the Engineer for approval well before the construction starts.

6.4.9 Flexible insulation shall have all circumferential and longitudinal joints sealed with tape of the same material or highly compatible with the main insulation facing. The external surface of the insulation shall be wrapped and galvanised wire netting of 25 mm mesh, 1 mm dia. and the netting joints shall be secured with a lacing of 1mm galvanised wire. Care shall be taken to ensure that the insulation material is not crushed during this application.

6.4.10 Thermal insulation and/or acoustic insulation materials shall be applied to the inside of ductwork only where indicated. The insulation material shall be cut to accurately fit the internal duct surfaces. The insulation shall be fastened to the duct using adhesive spread over the entire surface in combination with piercing fasteners finished flush with the insulation surface. Particular care shall be taken to ensure that the edges of all internal insulating materials, whether exposed or butted against similar edges, are sealed and secured to the internal surfaces of the duct. They shall be protected with galvanised iron channel sheet metal of not less than 0.8 mm thickness and 12 mm width. Alternatively they may be provided with other approved means of protection to prevent erosion and peeling. All materials shall have adequate strength and ability to resist erosion at the maximum design air velocity and shall not produce dust. The provisions of Sub-section B8.12 and B8.11 shall also apply where applicable.

6.4.11 Unless otherwise specified in Particular Specification, glass fibre insulation with scrim fibre glass cloth face finish or elastomeric insulation shall be used for internal lining material.

6.5 PAINTING AND IDENTIFICATION

6.5.1 Thermal insulation exposed to view (including that within plant rooms) shall be painted the colour of which shall be approved or is acceptable to the Engineer where insulation is protected by aluminium foil or self-coloured sheet, plastics film or a weather- proof finish and is in concealed space, painting will not be required.
An undercoat and not less than two finishing coats shall be applied. Absorbent surfaces shall also receive an initial coat of priming paint. All paints shall be compatible with the surfaces to which they are applied.

6.5.2 Painting shall be carried out generally as detailed in Section A8. The colour(s) of paint(s) shall be to the requirements of Section A8 and/or the instructions of the Engineer and shall be selected from the range contained in BS 4800.

6.5.3 All distribution services shall be colour coded and provided with symbols for identification purposes. Identification coding for ductwork, including thermal insulation, shall be in accordance with HVCA Standard DW/144. For pipework, including thermal insulation, the basic colour and colour coding shall be in accordance with SANS 12140-3 or BS 1712.

6.5.4 Uninsulated pipework or ductwork and thermal insulation which is painted or unpainted shall be identified by bands at least 25 mm wide or colour triangles of at least 150 mm side. The bands or triangles shall be spaced and located to permit ready identification of the services particularly adjacent to equipment positions and at service junctions and wall penetrations.

6.5.5 In addition to colour bands or triangles all pipework and ductwork in plant rooms and service areas, whether insulated or not, shall be legibly marked with black or white letters and triangles to show the type of service and the direction of fluid flow.

7. SECTION – 7

MODE OF MEASUREMENTS

UNIT PRICES IN THE SCHEDULE OF QUANTITIES

The item description in the schedule of quantities is in the form of a condensed resume. The unit price shall be held to include everything necessary to complete the work covered by this item in accordance with the specifications and drawings. The sum total of all the individual item prices shall represent the total price of the installation ready to be handed over.

The Equipment, Machinery and Apparatus shall include the following:

7.1.1. All equipment, machinery, apparatus and materials required as well as the cost of any tests which MCE may request in addition to the tests generally required to prove quality and performance of equipment.

7.1.2. All the labour required to supply and installs the complete installation in accordance with the specifications.

7.1.3. Use of any tools, equipment, machinery, lifting tackle, scaffolding, ladders etc. required by the contractor to carry out his work.

7.1.4. All the necessary measures to prevent the transmission of vibration.

7.1.5. The necessary material to isolate equipment foundations from the building structure, wherever necessary.

7.1.6. Storage and insurance of all equipment apparatus and materi

7.2. Measurements of sheet metal ducts, grilles/diffusers etc.

7.2.1. Sheet metal ducts

7.2.1.1. All duct measurements shall be taken as per actual outer duct surface area including bends, tees, reducers, collars, varies and other fittings. Gaskets, nuts bolts, vibration isolation pads are included in the duct items of schedule of quantity.

7.2.1.2. The unit of measurements shall be finished sheet metal surface area in square metres.

No extra shall be allowed for laps and wastages.

7.2.1.3. All the guide vanes, deflectors in duct elbows, branches, grilles, collars quadrant dampers etc. will be included in unit rates of duct.

No extra payments will be made in this regard.

7.2.1.4. The unit duct price shall include all the duct hangers supports, exposing of concrete reinforcement for supports and making good of the same as well as any materials and labour required to complete the duct frame.

7.3. Measurements of Refrigerant Piping

7.3.1. All pipes shall be measured in linear metres (to the nearest cm) along the axis of the pipes and rates shall be inclusive of all fittings eg.

Tees, bends, reducers, elbows etc.

7.3.2. Rates quoted shall be inclusive of providing and fixing vibration pads and wooden pieces wherever specified or required by the Mechanical Engineer.

7.3.3. Flexible connections, wherever required of specified shall be measured as part of straight length of same diameter, with no additional allowance being made for providing the same.

7.3.4. The length of the pipe for the purpose of payment will be taken through the centreline of the pipe and all fittings (e.g. Tees, bends, reducers, elbows etc.) as through the fittings are also presumed to be pipe lengths. Nothing extra whatsoever will be paid for over and above for the fittings and flanges.

7.3.5. The rates quoted shall be inclusive of cutting holes in walls and making good the same and inclusive of all items as specified in the specification and schedule of quantity.

7.4. Structural supports

Structural supports including supports fabricated from pipe lengths shall be measured as part of pipe line and hence no separate payment will be made. Rates shall be inclusive of hoisting, cutting, jointing welding, cutting of holes and chases in walls, slabs or floors, painting supports and other items as described in specification, drawings and schedule of quantities or as required by EIC.

7.5 Painting

7.5.1. Painting of all pipes and fittings shall be measured as part of pipes as installed. Nothing extra shall be paid for this works.

7.6.2. Painting of tanks and equipment wherever required shall be measured as part of equipment price.

8. SECTION 8

NOISE AND VIBRATION CONTROL

8.1 GENERAL

The Contractor shall install sufficient noise and vibration control measures on the plant/equipment, the interconnected piping, ductwork and conduit so that when the installed plant/equipment are put

into operation, the resulting noise and vibration levels at locations within the building and at adjacent or nearby buildings shall not exceed the acceptable limits.

