



TENDER NO: 2021/090(A)

PROVISION OF HVAC MAINTENANCE FOR HEAD OFFICE

VOLUME 1 – Tendering Procedures and Returnable Documents

Issued by:

Umgeni Water
310 Burger Street
Pietermaritzburg

Tender Queries:

Contact Name: Mbali Ngema
Telephone: 033 341 1323

Name of Tenderer:

National Treasury CSD Number:

Tip-Offs Anonymous Hotline:	Appeals/Objections
Report unethical conduct at Umgeni Water on: Toll Free Number: 0800 864 463 Email: umgeniwater@whistleblowing.co.za Toll Free Fax: 0800 212 689 Postal: Freepost KZN665, Musgrave, 4062 SMS: 33490 Online: www.whistleblowing.co.za <i>Stop theft / fraud / dishonesty / bribery /blackmail / intimidation, and remain anonymous.</i>	Persons aggrieved by tender award decisions taken by Umgeni Water, may lodge an appeal within 7 days of the date of the intention to award advertisement. UW shall only consider written appeals/objections clearly stating reasons for appeal directed to: The Supply Chain Management Office, Attention: Supply Chain Management Email: appeals@umgeni.co.za

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Tender Number: 2021/090(A)

Tender Title: PROVISION OF HVAC MAINTENANCE FOR HEAD OFFICE FOR A PERIOD OF THREE (3) YEARS

T1.1 TENDER NOTICE AND INVITATION TO TENDER

Umgeni Water is a state owned business enterprise and it operates within the South African legislative parameters of the Water Services Act 108 of 1997, Public Finance Management Act 1 of 1999 and Public Audit Act 25 of 2004.

Competent and experienced service providers are invited to tender for the following:

Provision of HVAC Maintenance for Head Office for a period of Three (3) Years

In addition to the Eligibility Criteria specified in Clause F2.1 of the tender document, tenderers are required to fulfil the following:

Tenderers are required to achieve at least 35% Contract Participation Goals (CPG) including a minimum 10% Black Women participation and another 10% for Local participation of the value of goods, services and works paid to one or more targeted enterprises to comply with Umgeni Water's BBBEE policy initiative.

A CIDB Grading of 3ME of Higher

Evaluation method:

The tender will firstly be evaluated on eligibility. If found to be eligible, it will be further evaluated in two stages i.e.

- Functionality shall be assessed. A minimum functionality score of 70 points is required for the tender to be considered further.
- Price & Preference using the 80/20 Preference Point Scoring System in terms of PPPFA

Tender documents are available from the Supply Chain Management Office. Documents will be issued by email, upon request and submission of proof of payment to mbali.ngema@umgeni.co.za. **Documents will only be issued in electronic format during working hours from 09h00 to 15h00 from 01 October 2021 to 14 October 2021**

A non-refundable tender fee of R 200 payable by Electronic Fund Transfer is required before requesting the Tender Document. Proof of EFT payment is to be provided. The said transfers may be made to:

BANK NAME: NEDBANK LIMITED
ACCOUNT NAME: UMGENI WATER BOARD – MAIN ACCOUNT
ACCOUNT NUMBER: 1196366594
REFERENCE: TENDER NO 2021/090(A) and Company Name.

**NOTE: 1 TENDER DOCUMENTS SHALL NOT BE ISSUED IF INCORRECTLY REFERENCED.
2 TENDERER TO FORWARD NOTIFICATION OF PAYMENT BY E-MAIL TO [Mbali Ngema]
AT [mbali.ngema@umgeni.co.za]**

NOTE: NO CASH PAYMENT WILL BE ACCEPTED WHEN ISSUING TENDER DOCUMENTS

Queries relating to the issue of these documents shall be addressed to: Ms Mbali Ngema, Tel No.: 033 341 1323, e-mail: mbali.ngema@umgeni.co.za

Due to the national lockdown restrictions, there will be no compulsory clarification meeting for the tender. Prospective tenderers will be issued with a detailed presentation with an overview regarding the tendering procedures, scope of work and the details of the site.

Tenderers who wish to view the site must make arrangements with Umgeni Water before the end of the collection period for tender documents.

No tender documents will be issued after the stipulated collection period indicated above and no concessions will be made for tenderers who do collect tender documents during the said period

The closing time for submission of tenders is **12h00 on 11 November 2021**

Tenders are to be deposited in the tender box located outside the main entrance at **Umgeni Water, 310 Burger Street, Pietermaritzburg.**

Persons aggrieved by decisions or actions taken by Umgeni Water, may lodge an appeal within 7 days of the date of the intention to award advertisement appearing in the relevant print media.

The appeal (clearly stating reasons for appeal) and queries with regard to the decision of award are to be directed, in writing only to the Supply Chain Management Office,
Attention: Supply Chain Management
Email: appeals@umgeni.co.za

Note that appeals not addressed to the abovementioned email will not be considered.

Umgeni Water's standard conditions of tender are available on Umgeni Water's website
https://www.umgeni.co.za/pdf/cm009_standard_conditions_of_tender.pdf

For any other tender adverts, please visit this website.

Umgeni Water Reserves the Right to Award the Contract In Whole or In Part

T1.2 TENDER DATA (INCLUDING SPECIAL CONDITIONS OF TENDER)

The conditions of tender are the Umgeni Water Standard Conditions of Tender (document number: SCM009, a copy of which may be obtained from Umgeni Water Supply Chain Management office or can be downloaded from the following web site:

www.umgeni.co.za/sustainable_development/sud.asp

For purposes of this Contract the following Special Condition of Tender shall apply:

F.3.8 Test for responsiveness

Sub-Clause F.3.8.1 Add the following new sub-clause:

“d) Meets the minimum Functionality requirement stated in the Tender Data.”

F3.11.5 Method 4: Financial offer, quality and preferences

Delete this Clause in its entirety and substitute with:

“F.3.11.5 Functionality

Each member of the Employer’s tender evaluation committee is to independently score each tender in respect of functionality offered in accordance with the provisions of F.3.11.9. The committee is then to calculate the final score for each tender as the average of the score from each committee member, rejecting all tender offers that fail to score the minimum number of points stated in the tender data, if any.”

Clause F.3.11.9 Scoring Quality

Substitute the word ‘quality’ wherever it appears with the word ‘functionality’.

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

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

Clause number	Tender Data
	F.1.1 Actions
F.1.1	The Employer is Umgeni Water
	F.1.2 Tender Documents
F.1.2	The Tender Documents issued by the Employer comprise the following documents: VOLUME 1 – Tendering Procedures and Returnable Documents Part T1: Tendering procedures Part T2: Returnable documents VOLUME 2 – Offer, Contract, Price, Scope of Work and Site Information Part C1: Agreements and Contract data Part C2: Pricing data Part C3: Scope of work Part C4: Site Inspection Part C5: Annexures

T1.4.

	F.1.4 Communication and Employer's agent
F.1.4	The Employer's agent is : <u>Tender Queries</u> Name: Mbali Ngema Address: 310 Burger Street, Pietermaritzburg Tel: 033 341 1323 E-mail: mbali.ngema@umgeni.co.za
	F.1.5 The Purchaser's right to accept or reject any tender offer
F.1.5.2	The minimum period will be 3 months
	F.2.1 Eligibility
F.2.1	Umgeni Water will only consider submissions from tenderers who satisfy the following criteria: - the Tenderer or any of its directors/shareholders is not listed on the Register of Tender Defaulters in terms of the Prevention and Combating of Corrupt Activities Act of 2004 as a person prohibited from doing business with the public sector; - the Tenderer has not: - abused the Employer's Supply Chain Management System; or - failed to perform on any previous contract and has been given a written notice to this effect; - the Tenderer has completed and signed the Declaration of Interest and there are no conflicts of interest which may impact on the Tenderer's ability to perform the contract in the best interests of the Purchaser or potentially compromise the tender process and persons in the employ of the state are permitted to submit tenders or participate in the contract; - the Tenderer has completed and signed the Declaration of Independent Tender Determination and has arrived at the accompanying tender independently from, and without consultation, communication, agreement or arrangement with any competitor. - Tenderers are required to achieve at least 35% Contract Participation Goals (CPG) including a minimum 10% Black Women participation and another 10% for Local participation of the value of goods, services and works paid to one or more targeted enterprises to comply with Umgeni Water's BBBEE policy initiative Registration with - CIDB Grading of 3ME or Higher.
	F.2.7 Clarification meeting
F.2.7	There will be no Clarification Meeting
	F.2.12 Alternative tender offers
F.2.12	No alternative tender offers shall be considered.
	F.2.13 Submitting a tender offer
F.2.13.3	Parts of each tender offer communicated on paper shall be submitted as an original

F.2.13.5 and F.2.13.7	The Employer's details and address for delivery of tender offers are stated in T1.1 Tender Notice and Invitation to Tender. Identification details The identification details which must be stated in the tender offer outer package are: Tender Number Title of Tender Closing Date Closing Time Tenderer's Name Tenderer's Address Tenders issued in more than one volume shall be returned in the same manner and bound separately as per the tender volumes issued. The tender box is available to the public 24 hours per day and 7 days per week. It is the Tenderers sole responsibility to ensure that tenders are placed in the tender box and only Tenders that have been placed in the tender box before the stipulated closing date and time shall be considered.
F.2.13.6	A two-envelope system is not applicable
	F.2.15 Closing time
F.2.15	The closing time for submission of tender offers is as stated in T.1.1 Tender Notice and Invitation to Tender.
	F.2.16 Tender offer validity
F.2.16.1	The tender offer validity period is 120 days from the closing date.
	F.2.19 Inspections, tests and analysis
F.2.19	Access shall be provided for the following inspections, tests and analysis:
	F.2.20 Submit securities, bonds, policies, etc.
F.2.20	The Tenderer is required to submit with his Tender a letter of intent from an approved Financial Services Provider registered with the Financial Services Board to provide the Insurances to the format included in Part T2.2 of this procurement document.
	F.2.23 Certificates
F.2.23	The Tenderer is required to submit with his tender: 1) A Tax Compliance Status (TCS) letter (with pin) issued by the South African Revenue Services. 2) A valid affidavit or a certified copy B-BBEE Status Level Certificate or sufficient evidence to confirm status as a qualifying EME 3) Proof of good standing in terms of the COID Act 4) Certificate of Independent Bid Determination 5) Company Registration Certificate 6) Registration with CIDB Grading of 3ME or Higher. 7) Central Supplier Database (CSD) Report
	F.3.4 Opening of tender submissions
F.3.4	Tenders shall be opened immediately after the closing time for tenders as stipulated in T1.1 Tender Notice and Invitation to Tender.
	F3.8 Test for responsiveness
F.3.8	The minimum qualifying Functionality Evaluation Score shall be 70 (seventy) points.