Unless otherwise specified in the Particular Specification, the total noise level in occupied areas within the building, whether it be airborne, structure-borne or ductwork-borne, shall not exceed the following limits when all the plant/equipment installed by the Contractor are put into operation: -

Table 8.1 Noise Control Criteria

Broadcasting and recording studios	NC 25
Concert and opera halls	NC 25
Theatres, assembly halls and churches	NC 30
Cinemas	NC 35
Hospital wards and operating theatres	NC 35
Homes, bedrooms	NC 35
Private offices, libraries, courtrooms and schoolrooms	NC 35
General offices	NC 40
Mechanised offices	NC 45
Restaurants, bars, cafeterias and canteens	NC 45
Department stores and shops	NC 45
Swimming baths and sports arenas	NC 50
Kitchens	NC 50
Factories (light engineering)	NC 65
Factories (heavy engineering)	NC 75

The specified noise criteria shall apply to all areas as measured at a level of 1.5 m above the floor, and the measuring points shall be 1.5 m away from the walls or doors of the rooms.

The Corrected Noise Level at potential Noise Sensitive Receiver in the adjacent or nearby building, if so identified in the Contract Documents, shall not exceed the

Acceptable Noise Level stipulated in the SABS and CIBSE Standards.

ANNEXURES

ANNEXURE - 1

APPROVED MAKES OF MATERIALS

1	HVAC	Daikin/Samsung or equivalent
2	Indoors units	Daikin/Samsung or equivalent
3	Exhaust fans	AMS or Equal
4	Heat Pump	Daikin/Samsung or equivalent
5	Starter / contactor	Siemens or Equal
6	Nitrile Rubber insulation	Armaflex or Equal
7	Vibration pads	Resistroflex or Equal
8	Vibration isolation	Resistroflex or Equal
9	Fresh air fans	AMS or Equal
10	Flexible ducts	Trox or Equal
11	Electrical Motors	Siemens or Equal

9. Administrative requirements

Bidders must ensure that all the documents listed below form part of their submitted bid documents:

- CSD tax compliant Report or
- Copy or Valid Tax Clearance Certificate or SARS Pin;
- All Standard bidding document must be completed in full;
- Valid Compensation for Occupational Injuries and Diseases Act, No.130 of 1993 (COIDA) letter of Good Standing (original or certified copy);
- Valid CIDB – minimum 3ME;
- Valid wireman license/certificate under company name to be attached.
- Public liability (minimum of R1 million)/ Letter of intent from the insurance company to be attached.

10 SITE INFORMATION

All Services will be at Freedom Park or at any designated location or jurisdiction situated approximately 4km south of Church Square of Pretoria CBD, on the corner of Koch and 7th Avenue, Salvokop.

2. **Compulsory Briefing Sessional 21 July 2023 @ 10h00**

3. For technical enquiry contact Ditiro Ramogayane @ 012336 4198

4. For Supply Chain Management contact Edward Buthelezi 012 336 4003

11 EVALUATION CRITERIA

The bid will be evaluated in phases as follows:

a) Phase 1: Admin compliance
b) Phase 2: Pre-Qualification criteria for Preferential Procurement
c) Phase 3: Functionality
c) Phase 4: 80/ 20 Preference Point system as prescribed in Preferential Regulation 2022, (Price and Promotion of Specific Goals)

1. Phase 1 Admin compliance

(a) The bidders must submit the required returnable documents as required by the Freedom Park's Supply Chain Management requirements.
(b) The tenderer's bids will be evaluated based on the compliance of the returnable documents

2. Phase 2 Pre-Qualification criteria for Preferential Procurement

(a) A tender which fails to meet any pre-qualifying criteria stipulated in the tender document is an unacceptable tender.

3. Phase 3 Functionality

(a) Bids will be rated in respect of each criterion of the point scored. The maximum possible score that can be achieved for functionality is 100.
(b) Bidders that do not achieve a minimum score of 75 (out of 100) for functionality will not be evaluated further.

The evaluation criteria for measuring functionality, and the weighting attached to each criterion is listed in the table below, and will be rated as follows:

1 = Poor 2 = Average 3 = Good and 4 =Very Good = 5 Excellent

CRITERIA	Proof	Scoring Criteria		Total Points
Company Experience: • Number of years the company has been rendering similar services. • The service provider must have a minimum of 2 years in installing air conditioners	The bidder must provide a clearly detailed company profile, stipulating the number of years rendering similar services	< 2 years – 0 points 2 – 3 years 3 points 4years – 4 points 5 years and above – 5 points	**4**	**20**
Client References (Only relevant references) • A minimum of 3 references is required	Reference Letters • In addition completed reference form must be completed for each reference	< 2 references – 0 points 2 – 3 references – 3 points 4 references – 4 points 5 Years and above references – 5 points	**4**	**20**

Methodology			**6**	**30**
• Biders must submit together with the company profile a detailed methodology on the implementation of the project as per the scope of work • Provide steps on implementation. • Product Name and description of equipment • Implementation Plan	Project Methodology will guide the evaluators the understanding of the bidder towards the]project	No Methodology= 0 Points Generic Methodology=2 Points Detailed Methodology= 5 Points		
Bidder's Capacity At least 3 technician is required	Comprehensive CV of a qualified technician • Degree/Certificate (Project Manager, Engineering, Gas)	No qualified technician – 0 points 1 qualified technician – 2 points 3 qualified technicians – 3 points > 3 and other relevant qualified technician 5 points	**4**	**20**
Staff Capability The installation technician(s) must have a minimum of 2 years installing air conditioners	Detailed CV(s), indicating the number of years the technician and Project Manager has been installing air conditioners must be provided	< 2 years – 0 points 2 – 3 years – 3 points 4 – 5 years – 4 points 5 and aboveyears – 5 points	**2**	**10**
TOTAL				**100**
Minimum threshold	**75%**			

The 80/ 20 Preference Point system as prescribed in Preferential Regulation 2022 follows:

(a) Price 80 points

(b) Promotion of Specific Goals Contributor level 20 points

12. PRICING SCHEDULE

PRICING INSTRUCTIONS

12.1 General

12.2 This section provides the tenderer with guidelines and requirements with regard to the completion of the Price Schedule. The Schedule has to be completed in black ink and the tenderer is referred to the Tender Specifications in regard to the correction of errors.

12.3 The Price Schedule shall be read with all the documents which form part of this Contract.

12.4 The following words shall have the meanings hereby assigned to them:
Unit: The unit of measurement for each item of work in terms of the Specifications and the Project Specifications.

Quantity: The number of units of work for each item.
Rate: The payment per unit of work at which the tenderer tenders to do the work.
Price: The product of the quantity and the rate tendered for an item.
Lump sum: An amount tendered for an item, the extent of which is described in the Price Schedule, the Specification and the Scope of Work, but the quantity of work of which is not measured in any units.