T1.6.

	F.3.11 Evaluation of tender offers									
F.3.11.3 F.3.11.7 F.3.11.8	The procedure for the evaluation of responsive tenders is Method 2 (Financial Offer and Preference) in accordance with F.3.11.3 using formula 2 in F.3.11.7									
F.3.11.9	The table below lists the returnable schedules that set out the scoring criteria and sub-criteria, and the percentage weighting for the score achieved against the relevant schedule: <table><tr><th colspan="2">Returnable Schedule</th><th>Weighting %</th></tr><tr><td>T2.2.09</td><td>Tenderer's Experience</td><td>50</td></tr><tr><td>T2.2.11</td><td>Experience of Key Personnel</td><td>50</td></tr></table> <u>Failure to score a single point in any of the criteria listed above will deem the bid to be non-responsive and the bidder will be disqualified.</u> The score allocated by each Bid Evaluation Committee member for a tender shall be the sum, of the scores relevant to each of the above listed returnable schedules multiplied by the percentage weighting for each as shown above.	Returnable Schedule		Weighting %	T2.2.09	Tenderer's Experience	50	T2.2.11	Experience of Key Personnel	50
Returnable Schedule		Weighting %								
T2.2.09	Tenderer's Experience	50								
T2.2.11	Experience of Key Personnel	50								
	F.3.17 Provide copies of the contracts									
F.3.17	The number of paper copies of the signed contract to be provided by the Employer is one.									
	F3.18 Provide written reasons for actions taken									
F3.18	Refer to Section 39 of the Supply Chain Management Policy.									

T2.1.

T2.1 LIST OF ALL RETURNABLE DOCUMENTS AND SCHEDULES

The Tenderer shall complete and submit the following returnable schedules and documents:

	Tenderer's Check List	Page No.
T2.2.1 Authority for Signatory		T2.3
T2.2.2 Declaration of Interest		T2.10
T2.2.3 Declaration of Tenderer's Past Supply Chain Management Practices`		T2.13
T2.2.4 Tax Compliance Status Letter Requirements		T2.16
T2.2.5 Proof of Attendance at the Compulsory Clarification/Site Meeting	N/A	T2.17
T2.2.6 Certificate of Independent Bid Determination		T2.18
T2.2.7 Contract Participation Goals (CPG)		T2.21
T2.2.8 Local Production and Content Declaration Certificate (SBD 6.2)	N/A	T2.24
T2.2.9 Tenderer's Experience		T2.30
T2.2.10 Key Personnel Assigned to the Work		T2.32
T2.2.11 Experience of Key Personnel		T2.33
T2.2.12 Proposed Organization and Staffing		T2.36
T2.2.13 Tenderer's Schedule of Plant and Equipment	N/A	T2.38
T2.2.14 Quality Assurance and Environmental Management	N/A	T2.40
T2.2.15 Method Statement	N/A	T2.42
T2.2.16 Preliminary Programme	N/A	T2.44
T2.2.17 Registration Certificate / Agreement / ID Document		T2.46
T2.2.18 Amendments, Qualifications and Alternatives		T2.47
T2.2.19 Record of Addenda to Tender Documents		T2.49
T2.2.20 VAT Registration Certificate		T2.50
T2.2.21 Schedule of Proposed Sub-Supplier		T2.51
T2.2.22 Preference Points claim form in terms of the PPPFA Regulations 2017, substantiated by the B-BBEE Verified Status Level Verification Certificate		T2.52
T2.2.23 Proof of Purchase of Tender Document		T2.59
T2.2.24 Goods and Services Sourced Internationally		T2.60
T2.2.25 Letter of Good Standing in terms of COID Act		T2.62

T2.2.

T2.2.26 Tenderer's Financial Standing		T2.63
T2.2.27 Suppliers Health and Safety Declaration		T2.64
T2.2.28 Pro forma OHS Notification		T2.65
T2.2.29 Letter of Intent for Public Liability		T2.66
T2.2.30 Letter of Intent for Performance Guarantee		T2.67
T2.2.31 Registration Certificates		T2.68
T2.2.32 Central Supplier Database (CSD) Report		T2.69

T2.2.1 AUTHORITY FOR SIGNATORY

Fill in the relevant portion applicable to the type of organization

A. COMPANIES

If a Tenderer is a company, a certified copy of the resolution by the board of directors, personally signed by the chairperson of the board, authorizing the person who signs this Tender to do so, as well as to sign any contract resulting from this Tender and any other documents and correspondence in connection with this Tender and/or contract on behalf of the company must be submitted with this Tender, that is before the closing time and date of the Tender

AUTHORITY BY BOARD OF DIRECTORS

By resolution passed by the Board of Directors on 20.....

Mr/Mrs (whose signature appears below) has been duly authorized to sign all documents in connection with this Tender on behalf of

(Name of Company)

IN HIS/HER CAPACITY AS:

SIGNED ON BEHALF OF COMPANY:
(PRINT NAME)

SIGNATURE OF SIGNATORY: DATE:

WITNESSES:

T2.4.

B. SOLE PROPRIETOR (ONE - PERSON BUSINESS)

I, the undersigned

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

.....

.....
SIGNATURE

.....
DATE

FOR INFORMATION USE ONLY

C. 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 partners in the business trading as

hereby authorize
to sign this Tender as well as any contract resulting from the Tender and any other documents and
correspondence in connection with this Tender and /or contract on behalf of

.....		
Signature	Signature	Signature

.....		
Date	Date	Date

D. CLOSE CORPORATION

In the case of a close corporation submitting a Tender, a certified copy of the Founding Statement of such corporation shall be included with the Tender, together with the resolution by its members authorizing a member or other official of the corporation to sign the documents on their behalf.

By resolution of members at a meeting on 20.....

at

Mr/Ms, whose signature appears below, has been authorized to sign all documents in connection with this Tender on behalf of (Name of Close Corporation)

.....

.....

SIGNED ON BEHALF OF CLOSE CORPORATION:

(PRINT NAME)

IN HIS/HER CAPACITY AS DATE:

SIGNATURE OF SIGNATORY:

WITNESSES: 1.

2.

E. CO-OPERATIVE

A certified copy of the Constitution of the co-operative must be included with the Tender, together with the resolution by its members authoring a member or other official of the co-operative to sign the Tender documents on their behalf.

By resolution of members at a meeting on 20.....

at

Mr/Ms, whose signature appears below, has been authorized to sign all documents in connection with this Tender on behalf of (Name of Co-Operative)

.....

SIGNATURE OF AUTHORIZED REPRESENTATIVE/SIGNATORY:

(PRINT NAME)

IN HIS/HER CAPACITY AS

DATE:

SIGNED ON BEHALF OF CO-OPERATIVE:

NAME IN BLOCK LETTERS:

WITNESSES: 1.

2.

F. JOINT VENTURES

If a tenderer is a joint venture, a certified copy of the resolution/agreement passed/reached signed by the duly authorised representatives of the enterprises, authorising the representatives who sign this tender to do so, as well as to sign any contract resulting from this tender and any other documents and correspondence in connection with the tender and/or contract on behalf of the joint venture must be submitted with this tender, before the closing time and date of the tender.

Authority to sign on behalf of the Joint Venture:

By resolution/agreement passed/reached by the joint venture partners on 20

Mr/Mrs, Mr/Mrs

Mr/Mrsand Mr/Mrs
(whose signatures appear below) have been duly authorised to sign all documents in connection with this tender on behalf of:

(Name of Joint Venture)

In his/her capacity as:

Signed on behalf of (COMPANY NAME):
(PRINT NAME)

Signature Date:

In his/her capacity as:

Signed on behalf of (COMPANY NAME):
(PRINT NAME)

Signature Date:

In his/her capacity as:

Signed on behalf of (COMPANY NAME):
(PRINT NAME)

Signature Date:

In his/her capacity as:

Signed on behalf of (COMPANY NAME):
(PRINT NAME)

Signature Date:

G. CONSORTIUM

If a tenderer is a consortium, a certified copy of the resolution/agreement passed/reached signed by the duly authorised representatives of the enterprises, authorising the representatives who sign this tender to do so, as well as to sign any contract resulting from this tender and any other documents and correspondence in connection with the tender and/or contract on behalf of the consortium must be submitted with this tender, before the closing time and date of the tender.

Authority to sign on behalf of the consortium:

By resolution/agreement passed/reached by the consortium partners on20.....

Mr/Mrs ,
(whose signature appear below) have been duly authorised to sign all documents in connection with this tender on behalf of:

(Name of Consortium)

In his/her capacity as:

Signature Date:

T2.2.2 DECLARATION OF INTEREST

1. Any legal person, including persons employed by the state¹, or persons having a kinship with persons employed by the state, including a blood relationship, may make an offer or offers in terms of this invitation to bid (includes a price quotation, advertised competitive bid, limited bid or proposal). In view of possible allegations of favouritism, should the resulting bid, or part thereof, be awarded to persons employed by the state, or to persons connected with or related to them, it is required that the bidder or his/her authorised representative declare his/her position in relation to the evaluating/adjudicating authority where-

- the bidder is employed by the state; and/or
- the legal person on whose behalf the bidding document is signed, has a relationship with persons/a person who are/is involved in the evaluation and or adjudication of the bid(s), or where it is known that such a relationship exists between the person or persons for or on whose behalf the declarant acts and persons who are involved with the evaluation and or adjudication of the bid.

2. **In order to give effect to the above, the following questionnaire must be completed and submitted with the bid.**

2.1 Full Name of bidder or his or her representative:

2.2 Identity Number:

2.3 Position occupied in the Company (director, trustee, shareholder²):

2.4 Company Registration Number:

2.5 Tax Reference Number:

2.6 VAT Registration Number:

- 2.6.1 The names of all directors / trustees / shareholders / members, their individual identity numbers, tax reference numbers and, if applicable, employee / persal numbers must be indicated in paragraph 3 below.

¹"State" means –

- (a) any national or provincial department, national or provincial public entity or constitutional institution within the meaning of the Public Finance Management Act, 1999 (Act No. 1 of 1999);
- (b) any municipality or municipal entity;
- (c) provincial legislature;
- (d) national Assembly or the national Council of provinces; or
- (e) Parliament.

²"Shareholder" means a person who owns shares in the company and is actively involved in the management of the enterprise or business and exercises control over the enterprise.

- 2.7 Are you or any person connected with the bidder **YES / NO**
presently employed by the state?

- 2.7.1 If so, furnish the following particulars:

Name of person / director / trustee / shareholder/ member:

Name of state institution at which you or the person connected to the bidder is employed:

Position occupied in the state institution:

Any other particulars:

.....
.....

2.7.2 If you are presently employed by the state, did you obtain the appropriate authority to undertake remunerative work outside employment in the public sector? YES / NO

2.7.2.1 If yes, did you attached proof of such authority to the bid document? YES / NO

(Note: Failure to submit proof of such authority, where applicable, may result in the disqualification of the bid.

2.7.2.2 If no, furnish reasons for non-submission of such proof:

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

2.8 Did you or your spouse, or any of the company's directors / trustees / shareholders / members or their spouses conduct business with the state in the previous twelve months? YES / NO

2.8.1 If so, furnish particulars:

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

2.9 Do you, or any person connected with the bidder, have any relationship (family, friend, other) with a person employed by the state and who may be involved with the evaluation and or adjudication of this bid? YES / NO

2.9.1 If so, furnish particulars.

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

2.10 Are you, or any person connected with the bidder, aware of any relationship (family, friend, other) between any other bidder and any person employed by the state who may be involved with the evaluation and or adjudication of this bid? YES / NO

2.10.1 If so, furnish particulars.

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

2.11 Do you or any of the directors / trustees / shareholders / members of the company have any interest in any other related companies whether or not they are bidding for this contract? YES / NO

2.11.1 If so, furnish particulars:

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

3 Full details of directors / trustees / members / shareholders

Full Name	Identity Number	Personal Tax Reference Number	State Employee Number / Persal Number

4 DECLARATION

I, THE UNDERSIGNED (NAME)

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

I ACCEPT THAT THE STATE MAY REJECT THE BID OR ACT AGAINST ME IN TERMS OF PARAGRAPH 23 OF THE GENERAL CONDITIONS OF CONTRACT SHOULD THIS DECLARATION PROVE TO BE FALSE.

.....
Signature

.....
Date

.....
Position

.....
Name of bidder

**T2.2.3 DECLARATION OF TENDERER'S PAST SUPPLY CHAIN MANAGEMENT PRACTICES
(To be completed by Tenderer)**

- 1 This Section must form part of all Tenders invited.
- 2 It serves as a declaration to be used by Umgeni Water in ensuring that when goods and services are being procured, all reasonable steps are taken to combat the abuse of the supply chain management system.
- 3 The Tender of any Tenderer may be disregarded if such Tenderer, or any of its directors have-
 - a. abused Umgeni Water 's supply chain management system;
 - b. committed fraud or any other improper conduct in relation to such system; or
 - c. failed to perform on any previous contract.
- 4 **In order to give effect to the above, the following questionnaire must be completed and submitted with the Tender.**

Item	Question	Yes	No
4.1	Is the Tenderer or any of its directors listed on the National Treasury/Umgeni Water's database as companies or persons prohibited from doing business with the public sector?	Yes ☐	No ☐
4.1.1	If so, furnish particulars		
4.2	Is the Tenderer or any of its directors listed on the Register for Tender Defaulters in terms of section 29 of the Prevention and Combating of Corrupt Activities Act (No 12 of 2004)?	Yes ☐	No ☐
4.2.1	If so, furnish particulars		
4.3	Was the Tenderer or any of its directors convicted by a court of law (including a court outside of the Republic of South Africa) for fraud or corruption during the past five years?	Yes ☐	No ☐
4.3.1	If so, furnish particulars		
4.4	Was any contract between the Tenderer and any organ of state terminated during the past five years on account of failure to perform on or comply with the contract?	Yes ☐	No ☐
4.4.1	If so, furnish particulars		

CERTIFICATION

I, THE UNDERSIGNED

(FULL NAME)

CERTIFY THAT THE INFORMATION FURNISHED ON THIS DECLARATION FORM IS TRUE AND CORRECT. I ACCEPT THAT, IN ADDITION TO CANCELLATION OF A CONTRACT, ACTION MAY BE TAKEN AGAINST ME SHOULD THIS DECLARATION PROVE TO BE FALSE.

.....
Signature

.....
Date

.....
Position

.....
Name of Tenderer

FOR INFORMATION USE ONLY

T2.2.4 TAX COMPLIANCE STATUS LETTER REQUIREMENTS

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

- Bidders must ensure compliance with their tax obligations.
- 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.
- Application for Tax Compliance Status (TCS) pin may be made via e-filing through the SARS website www.sars.gov.za.
- Bidders may also submit a printed TCS certificate together with the bid.
- In bids where consortia / joint ventures / sub-contractors are involved, each party must submit a separate TCS certificate / pin / CSD number.
- Where no TCS is available but the bidder is registered on the Central Supplier Database (CSD), a CSD number must be provided.
- 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 in the service of the state.

T2.2.4 TAX COMPLIANCE STATUS LETTER REQUIREMENTS (Continued.....)

[Tax Compliance Status (TCS) Letter *obtained from SARS to be inserted here*]

FOR INFORMATION USE ONLY

T2.2.5 PROOF OF ATTENDANCE AT THE COMPULSORY CLARIFICATION MEETING- NOT APPLICABLE

This is to certify that

(Tenderer)

of (address)

was represented by the person(s) named below at the compulsory meeting held for all Tenderers at

(location).....

..... on (date)

starting at (time)

I / We acknowledge that the purpose of the meeting was to acquaint myself / ourselves with the site of the works and / or matters incidental to doing the work specified in the Tender documents in order for me / us to take account of everything necessary when compiling our rates and prices included in the Tender.

Particulars of person(s) attending the meeting:

Name: Signature:

Capacity:

Name: Signature:

Capacity:

Attendance of the above person(s) at the meeting is confirmed by the Purchaser's representative, namely:

Name: Signature:

Capacity: Date and Time:

T2.2.6 CERTIFICATE OF INDEPENDENT TENDER DETERMINATION

- 1 This section must form part of all tenders¹ invited.
- 2 Section 4 (1) (b) (iii) of the Competition Act No. 89 of 1998, as amended, prohibits an agreement between, or concerted practice by, firms, or a decision by an association of firms, if it is between parties in a horizontal relationship and if it involves collusive tendering (or tender rigging).² Collusive tendering is a *pe se* prohibition meaning that it cannot be justified under any grounds.
- 3 Treasury Regulation 16A9 prescribes that accounting officers and accounting authorities must take all reasonable steps to prevent abuse of the supply chain management system and authorizes accounting officers and accounting authorities to:
 - a. disregard the tender of any tenderer if that tenderer, or any of its directors have abused the institution's supply chain management system and or committed fraud or any other improper conduct in relation to such system.
 - b. cancel a contract awarded to a supplier of goods and services if the supplier committed any corrupt or fraudulent act during the tendering process or the execution of that contract.
- 4 This SBD serves as a certificate of declaration that would be used by institutions to ensure that, when tenders are considered, reasonable steps are taken to prevent any form of tender-rigging.
- 5 In order to give effect to the above, the attached Certificate of Tender Determination (SBD 9) must be completed and submitted with the tender.

¹ Includes price quotations, advertised competitive tenders, limited tenders and proposals.