Units of Measurements

The units of measurement described in the Price Schedule are metric units.
Abbreviations used in the of Quantities are as follows:

Mm	=	millimetre	h	=	hour
M	=	metre	kg	=	kilogram
km	=	kilometre	t	=	ton (1000kg)
m2	=	square metre	no.	=	number
m2.pass	=	square metre pass	sum	=	lump sum
ha	=	hectare	MN	=	meganewton
m3	=	cubic metre	MN.m	=	meganewton-metre
m3.km	=	cubic metre-kilometre	PC sum	=	Prime Cost sum
l	=	litre	Prov sum	=	Provisional sum
kl	=	kilolitre	%	=	Per cent
MPa	=	megaspascal	kW	=	kilowatt

Rates

This price list has columns for quantity, rate and price for the goods. Entries in these columns are made as follows:

12.5. If the Supplier is to be paid an amount for the goods which is a fixed price for an item or a fixed price for each of a series of items, the tendering supplier enters the amount in the price column only, the other two columns being left blank.

12.6. If the Supplier is to be paid an amount for the goods which is the unit rate for each item multiplied by the quantity of the item supplied, (i.e. a 'Price Schedule' arrangement) - the tendering supplier enters the rate which is then multiplied by the quantity (which has been entered either by him or by the Purchaser) to produce the price which is also entered.

12.7. If the Supplier is to be paid an amount for an item of the goods which is the rate multiplied by the quantity supplied -whatever that quantity turns out to be (i.e. a 'schedule of rates' arrangement) - the tendering supplier enters the rate only, the other two columns being left blank. The tendering supplier's offer cannot include a total of the prices which covers all the items which the Supplier has to supply if any of the supply is dealt with using items with a rate only.

12.8 Rate only entries must not be made for work covered by other items.

CORRECTION OF ENTRIES MADE BY TENDERER

Any entry made by the Tenderer in the Price Schedule, forms, etc, which the tenderer desires to change, shall not be erased or painted out. A line shall be drawn through the incorrect entry and the correct entry shall be written above in black ink and the full signature of the Tenderer shall be placed next to the correction.

(Bidder erase or painted shall be unacceptable bidder.

SBD1

PART A

INVITATION TO BID

YOU ARE HEREBY INVITED TO BID FOR REQUIREMENTS OF THE (*NAME OF DEPARTMENT/ PUBLIC ENTITY*)					
BID NUMBER:	FP 01/23 PO	CLOSING DATE:	04 AUGUST 2023	CLOSING TIME:	11:00AM
DESCRIPTION	Appointment of a Service Provider for the Supply, Install and Commissioning of (HVAC), Airconditioning at the Gallery of Leaders, Freedom Park				
BID RESPONSE DOCUMENTS MAY BE DEPOSITED IN THE BID BOX SITUATED AT *(STREET ADDRESS)*					

BIDDING PROCEDURE ENQUIRIES MAY BE DIRECTED TO		**TECHNICAL ENQUIRIES MAY BE DIRECTED TO:**	
CONTACT PERSON		CONTACT PERSON	
TELEPHONE NUMBER		TELEPHONE NUMBER	
FACSIMILE NUMBER		FACSIMILE NUMBER	
E-MAIL ADDRESS		E-MAIL ADDRESS	

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 No:	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 IN ORDER TO QUALIFY FOR PREFERENCE POINTS FOR B-BBEE]			
ARE YOU THE ACCREDITED REPRESENTATIVE IN SOUTH AFRICA FOR THE GOODS /SERVICES /WORKS OFFERED?	☐Yes ☐No [IF YES ENCLOSE PROOF]	***ARE YOU A FOREIGN BASED SUPPLIER FOR THE GOODS /SERVICES /WORKS OFFERED?***	☐Yes ☐No [IF YES, ANSWER THE QUESTIONNAIRE 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 2.3 BELOW.

PART B

TERMS AND CONDITIONS FOR BIDDING

1. BID SUBMISSION:
1.1. BIDS MUST BE DELIVERED BY THE STIPULATED TIME TO THE CORRECT ADDRESS. LATE BIDS WILL NOT BE ACCEPTED FOR CONSIDERATION.
1.2. **ALL BIDS MUST BE SUBMITTED ON THE OFFICIAL FORMS PROVIDED–(NOT TO BE RE-TYPED) OR IN THE MANNER PRESCRIBED IN THE BID DOCUMENT.**
1.3. THIS BID IS SUBJECT TO THE PREFERENTIAL PROCUREMENT POLICY FRAMEWORK ACT, 2000 AND THE PREFERENTIAL PROCUREMENT REGULATIONS, 2017, THE GENERAL CONDITIONS OF CONTRACT (GCC) AND, IF APPLICABLE, ANY OTHER SPECIAL CONDITIONS OF CONTRACT.
1.4. **THE SUCCESSFUL BIDDER WILL BE REQUIRED TO FILL IN AND SIGN A WRITTEN CONTRACT FORM (SBD7).**
2. TAX COMPLIANCE REQUIREMENTS
2.1 BIDDERS MUST ENSURE COMPLIANCE WITH THEIR TAX OBLIGATIONS.
2.2 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.
2.3 APPLICATION FOR TAX COMPLIANCE STATUS (TCS) PIN MAY BE MADE VIA E-FILING THROUGH THE SARS WEBSITE WWW.SARS.GOV.ZA.
2.4 BIDDERS MAY ALSO SUBMIT A PRINTED TCS CERTIFICATE TOGETHER WITH THE BID.
2.5 IN BIDS WHERE CONSORTIA / JOINT VENTURES / SUB-CONTRACTORS ARE INVOLVED, EACH PARTY MUST SUBMIT A SEPARATE TCS CERTIFICATE / PIN / CSD NUMBER.
2.6 WHERE NO TCS PIN IS AVAILABLE BUT THE BIDDER IS REGISTERED ON THE CENTRAL SUPPLIER DATABASE (CSD), A CSD NUMBER MUST BE PROVIDED.
2.7 NO BIDS WILL BE CONSIDERED FROM PERSONS IN THE SERVICE OF THE STATE, COMPANIES WITH DIRECTORS WHO ARE PERSONS IN THE SERVICE OF THE STATE, OR CLOSE CORPORATIONS WITH MEMBERS PERSONS IN THE SERVICE OF THE STATE."

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:

……..

SBD 2

TAX CLEARANCE CERTFICATE REQUIREMENTS

It is a condition of bid that the taxes of the successful bidder must be in order, or that satisfactory arrangements have been made with South African Revenue Service (SARS) to meet the bidder's tax obligations.