² Tender rigging (or collusive tendering) occurs when businesses, that would otherwise be expected to compete, secretly conspire to raise prices or lower the quality of goods and / or services for purchasers who wish to acquire goods and / or services through a tendering process. Tender rigging is, therefore, an agreement between competitors not to compete.

T2.2.6 CERTIFICATE OF INDEPENDENT TENDER DETERMINATION (continued)

I, the undersigned, in submitting the accompanying tender:

.....
(Tender Number and Description)

in response to the invitation for the tender made by:

.....
(Name of Institution)

do hereby make the following statements that I certify to be true and complete in every respect:

I certify, on behalf of: that:
(Name of Tenderer)

1. I have read and I understand the contents of this Certificate;
2. I understand that the accompanying tender will be disqualified if this Certificate is found not to be true and complete in every respect;
3. I am authorized by the tenderer to sign this Certificate, and to submit the accompanying tender, on behalf of the tenderer;
4. Each person whose signature appears on the accompanying tender has been authorized by the tenderer to determine the terms of, and to sign the tender, on behalf of the tenderer;
5. For the purposes of this Certificate and the accompanying tender, I understand that the word "competitor" shall include any individual or organization, other than the tenderer, whether or not affiliated with the tenderer, who:
 - (a) has been requested to submit a tender in response to this tender invitation;
 - (b) could potentially submit a tender in response to this tender invitation, based on their qualifications, abilities or experience; and
 - (c) provides the same goods and services as the tenderer and/or is in the same line of business as the tenderer
6. The tenderer has arrived at the accompanying tender independently from, and without consultation, communication, agreement or arrangement with any competitor. However communication between partners in a joint venture or consortium³ will not be construed as collusive tendering.
7. In particular, without limiting the generality of paragraphs 6 above, there has been no consultation, communication, agreement or arrangement with any competitor regarding:
 - (a) prices;
 - (b) geographical area where product or service will be rendered (market allocation)
 - (c) methods, factors or formulas used to calculate prices;
 - (d) the intention or decision to submit or not to submit, a tender;
 - (e) the submission of a tender which does not meet the specifications and conditions of the tender; or
 - (f) tendering with the intention not to win the tender.
8. In addition, there have been no consultations, communications, agreements or arrangements with any competitor regarding the quality, quantity, specifications and conditions or delivery particulars of the products or services to which this tender invitation relates.
9. The terms of the accompanying tender have not been, and will not be, disclosed by the tenderer, directly or indirectly, to any competitor, prior to the date and time of the official tender opening or of the awarding of the contract.

T2.20.

10. I am aware that, in addition and without prejudice to any other remedy provided to combat any restrictive practices related to tenders and contracts, tenders that are suspicious will be reported to the Competition Commission for investigation and possible imposition of administrative penalties in terms of section 59 of the Competition Act No 89 of 1998 and or may be reported to the National Prosecuting Authority (NPA) for criminal investigation and or may be restricted from conducting business with the public sector for a period not exceeding ten (10) years in terms of the Prevention and Combating of Corrupt Activities Act No 12 of 2004 or any other applicable legislation.

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

.....
Signature

.....
Date

.....
Position

.....
Name of Tenderer

T2.2.7 CONTRACT PARTICIPATION GOALS

Objective

The objective of Umgeni Water's empowerment initiative is to bring about meaningful transformation in all procurement projects and in particular in the built environment / construction and consulting industry through achieving one or more of the following objectives:

- Meaningful Economic Participation;
- Local Economic Development;
- Transfer of Technical, Management and Entrepreneurial Skills; and
- Creation of sustainable Black Enterprises

Contract Participation Goals

Contract Participation Goal (CPG) – the **final** value of services paid to the CPG Partner/s based on the **final** contract value.

At the time of awarding the contract the 35% minimum CPG amount will be based on the contract award value exclusive of the following:

- VAT, CPA and Contingencies.

During contract implementation, adjustments relating to Provisional Sums and Contingencies linked to the CPG allocation will be agreed upon between the parties to the contract, as and when the need arises.

CPG Partner/s – Service provider/s selected from Umgeni Water's Supply Chain Management (SCM) Enterprise Development Database. However, should the database not contain suitable CPG Partner/s, the tenderer may propose suitable CPG Partner/s for Umgeni Water's consideration.

Tenderers (the main supplier irrespective of BBBEE classification) who are on Umgeni Water's SCM Enterprise Development Database are not exempt from this requirement and are still required to have a CPG Partner.

Tenderers are required to achieve at least 35% Contract Participation Goals (CPG) including a minimum 10% Black Women participation and another 10% for Local participation of the value of goods, services and Works paid to one or more enterprises (CPG Partner/s)

- 35% includes any special materials
- 35% excludes VAT, CPA and Contingencies.
- The tenderer will be required to achieve the actual Rand value committed for CPG, adjusted according to the following:
 - Variation Orders – Each VO will be evaluated by the Employer's Agent and the Project Manager to determine whether it should be counted, in its entirety or partially, as part of CPG or not.
 - Re-measurable Items (including CPA, and provisional sums) – Each re-measurable item change will be evaluated by the Employer's Agent and the Project Manager to determine whether it should be counted as part of CPG or not.

Within 2 weeks of the award of contract, the tenderer will be required to submit a cash flow projection for the main contractor and the CPG Partner/s

Applicability

The CPG target is applicable to all contracts to be adjudicated through the Umgeni Water procurement process and shall be achieved through the following mechanisms:-

- CPG Partner/s selection is concluded **after** adjudication of tenders and **before** contract award is made.
- The CPG Partner/s shall be selected according to the following criteria:

- CPG Partner/s are to be obtained from Umgeni Water's database of suppliers specifically earmarked for CPG purposes.
- In the event of services where Umgeni Water does not have an applicable service provider on its database, the tenderer may propose a suitable CPG Partner/s for consideration by Umgeni Water.
- Main service provider may propose a suitable CPG Partner/s, but Umgeni Water reserves the right to provide or arrange a CPG Partner/s to work with the successful company.
- Sub-contracting of the CPG Partner/s at the same rate / price that the tenderer would have offered to Umgeni Water whilst making profit margins consistent to the profit margins that the main supplier would have made under normal trading processes.
- Value of the work to be sub contracted shall be at least **35% (minimum of 10% shall be due to Black Women participation and another 10% for Local participation)** of the total contract value excluding VAT, CPA and Contingencies.
- CPA is payable to the CPG Partner/s as per the indices stipulated in the contract document.
- The work allocated to the CPG Partner shall be performed by the CPG Partner directly and may not be allocated or sub-contracted out to other contractors/consultants/service providers.
- The main supplier **shall not** substitute any CPG Partner/s without the written approval of Umgeni Water.
- The working capital arrangements between the main supplier and the CPG Partner/s must be agreed upon between the two parties prior to commencement of works to ensure that the CPG Partner does not have cash flow challenges during contract implementation.

Invoicing and Payment

The monthly measurement and payment will be according to the following guideline:

- Submission of payment certificate by the Supplier– by 25th of each month, or the nearest previous working day. The submission from the supplier shall include the signature of the CPG Partner indicating agreement with the measurements and rates applicable to the work undertaken by the CPG Partner.
- Payment to the Supplier – on the last day of the following month;
- The CPG Partner must be paid within reasonable time but no later than 3 working days after the Main Supplier has been paid by Umgeni Water; and
- The submission from the Supplier must include a schedule that clearly shows the following:
 - Total Contract Sum
 - Total amount payable to CPG Partner/s excluding current month
 - Amount payable to CPG Partner for current month
 - % split of Total amount payable to Main supplier and CPG Partner/s

Monitoring and Reporting on CPG

- Umgeni Water will monitor CPG implementation on site. This may include direct contact with CPG Partner/s on site for verification purposes.
- The CPG Partner shall be in agreement with the measurement and payment for work completed, for the purposes of submitting payment certificates, as determined by the supplier. Should disagreements arise, Umgeni Water reserves the right to intervene to resolve the disagreement.
- CPG Partner/s shall attend all contractual meetings relevant to their scope of work including contract award negotiations, monthly contract site meetings and technical meetings where applicable.

Eligibility Criteria

For tenders where the CPG target is applicable, those that do not offer a **minimum** CPG participation of **35%** (including minimum 10% Black Women participation and another 10% for Local participation) according to the requirements mentioned above, will be deemed **ineligible**.

DECLARATION REGARDING CONTRACT PARTICIPATION GOALS

I, the undersigned, in submitting the accompanying bid:

(Bid Number and Description)

in response to the invitation for the bid made by:

UMGENI WATER

do hereby make the following declaration and certify the statements contained herein to be true and complete in every respect:

I certify, on behalf of: _____ that:
(Name of Bidder)

1. I have read and I understand the contents of this Declaration and the fully completed bid document accompanying this declaration;
2. I understand and declare that the accompanying bid will, and must, be disqualified if this Declaration is found not to be true and complete in every respect;
3. I understand and declare that in the event that this bid is successful, I will be required to, and shall, fully implement the commitments that are submitted with this bid, in particular regarding the Bidder's contract participation goals and commitments towards the allocation of certain portion of the contract to small and emerging entities. Failure to implement such commitments as outlined in the bid document (in particular, as detailed in the bill of quantities) and or failure to provide the relevant information within the prescribed period as determined in the Letter of Intention to Award the Bid, shall automatically disqualify this bid from further consideration and the Employer has the right to, and must, then award the bid to the next highest ranked bidder; and as a result I or the bidder or any of its directors shall have no recourse against Umgeni Water.
4. I am authorized by the bidder to sign this Declaration, and to submit the accompanying bid, on behalf of the bidder;
5. Each person whose signature appears on the accompanying bid has been authorized by the bidder to determine the terms of, and to sign the bid, on behalf of the bidder;
6. I am aware that, and do consent to, the disqualification of my or the bidder's future bids with Umgeni Water in the event that the commitments made herein are not fulfilled and that such non-fulfillment amounts to abuse of Umgeni Water's supply chain policies and procedures and/or empowerment objectives which must be penalized, over and above the contractual sanctions as agreed to in line with the contract signed with Umgeni Water, with a sanction of restricting me and or my company (the bidder) and or any of its directors from conducting business with Umgeni Water for a period not exceeding ten (10) years.
7. I consent that should my company (the Bidder) deviate from the commitments and the spirit of the CPG objectives as agreed to, shall amount to a repudiation of the contractual arrangement between the two parties (Umgeni Water and the Bidder); and Umgeni Water shall have the right to terminate the contract with immediate effect and without giving my company (the Bidder) prior notice to remedy the breach.

Full Names & Surname
(Duly authorized)

Signature

Date

Position

Name of Bidder

T2.2.8 DECLARATION CERTIFICATE FOR LOCAL PRODUCTION AND CONTENT FOR DESIGNATED SECTORS - NOT APPLICABLE

This Standard Bidding Document (SBD) must form part of all bids invited. It contains general information and serves as a declaration form for local content (local production and local content are used interchangeably).

Before completing this declaration, bidders must study the General Conditions, Definitions, Directives applicable in respect of Local Content as prescribed in the Preferential Procurement Regulations, 2017, the South African Bureau of Standards (SABS) approved technical specification number SATS 1286:2011 (Edition 1) and the Guidance on the Calculation of Local Content together with the Local Content Declaration Templates [Annex C (Local Content Declaration: Summary Schedule), D (Imported Content Declaration: Supporting Schedule to Annex C) and E (Local Content Declaration: Supporting Schedule to Annex C)].

1. General Conditions

- 1.1. Preferential Procurement Regulations, 2017 (Regulation 8) makes provision for the promotion of local production and content.
- 1.2. Regulation 8(2) prescribes that in the case of designated sectors, where in the award of bids local production and content is of critical importance, such bids must be advertised with the specific bidding condition that only locally produced goods, services or works or locally manufactured goods, with a stipulated minimum threshold for local production and content will be considered.
- 1.3. Where necessary, for bids referred to in paragraph 1.2 above, a two stage bidding process may be followed, where the first stage involves a minimum threshold for local production and content and the second stage price and B-BBEE.
- 1.4. A person awarded a contract in relation to a designated sector, may not sub-contract in such a manner that the local production and content of the overall value of the contract is reduced to below the stipulated minimum threshold.
- 1.5. The local content (LC) expressed as a percentage of the bid price must be calculated in accordance with the SABS approved technical specification number SATS 1286:2011 as follows:

$$LC = [1 - x / y] * 100$$

Where

- x is the imported content in Rand
y is the bid price in Rand excluding value added tax (VAT)

Prices referred to in the determination of x must be converted to Rand (ZAR) by using the exchange rate published by South African Reserve Bank (SARB) at 12:00 on the date of advertisement of the bid as indicated in paragraph 4.1 below.

The SABS approved technical specification number SATS 1286:2011 is accessible on [http://www.thedti.gov.za/industrial development/ip.jsp](http://www.thedti.gov.za/industrial%20development/ip.jsp) at no cost.

- 1.6 A bid may be disqualified if –

- (a) this Declaration Certificate and the Annex C (Local Content Declaration: Summary Schedule) are not submitted as part of the bid documentation; and
- (b) the bidder fails to declare that the Local Content Declaration Templates (Annex C, D and E) have been audited and certified as correct.

2. Definitions

- 2.1. **“bid”** includes written price quotations, advertised competitive bids or proposals;
- 2.2. **“bid price”** price offered by the bidder, excluding value added tax (VAT);
- 2.3. **“contract”** means the agreement that results from the acceptance of a bid by an organ of state;
- 2.4. **“designated sector”** means a sector, sub-sector or industry that has been designated by the Department of Trade and Industry in line with national development and industrial policies for local production, where only locally produced services, works or goods or locally manufactured goods meet the stipulated minimum threshold for local production and content;
- 2.5. **“duly sign”** means a Declaration Certificate for Local Content that has been signed by the Chief Financial Officer or other legally responsible person nominated in writing by the Chief Executive, or senior member / person with management responsibility (close corporation, partnership or individual).
- 2.6. **“imported content”** means that portion of the bid price represented by the cost of components, parts or materials which have been or are still to be imported (whether by the supplier or its subcontractors) and which costs are inclusive of the costs abroad (this includes labour or intellectual property costs), plus freight and other direct importation costs, such as landing costs, dock duties, import duty, sales duty or other similar tax or duty at the South African port of entry;
- 2.7. **“local content”** means that portion of the bid price which is not included in the imported content, provided that local manufacture does take place;
- 2.8. **“stipulated minimum threshold”** means that portion of local production and content as determined by the Department of Trade and Industry; and
- 2.9. **“sub-contract”** means the primary contractor’s assigning, leasing, making out work to, or employing another person to support such primary contractor in the execution of part of a project in terms of the contract.

3. The stipulated minimum threshold(s) for local production and content (refer to Annex A of SATS 1286:2011) for this bid is/are as follows:

<u>Description of services, works or goods</u>	<u>Stipulated minimum threshold</u>
_____	_____ %
_____	_____ %
_____	_____ %

4. Does any portion of the services, works or goods offered have any imported content?

(Tick applicable box)

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

- 4.1 If yes, the rate(s) of exchange to be used in this bid to calculate the local content as prescribed in paragraph 1.5 of the general conditions must be the rate(s) published by SARB for the specific currency at 12:00 on the date of advertisement of the bid.

The relevant rates of exchange information is accessible on www.reservebank.co.za.

Indicate the rate(s) of exchange against the appropriate currency in the table below (refer to Annex A of SATS 1286:2011):

Currency	Rates of exchange
US Dollar	
Pound Sterling	
Euro	
Yen	
Other	

NB: Bidders must submit proof of the SARB rate (s) of exchange used.

5. Were the Local Content Declaration Templates (Annex C, D and E) audited and certified as correct?

(Tick applicable box)

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

- 5.1. If yes, provide the following particulars:

- (a) Full name of auditor:
- (b) Practice number:
- (c) Telephone and cell number:
- (d) Email address:

(Documentary proof regarding the declaration will, when required, be submitted to the satisfaction of the Accounting Officer / Accounting Authority)

6. Where, after the award of a bid, challenges are experienced in meeting the stipulated minimum threshold for local content the dti must be informed accordingly in order for the dti to verify and in consultation with the AO/AA provide directives in this regard.

LOCAL CONTENT DECLARATION – NOT APPLICABLE
(REFER TO ANNEX B OF SATS 1286:2011)

LOCAL CONTENT DECLARATION BY CHIEF FINANCIAL OFFICER OR OTHER LEGALLY RESPONSIBLE PERSON NOMINATED IN WRITING BY THE CHIEF EXECUTIVE OR SENIOR MEMBER/PERSON WITH MANAGEMENT RESPONSIBILITY (CLOSE CORPORATION, PARTNERSHIP OR INDIVIDUAL)

IN RESPECT OF BID NO.

ISSUED BY: (Procurement Authority / Name of Institution):
.....

NB

1 The obligation to complete, duly sign and submit this declaration cannot be transferred to an external authorized representative, auditor or any other third party acting on behalf of the bidder.

2 Guidance on the Calculation of Local Content together with Local Content Declaration Templates (Annex C, D and E) is accessible on <http://www.thedti.gov.za/industrialdevelopment/ip.jsp>. Bidders should first complete Declaration D. After completing Declaration D, bidders should complete Declaration E and then consolidate the information on Declaration C. **Declaration C should be submitted with the bid documentation at the closing date and time of the bid in order to substantiate the declaration made in paragraph (c) below.** Declarations D and E should be kept by the bidders for verification purposes for a period of at least 5 years. The successful bidder is required to continuously update Declarations C, D and E with the actual values for the duration of the contract.

I, the undersigned, (full names),
do hereby declare, in my capacity as
of (name of bidder
entity), the following:

(a) The facts contained herein are within my own personal knowledge.

(b) I have satisfied myself that:

- (i) the goods/services/works to be delivered in terms of the above-specified bid comply with the minimum local content requirements as specified in the bid, and as measured in terms of SATS 1286:2011; and
- (ii) the declaration templates have been audited and certified to be correct.

(c) The local content percentage (%) indicated below has been calculated using the formula given in clause 3 of SATS 1286:2011, the rates of exchange indicated in paragraph 4.1 above and the information contained in Declaration D and E which has been consolidated in Declaration C:

Bid price, excluding VAT (y)	R
Imported content (x), as calculated in terms of SATS 1286:2011	R
Stipulated minimum threshold for local content (paragraph 3 above)	
Local content %, as calculated in terms of SATS 1286:2011	

If the bid is for more than one product, the local content percentages for each product contained in Declaration C shall be used instead of the table above.

T2.28.

The local content percentages for each product has been calculated using the formula given in clause 3 of SATS 1286:2011, the rates of exchange indicated in paragraph 4.1 above and the information contained in Declaration D and E.

(d) I accept that the Procurement Authority / Institution has the right to request that the local content be verified in terms of the requirements of SATS 1286:2011.