1 In order to meet this requirement bidders are required to complete in full the attached form TCC 001 "Application for a Tax Clearance Certificate" and submit it to any SARS branch office nationally. The Tax Clearance Certificate Requirements are also applicable to foreign bidders / individuals who wish to submit bids.

2 SARS will then furnish the bidder with a Tax Clearance Certificate that will be valid for a period of 1 (one) year from the date of approval.

3 The original Tax Clearance Certificate must be submitted together with the bid. Failure to submit the original and valid Tax Clearance Certificate will result in the invalidation of the bid. Certified copies of the Tax Clearance Certificate will not be acceptable.

4 In bids where Consortia / Joint Ventures / Sub-contractors are involved, each party must submit a separate Tax Clearance Certificate.

5 Copies of the TCC 001 "Application for a Tax Clearance Certificate" form are available from any SARS branch office nationally or on the website www.sars.gov.za.

6 Applications for the Tax Clearance Certificates may also be made via eFiling. In order to use this provision, taxpayers will need to register with SARS as eFilers through the website www.sars.gov.za.

SBD4

BIDDER'S DISCLOSURE

1. PURPOSE OF THE FORM

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

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

2. Bidder's declaration

2.1 Is the bidder, or any of its directors / trustees / shareholders / members / partners or any person having a controlling interest[1] 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**

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

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

2.2.1 If so, furnish particulars:
……
……

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

2.3.1 If so, furnish particulars:
……
……

3 DECLARATION

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

3.1 I have read and I understand the contents of this disclosure;
3.2 I understand that the accompanying bid will be disqualified if this disclosure is found not to be true and complete in every respect;
3.3 The bidder has arrived at the accompanying bid independently from, and without consultation, communication, agreement or arrangement with any competitor. However, communication between partners in a joint venture or consortium[2] 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 drafting of the specifications

[2] 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.

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

SBD 6.1

PREFERENCE POINTS CLAIM FORM IN TERMS OF THE PREFERENTIAL PROCUREMENT REGULATIONS 2022

This preference form must form part of all tenders invited. It contains general information and serves as a claim form for preference points for specific goals.

NB: BEFORE COMPLETING THIS FORM, TENDERERS MUST STUDY THE GENERAL CONDITIONS, DEFINITIONS AND DIRECTIVES APPLICABLE IN RESPECT OF THE TENDER AND PREFERENTIAL PROCUREMENT REGULATIONS, 2022

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1. GENERAL CONDITIONS

1.1 The following preference point systems are applicable to invitations to tender:

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

1.2 **To be completed by the organ of state**

(*delete whichever is not applicable for this tender*).

a) The applicable preference point system for this tender is the 90/10 preference point system.

b) The applicable preference point system for this tender is the 80/20 preference point system.

c) Either the 90/10 or 80/20 preference point system will be applicable in this tender. The lowest/ highest acceptable tender will be used to determine the accurate system once tenders are received.

1.3 Points for this tender (even in the case of a tender for income-generating contracts) shall be awarded for:

(a) Price; and

(b) Specific Goals.

1.4 **To be completed by the organ of state:**

The maximum points for this tender are allocated as follows:

	POINTS
PRICE	80
Specific Goals	**20**
Total points for Price and Specific Goals	**100**

1.5 Failure on the part of a tenderer to submit proof or documentation required in terms of this tender to claim points for specific goals with the tender, will be interpreted to mean that preference points for specific goals are not claimed.

1.6 The organ of state reserves the right to require of a tenderer, either before a tender is adjudicated or at any time subsequently, to substantiate any claim in regard to preferences, in any manner required by the organ of state.

2. DEFINITIONS

(a) **"tender"** means a written offer in the form determined by an organ of state in response to an invitation to provide goods or services through price quotations, competitive tendering process or any other method envisaged in legislation;

(b) **"price"** means an amount of money tendered for goods or services, and includes all applicable taxes less all unconditional discounts;

(c) **"rand value"** means the total estimated value of a contract in Rand, calculated at the time of bid invitation, and includes all applicable taxes;

(d) **"tender for income-generating contracts"** means a written offer in the form determined by an organ of state in response to an invitation for the origination of income-generating contracts through any method envisaged in legislation that will result in a legal agreement between the organ of state and a third party that produces revenue for the organ of state, and includes, but is not limited to, leasing and disposal of assets and concession contracts, excluding direct sales and disposal of assets through public auctions; and

(e) **"the Act"** means the Preferential Procurement Policy Framework Act, 2000 (Act No. 5 of 2000).

3. FORMULAE FOR PROCUREMENT OF GOODS AND SERVICES

3.1. POINTS AWARDED FOR PRICE

3.1.1 THE 80/20 OR 90/10 PREFERENCE POINT SYSTEMS

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

80/20 or
80/20 **or** **90/10**

$$Ps = 80\left(1 - \frac{Pt - P\,min}{P\,min}\right) \quad \text{or} \quad Ps = 90\left(1 - \frac{Pt - P\,min}{P\,min}\right)$$

Where

Ps = Points scored for price of tender under consideration

Pt = Price of tender under consideration

Pmin = Price of lowest acceptable tender

3.2. FORMULAE FOR DISPOSAL OR LEASING OF STATE ASSETS AND INCOME GENERATING PROCUREMENT

3.2.1. POINTS AWARDED FOR PRICE

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

80/20 **or** **90/10**

$$Ps = 80\left(1 - \frac{Pt - P\,min}{P\,min}\right) \quad \text{or} \quad Ps = 90\left(1 - \frac{Pt - P\,min}{P\,min}\right)$$

Where

Ps = Points scored for price of tender under consideration

Pt = Price of tender under consideration

Pmax = Price of highest acceptable tender

4. POINTS AWARDED FOR SPECIFIC GOALS

4.1. In terms of Regulation 4(2); 5(2); 6(2) and 7(2) of the Preferential Procurement Regulations, preference points must be awarded for specific goals stated in the tender. For the purposes of this tender the tenderer will be allocated points based on the goals stated in table 1 below as may be supported by proof/ documentation stated in the conditions of this tender:

4.2. In cases where organs of state intend to use Regulation 3(2) of the Regulations, which states that, if it is unclear whether the 80/20 or 90/10 preference point system applies, an organ of state must, in the tender documents, stipulate in the case of—

(a) an invitation for tender for income-generating contracts, that either the 80/20 or 90/10 preference point system will apply and that the highest acceptable tender will be used to determine the applicable preference point system; or

(b) any other invitation for tender, that either the 80/20 or 90/10 preference point system will apply and that the lowest acceptable tender will be used to determine the applicable preference point system,

then the organ of state must indicate the points allocated for specific goals for both the 90/10 and 80/20 preference point system.

Table 1: Specific goals for the tender and points claimed are indicated per the table below.