(e) I understand that the awarding of the bid is dependent on the accuracy of the information furnished in this application. I also understand that the submission of incorrect data, or data that are not verifiable as described in SATS 1286:2011, may result in the Procurement Authority / Institution imposing any or all of the remedies as provided for in Regulation 13 of the Preferential Procurement Regulations, 2017 promulgated under the Preferential Policy Framework Act (PPPFA), 2000 (Act No. 5 of 2000).

SIGNATURE: _____

DATE: _____

WITNESS No. 1 _____

DATE: _____

WITNESS No. 2 _____

DATE: _____

In terms of the guideline document for calculating local content, Annexure C (attached) must be submitted with the tender. Please add it here.

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T2.2.9 TENDERER'S EXPERIENCE

The experience of the Tenderer or joint venture partners in the case of an unincorporated joint venture or consortium will be evaluated on the basis of experience in similar projects or similar areas and conditions in relation to the scope of work.

The evaluation will consider experience in relation to the management of programmes and projects and the provision of cost consulting services in relation to programmes of work as opposed to projects where bills of quantities have been used.

Tenderers should very briefly describe his or her experience in this regard relevant to the scope of work and attach this to this schedule.

NOTE:

- Company's experience:** Previous and Current Contracts in the last 5 years (2016-2021) for HVAC, air conditioning units maintenance – Submit written reference per contract.
- Number of contracts:** Previous and Current Contracts in HVAC, air conditioning units maintenance Submit written reference per contract
- The Tenderer to submit award letters and completion certificates with reachable contact details.

The description should be put in tabular form with the following headings:

Description of work service and maintenance of HVAC,air conditioning units	Period / Year	Value of work (i.e. the service provided) inclusive of VAT (Rand)	Company (Where the Service was provided)	Contact details

Scoring of the Tenderer's experience will be as follows: **50%**

DESCRIPTION	MAX POSSIBLE SCORE
Company experience in the service and maintenance of HVAC, air conditioning units projects, of equal or greater than R450, 000-00 project value. Tenderer must submit proof of previous experience. • 1 project – 20 points, with equal/greater than R450,000 project value • 2 projects – 50 points, each project of equal/greater than R450,000 project value • 3 projects – 70 points, each project of equal/greater than R450,000 project value 10 additional points for every project more than 3 projects to a maximum of 100 points	100

T2.32.

T2.2.9 TENDERER'S EXPERIENCE (Continued)

INSERT HERE

FOR INFORMATION USE ONLY

T2.2.10 KEY PERSONNEL ASSIGNED TO THE WORK

Insert in the table below the key personnel and their proposed function

KEY PERSONNEL SCHEDULE

No.	Proposed Function	Key Person Name
1.	Maintenance Supervisor	
2.	On- Call Refrigeration/HVAC Technician	

T2.2.11 EXPERIENCE OF KEY PERSONNEL

Provide relevant information as prescribed below for the following Key Persons proposed in the tender to fulfil the following positions:

Key Person Positions

A. Maintenance Supervisor

B. On-Call Refrigeration/HVAC Technician

The experience of each key person, relevant to the scope of work, will be evaluated from the following:

- 1) General experience (total duration of activity), and positions held by the key person.
- 2) The experience of the person, in the specific sector, field, subject, etc which is directly linked to the scope of work.

A CV of each key person of not more than 3 pages should be attached to this schedule.

Each CV should be structured under the following headings:

1. Personal particulars
 - name
 - date and place of birth
2. Name of current employer and position in enterprise
3. Overview last 6 years of experience (year, organization, position and projects)
4. Outline of recent assignments / experience that has a bearing on the scope of work

The scoring of the experience of key staff will be as follows: **50%**

	100
Experience of Maintenance Supervisor in Air Conditioning Units • <2yrs – 0 points • 2yrs – 20 points • 3yrs – 35 points • 5 additional points every year to a maximum of 50 points Experience of On-Call Refrigeration/HVAC Technician • <2yrs – 0 points • 2yrs – 20 points • 3yrs – 35 points • 5 additional points every year to a maximum of 50 points	

T2.2.11 EXPERIENCE OF KEY PERSONNEL (Continued)

FOR INFORMATION USE ONLY

T2.2.12 PROPOSED ORGANIZATION AND STAFFING

The Tenderer should propose the structure and composition of their team i.e. the main disciplines involved, the key staff member / expert responsible for each discipline, and the proposed technical and support staff and site staff. The roles and responsibilities of each key staff member / expert should be set out as job descriptions. In the case of an association / joint venture / consortium, it should, indicate how the duties and responsibilities are to be shared.

FOR INFORMATION USE ONLY

T2.2.12 PROPOSED ORGANIZATION AND STAFFING (Continued)

INSERT HERE

FOR INFORMATION USE ONLY

T2.2.13 TENDERER'S SCHEDULE OF PLANT AND EQUIPMENT – NOT APPLICABLE

The following are lists of major items of relevant equipment that I / we presently own or lease and will have available for this contract if my / our Tender is accepted.

- (a) Details of major equipment that is owned by me / us and immediately available for this contract.

DESCRIPTION (type, size, capacity etc)	QUANTITY	YEAR OF MANUFACTURE

Attach additional pages if more space is required

- (b) Details of major equipment that will be hired, or acquired for this contract if my / our Tender is accepted

DESCRIPTION (type, size, capacity etc)	QUANTITY	HOW ACQUIRED	
		HIRE/ BUY	SOURCE

Attach additional pages if more space is required

The Tenderer undertakes to bring onto site without additional cost to the Employer any additional plant not listed but which may be necessary to complete the contract within the specified contract period.

Failure to complete this form properly and correctly, will lead to the conclusion that the Tenderer does not have the necessary plant and equipment resources at its disposal, which will prejudice its Tender.

SIGNATURE: DATE:
(of person authorized to sign on behalf of the Tenderer)

T2.2.13 TENDERER'S SCHEDULE OF PLANT AND EQUIPMENT (Continued)

FOR INFORMATION USE ONLY

T2.2.14 QUALITY ASSURANCE AND ENVIRONMENTAL MANAGEMENT – NOT APPLICABLE

1. Does the Tenderer have a quality management system which is certified in terms of ISO 9001: 2015

YES	NO
-----	----

2. If “yes”, Tenderer to supply brief summary of structure of system:
.....
.....
.....
.....
.....
.....
.....

3. If “no”, does the Tenderer intend to apply for certification?

YES	NO
Date	

By when?

OR

4. If “no”, does the Tenderer have its own system?

YES	NO
-----	----

5. If “yes”, please supply details of the system
.....
.....
.....
.....
.....
.....

6. Does the Tenderer have an environmental management system which is certified in terms of ISO 14001

YES	NO
-----	----

7. If “yes”, Tenderer to supply brief summary of structure of system:
.....
.....
.....
.....
.....
.....
.....

8. If “no”, does the Tenderer intend to apply for certification?

YES	NO
Date	

By when?

T2.41.

OR

9. If “no”, does the Tenderer have its own system?.....

YES

NO

10. If “yes”, please supply details of the system

If the Tenderer does not intend to apply for certification it shall submit details of the quality / environmental management system presently in place.

[The Tenderer shall insert here a copy of the company’s quality assurance plan, control procedures and the relevant documentation supporting its commitment to environmental management. In the event of these documents being too extensive to be included in the procurement document, an abbreviated version of the master document will be included, referring to the master document.]

T2.2.15 METHOD STATEMENT - NOT APLICABLE

The method statement must respond to the Scope of Work and outline the proposed approach / methodology. The method statement should articulate what value the Tenderer will add by in achieving the stated objectives for the project.

The Tenderer must as such explain his / her understanding of the objectives of the assignment and the Purchaser's stated and implied requirements, highlight the issues of importance, and explain the technical approach they would adopt to address them. The approach paper should explain the methodologies which are to be adopted, demonstrate the compatibility of those methodologies with the proposed approach. The approach should also include a quality plan which outlines processes, procedures and associated resources, applied by whom and when, to meet the requirements and indicate how risks will be managed and what contribution can be made regarding value management.

FOR INFORMATION USE ONLY

T2.43.

T2.2.15 METHOD STATEMENT (Continued)

INSERT HERE

FOR INFORMATION USE ONLY

T2.2.16 PRELIMINARY PROGRAMME – NOT APPLICABLE

The Tenderer shall detail below or attach a preliminary programme reflecting the proposed sequence and tempo of execution of the main work components. The programme shall be in accordance with the information supplied in the Contract, requirements of the Project Specifications and with all other aspects of his Tender.

FOR INFORMATION USE ONLY

T2.45.

T2.2.16 PRELIMINARY PROGRAMME (Continued)

INSERT HERE

FOR INFORMATION USE ONLY

T.2.2.17 REGISTRATION CERTIFICATE / AGREEMENT / ID DOCUMENT

Important note to Tenderer: The relevant supporting documents to the organization tendering i.e. Registration Certificates for Companies, Close Corporations and Partnerships, or Agreements and Powers of Attorney for Joint Ventures and Consortiums, or ID documents for Sole Proprietors, all as referred to in the foregoing forms and in T2.1, must be inserted here

INSERT HERE

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T2.2.18 AMENDMENTS, QUALIFICATIONS AND ALTERNATIVES

(This is not an invitation for amendments, deviations or alternatives but should the Tenderer desire to make any departures from the provisions of this contract he shall set out his proposals clearly hereunder. Umgeni Water will not consider any amendment, alternative offers or discounts unless forms (a), (b) and (c) have been completed to the satisfaction of the Purchaser).

I / We herewith propose the amendments, alternatives and discounts as set out in the tables below:

(a) AMENDMENTS - NOT APPLICABLE

PAGE, CLAUSE OR ITEM NO.	PROPOSED AMENDMENT

- [Notes: (1) Proposals for amendments to the General and Special Conditions of Contract are not acceptable, and will be ignored;
(2) The Tenderer must give full details of all the financial implications of the amendments and qualifications in a covering letter attached to his Tender.

(b) ALTERNATIVES - NOT APPLICABLE

PROPOSED ALTERNATIVE	DESCRIPTION OF ALTERNATIVE

- [Notes: (1) Individual alternative items that do not justify an alternative Tender, and an alternative offer for time for completion should be listed here.
(2) In the case of a major alternative to any part of the work, a separate Bill of Quantities, programme, etc, and a detailed statement setting out the salient features of the proposed alternatives must accompany the Tender.
(3) Alternative Tenders involving technical modifications to the design of the works and methods of construction shall be treated separately from the main Tender offer.]

(c) UNCONDITIONAL DISCOUNTS

ITEM ON WHICH DISCOUNT IS OFFERED	DESCRIPTION OF DISCOUNT OFFERED

[Note: The Tenderer must give full details of the discounts offered in a covering letter attached to his Tender, failing which, the offer for a discount may have to be disregarded.]

Signature Date.....

T2.2.19 RECORD OF ADDENDA TO TENDER DOCUMENTS

I / We confirm that the following communications amending the Tender documents that I / we received from Umgeni Water or his representative before the closing date for submission of Tenders have been taken into account in this Tender.

A signed copy of each addendum shall be inserted after this page.

ADDENDUM No	DATE	TITLE OR DETAILS

.....
Signature
(of person authorized to sign on behalf of the Tenderer)

.....
Date

T2.2.20 VAT REGISTRATION CERTIFICATE

[VAT Registration Certificate obtained from SARS to be inserted here]

FOR INFORMATION USE ONLY

T2.2.21 SCHEDULE OF PROPOSED SUB-SUPPLIERS

Important note to Tenderer: The relevant supporting documents to the organization tendering i.e. Registration Certificates for Companies, Close Corporations and Partnerships, or Agreements and Powers of Attorney for Joint Ventures and Consortiums, or ID documents for Sole Proprietors, all as referred to in the foregoing forms and in T2.1, must be inserted here

We notify you that it is our intention to employ the following Sub-Suppliers for work in this contract. If we are awarded a contract we agree that this notification does not change the requirement for us to submit the names of proposed Sub-Suppliers in accordance with requirements in the contract for such appointments. If there are no such requirements in the contract, then your written acceptance of this list shall be binding between us.

	Name and address of proposed Sub-Supplier	Nature and extent of work	Previous experience with Sub-Supplier.
1.			
2.			
3.			
4.			
5.			

Signature Date

Name Position

Tenderer

T2.2.22 PREFERENCE POINTS CLAIM FORM IN TERMS OF THE PREFERENTIAL PROCUREMENT REGULATIONS 2017

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

NB: BEFORE COMPLETING THIS FORM, TENDERERS MUST STUDY THE GENERAL CONDITIONS, DEFINITIONS AND DIRECTIVES APPLICABLE IN RESPECT OF B-BBEE, AS PRESCRIBED IN THE PREFERENTIAL PROCUREMENT REGULATIONS, 2017.

1. GENERAL CONDITIONS

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

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

1.2 The value of this tender is estimated not to exceed R50 000 000 (all applicable taxes included) and therefore the **80/20** system shall be applicable.

1.3 Preference points for this tender shall be awarded for:

- (a) Price; and
- (b) B-BBEE Status Level of Contribution.
(Refer Clause 5.7)

1.3.1 The maximum points for this tender are allocated as follows:

	POINTS
1.3.1.1 PRICE	80
1.3.1.2 B-BBEE STATUS LEVEL OF CONTRIBUTION	20
Total points for Price and B-BBEE must not exceed	100

1.4 Failure on the part of a tenderer to fill in and/or to sign this form and submit a B-BBEE Affidavit, Verification Certificate from a B-BBEE Verification Agency accredited by the South African National Accreditation System (SANAS) or a Registered Auditor approved by the Independent Regulatory Board of Auditors (IRBA), issued prior to 01 January 2017 together with the tender, will be interpreted to mean that preference points for B-BBEE status level of contribution are not claimed.

1.5 The purchaser 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 purchaser.

2. DEFINITIONS

2.1 "all applicable taxes" includes value-added tax, pay as you earn, income tax, unemployment insurance fund contributions and skills development levies;

2.2 "B-BBEE" means broad-based black economic empowerment as defined in section 1 of the Broad -Based Black Economic Empowerment Act;

- 2.3 “B-BBEE status level of contributor” means the B-BBEE status received by a measured entity based on its overall performance using the relevant scorecard contained in the Codes of Good Practice, or Sector Code on Black Economic Empowerment, issued in terms of section 9(1) of the Broad-Based Black Economic Empowerment Act;
- 2.4 “tender” means a written offer in a prescribed or stipulated form in response to an invitation by an organ of state for the provision of services, works or goods, through price quotations, advertised competitive tendering processes or proposals;
- 2.5 “Broad-Based Black Economic Empowerment Act” means the Broad-Based Black Economic Empowerment Act, 2003 (Act No. 53 of 2003);
- 2.6 “comparative price” means the price after the factors of a non-firm price and all unconditional discounts that can be utilized have been taken into consideration;
- 2.7 “consortium or joint venture” 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;
- 2.8 “contract” means the agreement that results from the acceptance of a tender by an organ of state;
- 2.9 “EME” – (Exempted Micro Enterprise) means an Entity with annual turnover of R10 million or less
- 2.10 “Firm price” means the price that is only subject to adjustments in accordance with the actual increase or decrease resulting from the change, imposition, or abolition of customs or excise duty and any other duty, levy, or tax, which, in terms of the law or regulation, is binding on the Supplier and demonstrably has an influence on the price of any supplies, or the rendering costs of any service, for the execution of the contract;
- 2.11 “functionality” means the measurement according to predetermined norms, as set out in the tender documents, of a service or commodity that is designed to be practical and useful, working or operating, taking into account, among other factors, the quality, reliability, viability and durability of a service and the technical capacity and ability of a tenderer;
- 2.12 “non-firm prices” means all prices other than “firm” prices;
- 2.13 “person” includes a juristic person;
- 2.14 “QSE” – (Qualifying Small Enterprise) means an Entity that qualifies for measurement under the QSE scorecard with turnover of R10 million or more but less than R50 million.
- 2.15 “rand value” means the total estimated value of a contract in South African currency, calculated at the time of tender invitations, and includes all applicable taxes and excise duties;
- 2.16 “sub-contract” means the primary Supplier’s assigning, leasing, making out work to, or employing, another person to support such primary Supplier in the execution of part of a project in terms of the contract;
- 2.17 “total revenue” – means the total income of an entity from its operations as determined under South African Generally Accepted Accounting Practice, as per Codes of Good Practice on Black Economic Empowerment, issued in terms of section 9(1) of the Broad-Based Black Economic Empowerment Act and promulgated in the Government Gazette on 9 February 2007;
- 2.18 “trust” means the arrangement through which the property of one person is made over or bequeathed to a trustee to administer such property for the benefit of another person; and

- 2.19 “trustee” means any person, including the founder of a trust, to whom property is bequeathed in order for such property to be administered for the benefit of another person.

3. ADJUDICATION USING A POINT SYSTEM

- 3.1 The tenderer obtaining the highest number of total points will be awarded the contract.
- 3.2 Preference points shall be calculated after prices have been brought to a comparative basis taking into account all factors of non-firm prices and all unconditional discounts;.
- 3.3 Points scored must be rounded off to the nearest 2 decimal places.
- 3.4 In the event that two or more tenders have scored equal total points, the successful tender must be the one scoring the highest number of preference points for B-BBEE.
- 3.5 However, when functionality is part of the evaluation process and two or more tenders have scored equal points including equal preference points for B-BBEE, the successful tender must be the one scoring the highest score for functionality.
- 3.6 Should two or more tenders be equal in all respects, the award shall be decided by the drawing of lots.