(Note to organs of state: Where either the 90/10 or 80/20 preference point system is applicable, corresponding points must also be indicated as such.

***Note to tenderers: The tenderer must indicate how they claim points for each preference point system.*)**

The specific goals allocated points in terms of this tender	Number of points allocated (90/10 system) (To be completed by the organ of state)	Number of points allocated (80/20 system) (To be completed by the organ of state)	Number of points claimed (90/10 system) (To be completed by the tenderer)	Number of points claimed (80/20 system) (To be completed by the tenderer)
100% Black owned		8		
51% -99% Black owned		6		
100% women owned		8		
51% -99% women owned		6		
100% youth owned		3		
51% -99% youth owned		2		
2% Owned by Persons with Disabilities		1		

DECLARATION WITH REGARD TO COMPANY/FIRM

4.3. Name of company/……

4.4. Company registration number: ……

4.5. TYPE OF COMPANY/ FIRM

- ☐ Partnership/Joint Venture / Consortium
- ☐ One-person business/sole propriety
- ☐ Close corporation
- ☐ Public Company
- ☐ Personal Liability Company
- ☐ (Pty) Limited
- ☐ Non-Profit Company
- ☐ State Owned Company

[TICK APPLICABLE BOX]

4.6. I, the undersigned, who is duly authorised to do so on behalf of the company/firm, certify that the points claimed, based on the specific goals as advised in the tender, qualifies the company/ firm for the preference(s) shown and I 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 paragraphs 1.4 and 4.2, the contractor may be required to furnish documentary proof to the satisfaction of the organ of state that the claims are correct;

(iv) If the specific goals have been claimed or obtained on a fraudulent basis or any of the conditions of contract have not been fulfilled, the organ of state may, in addition to any other remedy it may have –

(a) disqualify the person from the tendering 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) recommend that the tenderer or contractor, its shareholders and directors, or only the shareholders and directors who acted on a fraudulent basis, be restricted 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

(e) forward the matter for criminal prosecution, if deemed necessar

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SIGNATURE(S) OF TENDERER(S)

SURNAME AND NAME: .....

DATE: .....

ADDRESS: .....

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.....

.....

THE NATIONAL TREASURY
Republic of South Africa

GOVERNMENT PROCUREMENT:
GENERAL CONDITIONS OF CONTRACT
July 2010

NOTES

The purpose of this document is to:

(i) Draw special attention to certain general conditions applicable to government bids, contracts and orders; and

(ii) To ensure that clients be familiar with regard to the rights and obligations of all parties involved in doing business with government.

In this document words in the singular also mean in the plural and vice versa and words in the masculine also mean in the feminine and neuter.

- The General Conditions of Contract will form part of all bid documents and may not be amended.
- Special Conditions of Contract (SCC) relevant to a specific bid, should be compiled separately for every bid (if (applicable) and will supplement the General Conditions of Contract. Whenever there is a conflict, the provisions in the SCC shall prevail.

TABLE OF CLAUSES

1.Definitions	1. The following terms shall be interpreted as indicated: 1.1 “Closing time” means the date and hour specified in the bidding documents for the receipt of bids. 1.2 “Contract” means the written agreement entered into between the purchaser and the supplier, as recorded in the contract form signed by the parties, including all attachments and appendices thereto and all documents incorporated by reference therein. 1.3 “Contract price” means the price payable to the supplier under the contract for the full and proper performance of his contractual obligations. 1.4 “Corrupt practice” means the offering, giving, receiving, or soliciting of anything of value to influence the action of a public official in the procurement process or in contract execution. 1.5"Countervailing duties" are imposed in cases where an enterprise abroad is subsidized by its government and encouraged to market its products internationally. 1.6 “Country of origin” means the place where the goods were mined, grown or produced or from which the services are supplied. Goods are produced when, through manufacturing, processing or substantial and major assembly of components, a commercially recognized new product results that is substantially different in basic characteristics or in purpose or utility from its components. 1.7 “Day” means calendar day. 1.8 “Delivery” means delivery in compliance of the conditions of the contract or order. 1.9 “Delivery ex stock” means immediate delivery directly from stock actually on hand. 1.10 “Delivery into consignees store or to his site” means delivered and unloaded in the specified store or depot or on the specified site in compliance with the conditions of the contract or order, the supplier bearing all risks and charges involved until the supplies are so delivered and a valid receipt is obtained. 1.11 "Dumping" occurs when a private enterprise abroad market its goods on own initiative in the RSA at lower prices than that of the country of origin and which have the potential to harm the local industries in the 5 RSA. 1.12 ”Force majeure” means an event beyond the control of the supplier and not involving the supplier’s fault or negligence and not foreseeable. Such events

	may include, but is not restricted to, acts of the purchaser in its sovereign capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions and freight embargoes. 1.13 "Fraudulent practice" means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of any bidder, and includes collusive practice among bidders (prior to or after bid submission) designed to establish bid prices at artificial non-competitive levels and to deprive the bidder of the benefits of free and open competition. 1.14 "GCC" means the General Conditions of Contract. 1.15 "Goods" means all of the equipment, machinery, and/or other materials that the supplier is required to supply to the purchaser under the contract. 1.16 "Imported content" means that portion of the bidding price represented by the cost of components, parts or materials which have been or are still to be imported (whether by the supplier or his subcontractors) and which costs are inclusive of the costs abroad, plus freight and other direct importation costs such as landing costs, dock dues, import duty, sales duty or other similar tax or duty at the South African place of entry as well as transportation and handling charges to the factory in the Republic where the supplies covered by the bid will be manufactured. 1.17 "Local content" means that portion of the bidding price which is not included in the imported content provided that local manufacture does take place. 1.18 "Manufacture" means the production of products in a factory using labour, materials, components and machinery and includes other related value-adding activities. 1.19 "Order" means an official written order issued for the supply of goods or works or the rendering of a service. 1.20 "Project site," where applicable, means the place indicated in bidding documents. 1.21 "Purchaser" means the organization purchasing the goods. 1.22 "Republic" means the Republic of South Africa. 1.23 "SCC" means the Special Conditions of Contract.\ 1.24 "Services" means those functional services ancillary to the supply of the goods, such as transportation and any other incidental services, such as installation, commissioning, provision of technical assistance, training, catering, gardening, security, maintenance and other such 6 obligations of the supplier covered under the contract. 1.25 "Written" or "in writing" means handwritten in ink or any form of electronic or mechanical writing.
2. Application	2.1 These general conditions are applicable to all bids, contracts and orders including bids for functional and professional services, sales, hiring, letting and

	the granting or acquiring of rights, but excluding immovable property, unless otherwise indicated in the bidding documents. 2.2 Where applicable, special conditions of contract are also laid down to cover specific supplies, services or works. 2.3 Where such special conditions of contract are in conflict with these general conditions, the special conditions shall apply.
3. General	3.1 Unless otherwise indicated in the bidding documents, the purchaser shall not be liable for any expense incurred in the preparation and submission of a bid. Where applicable a non-refundable fee for documents may be charged. 3.2 With certain exceptions, invitations to bid are only published in the Government Tender Bulletin. The Government Tender Bulletin may be obtained directly from the Government Printer, Private Bag X85, Pretoria 0001, or accessed electronically from www.treasury.gov.za
4. Standards	4.1 The goods supplied shall conform to the standards mentioned in the bidding documents and specifications.
5. Use of contract documents and information; inspection.	5.1 The supplier shall not, without the purchaser's prior written consent, disclose the contract, or any provision thereof, or any specification, plan, drawing, pattern, sample, or information furnished by or on behalf of the purchaser in connection therewith, to any person other than a person employed by the supplier in the performance of the contract. Disclosure to any such employed person shall be made in confidence and shall extend only so far as may be necessary for purposes of such performance. 5.2 The supplier shall not, without the purchaser's prior written consent, make use of any document or information mentioned in GCC clause 5.1 Except for purposes of performing the contract. 5.3 Any document, other than the contract itself mentioned in GCC clause 5.1 shall remain the property of the purchaser and shall be returned (all copies) to the purchaser on completion of the supplier's performance under the contract if so required by the purchaser. 5.4 The supplier shall permit the purchaser to inspect the supplier's records relating to the performance of the supplier and to have them audited by auditors appointed by the purchaser, if so required by the purchaser
6. Patent rights	6.1 The supplier shall indemnify the purchaser against all third-party claims of infringement of patent, trademark, or industrial design rights arising from use of the goods or any part thereof by the purchaser
7. Performance security	7.1 Within thirty (30) days of receipt of the notification of contract award, the successful bidder shall furnish to the purchaser the performance security of the amount specified in SCC.

	7.2 The proceeds of the performance security shall be payable to the purchaser as compensation for any loss resulting from the supplier's failure to complete his obligations under the contract. 7.3 The performance security shall be denominated in the currency of the contract, or in a freely convertible currency acceptable to the purchaser and shall be in one of the following forms: (a) a bank guarantee or an irrevocable letter of credit issued by a reputable bank located in the purchaser's country or abroad, acceptable to the purchaser, in the form provided in the bidding documents or another form acceptable to the purchaser; or (b) a cashier's or certified cheque 7.4 The performance security will be discharged by the purchaser and returned to the supplier not later than thirty (30) days following the date of completion of the supplier's performance obligations under the contract, including any warranty obligations, unless otherwise specified in SCC.
8. Inspections, tests and analyses	8.1 All pre-bidding testing will be for the account of the bidder. 8.2 If it is a bid condition that supplies to be produced or services to be rendered should at any stage during production or execution or on completion be subject to inspection, the premises of the bidder or contractor shall be open, at all reasonable hours, for inspection by a representative of the Department or an organization acting on behalf of the Department. 8.3 If there are no inspection requirements indicated in the bidding documents and no mention is made in the contract, but during the contract period it is decided that inspections shall be carried out, the purchaser shall itself make the necessary arrangements, including payment arrangements with the testing authority concerned. 8.4 If the inspections, tests and analyses referred to in clauses 8.2 and 8.3 show the supplies to be in accordance with the contract requirements, the cost of the inspections, tests and analyses shall be defrayed by the purchaser. 8.5 Where the supplies or services referred to in clauses 8.2 and 8.3 do not comply with the contract requirements, irrespective of whether such supplies or services are accepted or not, the cost in connection with these inspections, tests or analyses shall be defrayed by the supplier. 8.6 Supplies and services which are referred to in clauses 8.2 and 8.3 and which do not comply with the contract requirements may be rejected. 8.7 Any contract supplies may on or after delivery be inspected, tested or analyzed and may be rejected if found not to comply with the requirements of the contract. Such rejected supplies shall be held at the cost and risk of the supplier who shall, when called upon, remove them immediately at his own cost and forthwith substitute them with supplies which do comply with the requirements of the contract. Failing such removal the rejected supplies shall be returned at the suppliers cost and risk. Should the supplier fail to provide the substitute supplies forthwith, the purchaser may, without giving the supplier further opportunity to

	substitute the rejected supplies, purchase such supplies as may be necessary at the expense of the supplier. 3.1 The provisions of clauses 8.4 to 8.7 shall not prejudice the right of the purchaser to cancel the contract on account of a breach of the conditions thereof, or to act in terms of Clause 23 of GCC.
9. Packing	9.1 The supplier shall provide such packing of the goods as is required to prevent their damage or deterioration during transit to their final destination, as indicated in the ontract. The packing shall be sufficient to withstand, without limitation, rough handling during transit and exposure to extreme temperatures, salt and precipitation during transit, and open storage. Packing, case size and weights shall take into consideration, where appropriate, the remoteness of the goods' final destination and the absence of heavy handling facilities at all points in transit. 9.2 The packing, marking, and documentation within and outside the packages shall comply strictly with such special requirements as shall be expressly provided for in the contract, including additional requirements, if any, specified in SCC, and in any subsequent instructions ordered by the purchaser.
10. Delivery and documents	10.1 Delivery of the goods shall be made by the supplier in accordance with the terms specified in the contract. The details of shipping and/or other documents to be furnished by the supplier are specified in SCC. 10.2 Documents to be submitted by the supplier are specified in SCC. 10.3
11. Insurance	11.1 The goods supplied under the contract shall be fully insured in a freely convertible currency against loss or damage incidental to manufacture or acquisition, transportation, storage and delivery in the manner specified in the SCC.
12. Transportation	12.1 Should a price other than an all-inclusive delivered price be required, this shall be specified in the SCC.
13. Incidental services	13.1 The supplier may be required to provide any or all of the following services, including additional services, if any, specified in SCC: (a) performance or supervision of on-site assembly and/or commissioning of the supplied goods; (b) furnishing of tools required for assembly and/or maintenance of the supplied goods; (c) furnishing of a detailed operations and maintenance manual for each appropriate unit of the supplied goods; (d) performance or supervision or maintenance and/or repair of the supplied goods, for a period of time agreed by the parties, provided that this service shall not relieve the supplier of any warranty obligations under this contract; and (e) training of the purchaser's personnel, at the supplier's plant and/or on-site, in assembly, start-up, operation, maintenance, and/or repair of the supplied goods.

	13.2 Prices charged by the supplier for incidental services, if not included in the contract price for the goods, shall be agreed upon in advance by the parties and shall not exceed the prevailing rates charged to other parties by the supplier for similar services.
14. Spare parts	14.1 As specified in SCC, the supplier may be required to provide any or all of the following materials, notifications, and information pertaining to spare parts manufactured or distributed by the supplier: (a) such spare parts as the purchaser may elect to purchase from the supplier, provided that this election shall not relieve the supplier of any warranty obligations under the contract; and (b) in the event of termination of production of the spare parts: (i) Advance notification to the purchaser of the pending termination, in sufficient time to permit the purchaser to procure needed requirements; and (ii) following such termination, furnishing at no cost to the purchaser, the blueprints, drawings, and specifications of the spare parts, if requested.
15. Warrant	15.1 The supplier warrants that the goods supplied under the contract are new, unused, of the most recent or current models, and that they incorporate all recent improvements in design and materials unless provided otherwise in the contract. The supplier further warrants that all goods supplied under this contract shall have no defect, arising from design, materials, or workmanship (except when the design and/or material is required by the purchaser's specifications) or from any act or omission of the supplier, that may develop under normal use of the supplied goods in the conditions prevailing in the country of final destination. 15.2 This warranty shall remain valid for twelve (12) months after the goods, or any portion thereof as the case may be, have been delivered to and accepted at the final destination indicated in the contract, or for eighteen (18) months after the date of shipment from the port or place of loading in the source country, whichever period concludes earlier, unless specified otherwise in SCC. 15.3 The purchaser shall promptly notify the supplier in writing of any claims arising under this warranty. 15.4 Upon receipt of such notice, the supplier shall, within the period specified in SCC and with all reasonable speed, repair or replace the defective goods or parts thereof, without costs to the purchaser. 15.5 If the supplier, having been notified, fails to remedy the defect(s) within the period specified in SCC, the purchaser may proceed to take such remedial action as may be necessary, at the supplier's risk and expense and without prejudice to any other rights which the purchaser may have against the supplier under the contract
16. Payment	16.1 The method and conditions of payment to be made to the supplier under this contract shall be specified in SCC.

	16.2 The supplier shall furnish the purchaser with an invoice accompanied by a copy of the delivery note and upon fulfilment of other obligations stipulated in the contract. 16.3 Payments shall be made promptly by the purchaser, but in no case later than thirty (30) days after submission of an invoice or claim by the supplier. 16.4 Payment will be made in Rand unless otherwise stipulated in SCC.
17. Prices	17.1 Prices charged by the supplier for goods delivered and services performed under the contract shall not vary from the prices quoted by the supplier in his bid, with the exception of any price adjustments authorized in the purchaser's request for bid validity extension, as the case may be.
18. Contract amendments	18.1 No variation in or modification of the terms of the contract shall be made except by written amendment signed by the parties concerned
19. Assignment	19.1 The supplier shall not assign, in whole or in part, its obligations to perform under the contract, except with the purchaser's prior written consent.
20. Subcontracts	20.1 The supplier shall notify the purchaser in writing of all subcontracts awarded under this contracts if not already specified in the bid. Such notification, in the original bid or later, shall not relieve the supplier from any liability or obligation under the contract.
21. Delays in the supplier's performan	21.1 Delivery of the goods and performance of services shall be made by the supplier in accordance with the time schedule prescribed by the purchaser in the contract. 21.2 If at any time during performance of the contract, the supplier or its subcontractor(s) should encounter conditions impeding timely delivery of the goods and performance of services, the supplier shall promptly notify the purchaser in writing of the fact of the delay, its likely duration and its cause(s). As soon as practicable after receipt of the supplier's notice, the purchaser shall evaluate the situation and may at his discretion extend the supplier's time for performance, with or without the imposition of penalties, in which case the extension shall be ratified by the parties by amendment of contract. 21.3 No provision in a contract shall be deemed to prohibit the obtaining of supplies or services from a national department, provincial department, or a local authority. 21.4 The right is reserved to procure outside of the contract small quantities or to have minor essential services executed if an emergency arises, the supplier's point of supply is not situated at or near the place where the supplies are required, or the supplier's services are not readily available. 21.5 Except as provided under GCC Clause 25, a delay by the supplier in the performance of its delivery obligations shall render the supplier liable to the imposition of penalties, pursuant to GCC Clause 22, unless an extension of time is agreed upon pursuant to GCC Clause 21.2 without the application of penalties.

	21.6 Upon any delay beyond the delivery period in the case of a supplies contract, the purchaser shall, without cancelling the contract, be entitled to purchase supplies of a similar quality and up to the same quantity in substitution of the goods not supplied in conformity with the contract and to return any goods delivered later at the supplier's expense and risk, or to cancel the contract and buy such goods as may be required to complete the contract and without prejudice to his other rights, be entitled to claim damages from the supplier.
22. Penalties	22.1 Subject to GCC Clause 25, if the supplier fails to deliver any or all of the goods or to perform the services within the period(s) specified in the contract, the purchaser shall, without prejudice to its other remedies under the contract, deduct from the contract price, as a penalty, a sum calculated on the delivered price of the delayed goods or unperformed services using the current prime interest rate calculated for each day of the delay until actual delivery or performance. The purchaser may also consider termination of the contract pursuant to GCC Clause 23.
23. Termination for default	23.1 The purchaser, without prejudice to any other remedy for breach of contract, by written notice of default sent to the supplier, may terminate this contract in whole or in part: (a) if the supplier fails to deliver any or all of the goods within the period(s) specified in the contract, or within any extension thereof granted by the purchaser pursuant to GCC Clause 21.2; (b) if the Supplier fails to perform any other obligation(s) under the contract; or (c) if the supplier, in the judgment of the purchaser, has engaged in corrupt or fraudulent practices in competing for or in executing the contract. 23.2 In the event the purchaser terminates the contract in whole or in part, the purchaser may procure, upon such terms and in such manner as it deems appropriate, goods, works or services similar to those undelivered, and the supplier shall be liable to the purchaser for any excess costs for such similar goods, works or services. However, the supplier shall continue performance of the contract to the extent not terminated. 23.3 Where the purchaser terminates the contract in whole or in part, the purchaser may decide to impose a restriction penalty on the supplier by prohibiting such supplier from doing business with the public sector for a period not exceeding 10 years. 23.4 If a purchaser intends imposing a restriction on a supplier or any person associated with the supplier, the supplier will be allowed a time period of not more than fourteen (14) days to provide reasons why the envisaged restriction should not be imposed. Should the supplier fail to respond within the stipulated fourteen (14) days the purchaser may regard the intended penalty as not objected against and may impose it on the supplier. 23.5 Any restriction imposed on any person by the Accounting Officer / Authority will, at the discretion of the Accounting Officer / Authority, also be applicable to any other enterprise or any partner, manager, director or other person who wholly or partly exercises or exercised or may exercise control over the enterprise of the first-mentioned person, and with which enterprise or person

	the first-mentioned person, is or was in the opinion of the Accounting Officer / Authority actively associated. 23.6 If a restriction is imposed, the purchaser must, within five (5) working days of such imposition, furnish the National Treasury, with the following information: (i) the name and address of the supplier and / or person restricted by the purchaser; (ii) the date of commencement of the restriction (iii) the period of restriction; and (iv) the reasons for the restriction. These details will be loaded in the National Treasury's central database of suppliers or persons prohibited from doing business with the public sector. 23.7 If a court of law convicts a person of an offence as contemplated in sections 12 or 13 of the Prevention and Combating of Corrupt Activities Act, No. 12 of 2004, the court may also rule that such person's name be endorsed on the Register for Tender Defaulters. When a person's name has been endorsed on the Register, the person will be prohibited from doing business with the public sector for a period not less than five years and not more than 10 years. The National Treasury is empowered to determine the period of restriction and each case will be dealt with on its own merits. According to section 32 of the Act the Register must be open to the public. The Register can be perused on the National Treasury website.
24. Anti-dumping and countervailing duties and rights	24.1 When, after the date of bid, provisional payments are required, or antidumping or countervailing duties are imposed, or the amount of a provisional payment or anti-dumping or countervailing right is increased in respect of any dumped or subsidized import, the State is not liable for any amount so required or imposed, or for the amount of any such increase. When, after the said date, such a provisional payment is no longer required or any such anti-dumping or countervailing right is abolished, or where the amount of such provisional payment or any such right is reduced, any such favourable difference shall on demand be paid forthwith by the contractor to the State or the State may deduct such amounts from moneys (if any) which may otherwise be due to the contractor in regard to supplies or services which he delivered or rendered, or is to deliver or render in terms of the contract or any other contract or any other amount which may be due to him
25. Force Majeure	25.1 Notwithstanding the provisions of GCC Clauses 22 and 23, the supplier shall not be liable for forfeiture of its performance security, damages, or termination for default if and to the extent that his delay in performance or other failure to perform his obligations under the contract is the result of an event of force majeure. 25.2 If a force majeure situation arises, the supplier shall promptly notify the purchaser in writing of such condition and the cause thereof. Unless otherwise directed by the purchaser in writing, the supplier shall continue to perform its obligations under the contract as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the force majeure event.
26. Termination for insolvency	26.1 The purchaser may at any time terminate the contract by giving written notice to the supplier if the supplier becomes bankrupt or otherwise insolvent. In this event, termination will be without compensation to the supplier, provided that

	such termination will not prejudice or affect any right of action or remedy which has accrued or will accrue thereafter to the purchaser.
27. Settlement of Disputes	27.1 If any dispute or difference of any kind whatsoever arises between the purchaser and the supplier in connection with or arising out of the contract, the parties shall make every effort to resolve amicably such dispute or difference by mutual consultation. 27.2 If, after thirty (30) days, the parties have failed to resolve their dispute or difference by such mutual consultation, then either the purchaser or the supplier may give notice to the other party of his intention to commence with mediation. No mediation in respect of this matter may be commenced unless such notice is given to the other party. 27.3 Should it not be possible to settle a dispute by means of mediation, it may be settled in a South African court of law. 27.4 Mediation proceedings shall be conducted in accordance with the rules of procedure specified in the SCC. 27.5 Notwithstanding any reference to mediation and/or court proceedings herein, (a) the parties shall continue to perform their respective obligations under the contract unless they otherwise agree; and (b) the purchaser shall pay the supplier any monies due the supplier.
28. Limitation of liability	28.1 Except in cases of criminal negligence or willful misconduct, and in the case of infringement pursuant to Clause 6; (a) the supplier shall not be liable to the purchaser, whether in contract, tort, or otherwise, for any indirect or consequential loss or damage, loss of use, loss of production, or loss of profits or interest costs, provided that this exclusion shall not apply to any obligation of the supplier to pay penalties and/or damages to the purchaser; and (b) the aggregate liability of the supplier to the purchaser, whether under the contract, in tort or otherwise, shall not exceed the total contract price, provided that this limitation shall not apply to the cost of repairing or replacing defective equipment.
29. Governing language	29.1 The contract shall be written in English. All correspondence and other documents pertaining to the contract that is exchanged by the parties shall also be written in English.
30. Applicable law	30.1 The contract shall be interpreted in accordance with South African laws, unless otherwise specified in SCC.
31. Notices	31.1 Every written acceptance of a bid shall be posted to the supplier concerned by registered or certified mail and any other notice to him shall be posted by ordinary mail to the address furnished in his bid or to the address notified later by him in writing and such posting shall be deemed to be proper service of such notice

	31.2 The time mentioned in the contract documents for performing any act after such aforesaid notice has been given, shall be reckoned from the date of posting of such notice
32. Taxes and duties	32.1 A foreign supplier shall be entirely responsible for all taxes, stamp duties, license fees, and other such levies imposed outside the purchaser's country. 32.2 A local supplier shall be entirely responsible for all taxes, duties, license fees, etc., incurred until delivery of the contracted goods to the purchaser. 32.3 No contract shall be concluded with any bidder whose tax matters are not in order. Prior to the award of a bid the Department must be in possession of a tax clearance certificate, submitted by the bidder. This certificate must be an original issued by the South African Revenue Services.
33. National Industrial Participation (NIP) Programme	33.1 The NIP Programme administered by the Department of Trade and Industry shall be applicable to all contracts that are subject to the NIP obligation.
34 Prohibition of Restrictive practices	34.1 In terms of section 4 (1) (b) (iii) of the Competition Act No. 89 of 1998, as amended, an agreement between, or concerted practice by, firms, or a decision by an association of firms, is prohibited if it is between parties in a horizontal relationship and if a bidder (s) is / are or a contractor(s) was / were involved in collusive bidding (or bid rigging). 34.2 If a bidder(s) or contractor(s), based on reasonable grounds or evidence obtained by the purchaser, has / have engaged in the restrictive practice referred to above, the purchaser may refer the matter to the Competition Commission for investigation and possible imposition of administrative penalties as contemplated in the Competition Act No. 89 of 1998. 34.3 If a bidder(s) or contractor(s), has / have been found guilty by the Competition Commission of the restrictive practice referred to above, the purchaser may, in addition and without prejudice to any other remedy provided for, invalidate the bid(s) for such item(s) offered, and / or terminate the contract in whole or part, and / or restrict the bidder(s) or contractor(s) from conducting business with the public sector for a period not exceeding ten (10) years and / or claim damages from the bidder(s) or contractor(s) concerned.