4. POINTS AWARDED FOR PRICE

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

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

$$\begin{array}{ccc} 80/20 & \text{or} & 90/10 \\ P_s = 80 \left(1 - \frac{P_t - P_{\min}}{P_{\min}} \right) & \text{or} & P_s = 90 \left(1 - \frac{P_t - P_{\min}}{P_{\min}} \right) \end{array}$$

Where:

P_s = Points scored for comparative price of tender under consideration
 P_t = Comparative price of tender under consideration
 $P_{\min}$ = Comparative price of lowest acceptable tender

5. Points awarded for B-BBEE Status Level of Contribution

- 5.1 In terms of Regulation 6 (2) and 7 (2) of the Preferential Procurement Regulations 2017, preference points must be awarded to a tenderer for attaining the B-BBEE status level of contribution in accordance with the table below:

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

- 5.2 Tenderers who qualify as EMEs in terms of the B-BBEE Act must submit a certificate issued by an Accounting Officer as contemplated in the CCA, prior to 01 May 2015 or a B-BBEE Affidavit with B-BBEE Status Level Certificates.
- 5.3 Tenderers other than EMEs must submit their original and valid B-BBEE status level Affidavit QSE (For entities whose turnover is between R10 Million and R50 Million, with 51% to 100% Black Ownership) verification certificate or a certified copy thereof, substantiating their B-BBEE rating issued by a Registered Auditor approved by IRBA (prior to 1 January 2017) or a Verification Agency accredited by SANAS.
- 5.4 A trust, consortium or joint venture, will qualify for points for their B-BBEE status level as a legal entity, provided that the entity submits their B-BBEE status level certificate for consortiums or joint ventures and affidavit for trusts.
- 5.5 A trust, consortium or joint venture will qualify for points for their B-BBEE status level as an unincorporated entity, provided that the entity submits their consolidated B-BBEE scorecard as if they were a group structure and that such a consolidated B-BBEE scorecard is prepared for every separate tender.
- 5.6 Tertiary institutions and public entities will be required to submit their B-BBEE status level certificates in terms of the specialised scorecard contained in the Amended B-BBEE Codes of Good Practice, Gazette No. 38766.
- 5.7 A person will not be awarded points for B-BBEE status level if it is indicated in the tender documents that such a tenderer intends sub-contracting more than 25% of the value of the contract to any other enterprise that does not qualify for at least the points that such a tenderer qualifies for, unless the intended sub-Supplier is an EME that has the capability and ability to execute the sub-contract.
- 5.8 A person awarded a contract may not sub-contract more than 25% of the value of the contract to any other enterprise that does not have an equal or higher B-BBEE status level than the person concerned, unless the contract is sub-contracted to an EME that has the capability and ability to execute the sub-contract.

6. TENDER DECLARATION

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

7. B-BBEE STATUS LEVEL OF CONTRIBUTION CLAIMED IN TERMS OF PARAGRAPHS 1.3.1.2 AND 5.1

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

(Points claimed in respect of paragraph 7.1 must be in accordance with the table reflected in paragraph 5.1 and must be substantiated by means of a B-BBEE certificate issued by a Verification Agency accredited by SANAS or a Registered Auditor approved by IRBA (prior to 01 January 2017) or an Accounting Officer as contemplated in the CCA).

8. SUB-CONTRACTING

8.1 Will any portion of the contract be sub-contracted? **YES / NO** (delete which is not applicable)

8.1.1 If yes, indicate:

- i. what percentage of the contract will be subcontracted? %
- ii. the name of the sub-Supplier?
- iii. the B-BBEE status level of the sub-Supplier?
- iv. whether the sub-Supplier is an EME? YES / NO (delete which is not applicable)

9. DECLARATION WITH REGARD TO COMPANY/FIRM

9.1 Name of organization:

9.2 VAT registration number:

9.3 Company Registration number:

9.4 TYPE OF COMPANY/ FIRM

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

[TICK APPLICABLE BOX]

9.5 DESCRIBE PRINCIPAL BUSINESS ACTIVITIES

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

9.6 COMPANY CLASSIFICATION

- ☐ Manufacturer
- ☐ Supplier
- ☐ Professional supplier
- ☐ Other suppliers, e.g. transporter, etc.

[TICK APPLICABLE BOX]

9.7 Total number of years the company/firm has been in business?.....

9.8 I/we, the undersigned, who is / are duly authorised to do so on behalf of the company/firm, certify that the points claimed, based on the B-BBE status level of contribution indicated in paragraph 7 of the foregoing certificate, qualifies the company/ firm for the preference(s) shown and I / we acknowledge that:

- (i) The information furnished is true and correct
- (ii) The preference points claimed are in accordance with the General Conditions as indicated in paragraph 1 of this form
- (iii) In the event of a contract being awarded as a result of points claimed as shown in paragraph 7, the Supplier may be required to furnish documentary proof to the satisfaction of the purchaser that the claims are correct;
- (iv) If the B-BBEE status level of contribution has been claimed or obtained on a fraudulent basis or any of the conditions of contract have not been fulfilled, the purchaser may, in addition to any other remedy it may have –
 - (a) disqualify the person from the 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) restrict the tenderer or Supplier, its shareholders and directors, or only the shareholders and directors who acted on a fraudulent basis, 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

.....
SIGNATURE(S) OF TENDERER(S):

DATE:.....

ADDRESS:.....
.....
.....

WITNESSES:

1.

2.

T2.2.22 .../continued B-BBEE STATUS LEVEL VERIFICATION CERTIFICATES

Tenderers not submitting a **valid original or a certified copy** B-BBEE Status Level Verification Certificate or are non-compliant contributors to B-BBEE do not qualify for preference points for B-BBEE but will not be disqualified from the tendering process.

FOR INFORMATION USE ONLY

T2.2.23 PROOF OF PURCHASE OF TENDER DOCUMENT

INSERT HERE

FOR INFORMATION USE ONLY

T2.2.24 GOODS AND SERVICES SOURCED INTERNATIONALLY

INTRODUCTION

The National Industrial Participation (NIP) Programme, which is applicable to all government procurement contracts that have an imported content, became effective on the 1 September 1996. The NIP policy and guidelines were fully endorsed by Cabinet on 30 April 1997. In terms of the Cabinet decision, all state and State Owned Entities purchases / lease contracts (for goods, works and services) entered into after this date, are subject to the NIP requirements. NIP is obligatory and therefore must be complied with. The Industrial Participation Secretariat (IPS) of the Department of Trade and Industry (DTI) is charged with the responsibility of administering the programme.

1. PILLARS OF THE PROGRAMME

1.1 The NIP obligation is benchmarked on the imported content of the contract. Any contract having an imported content equal to or exceeding US\$ 10 million or other currency equivalent to US\$ 10 million will have a NIP obligation. This threshold of US\$ 10 million can be reached as follows:

- (a) Any single contract with imported content exceeding US\$10 million.
or
- (b) Multiple contracts for the same goods, works or services each with imported content exceeding US\$3 million awarded to one seller over a 2 year period which in total exceeds US\$10 million.
or
- (c) A contract with a renewable option clause, where should the option be exercised the total value of the imported content will exceed US\$10 million.
or
- (d) Multiple suppliers of the same goods, works or services under the same contract, where the value of the imported content of each allocation is equal to or exceeds US\$ 3 million worth of goods, works or services to the same government institution, which in total over a two (2) year period exceeds US\$10 million.

1.2 The NIP obligation applicable to suppliers in respect of sub-paragraphs 1.1 (a) to 1.1 (c) above will amount to 30 % of the imported content whilst suppliers in respect of paragraph 1.1 (d) shall incur 30% of the total NIP obligation on a pro-rata basis.

1.3 To satisfy the NIP obligation, the DTI would negotiate and conclude agreements such as investments, joint ventures, sub-contracting, licensee production, export promotion, sourcing arrangements and research and development (R&D) with partners or suppliers.

1.4 A period of seven years has been identified as the time frame within which to discharge the obligation.

2. REQUIREMENTS OF THE DEPARTMENT OF TRADE AND INDUSTRY

2.1 In order to ensure effective implementation of the programme, successful tenderers (Suppliers) are required to, immediately after the award of a contract that is in excess of R10 million (ten million Rands), submit details of such a contract to the DTI for reporting purposes.

2.2 The purpose for reporting details of contracts in excess of the amount of R10 million (ten million Rands) is to cater for multiple contracts for the same goods, works or services; renewable contracts and multiple suppliers for the same goods, works or services under the same contract as provided for in paragraphs 1.1.(b) to 1.1. (d) above.

3. TENDER SUBMISSION AND CONTRACT REPORTING REQUIREMENTS OF TENDERERS AND SUCCESSFUL TENDERERS (SUPPLIERS)

3.1 Tenderers are required to sign and submit this Section together with the tender on the closing date and time.

3.2 In order to accommodate multiple contracts for the same goods, works or services; renewable contracts and multiple suppliers for the same goods, works or services under the same contract as indicated in sub-paragraphs 1.1 (b) to 1.1(d) above and to enable the DTI in determining the NIP obligation, successful tenderers (Suppliers) are required, immediately after being officially notified about any successful tender with a value in excess of R10 million (ten million Rands), to contact and furnish the DTI with the following information:

- Tender / contract number.
- Description of the goods, works or services.
- Date on which the contract was accepted.
- Name, address and contact details of the government institution.
- Value of the contract.
- Imported content of the contract, if possible.

3.3 The information required in paragraph 3.2 above must be sent to the Department of Trade and Industry, Private Bag X 84, Pretoria, 0001 for the attention of Mr Elias Malapane within five (5) working days after award of the contract. Mr Malapane may be contacted on telephone (012) 3941401, facsimile (012) 3942401 or e-mail at Elias@thedti.gov.za for further details about the programme.

4. PROCESS TO SATISFY THE NIP OBLIGATION

4.1 Once the successful tenderer (Supplier) has made contact with and furnished the DTI with the information required, the following steps will be followed:

- (a) the Supplier and the DTI will determine the NIP obligation;
- (b) the Supplier and the DTI will sign the NIP obligation agreement;
- (c) the Supplier will submit a performance guarantee to the DTI;
- (d) the Supplier will submit a business concept for consideration and approval by the DTI;
- (e) upon approval of the business concept by the DTI, the Supplier will submit detailed business plans outlining the business concepts;
- (f) the Supplier will implement the business plans; and
- (g) the Supplier will submit bi-annual progress reports on approved plans to the DTI.

4.2 The NIP obligation agreement is between the DTI and the successful tenderer (Supplier) and, therefore, does not involve the purchasing institution.

Tender number	Closing date
Name of tenderer	
Postal address	
.....	
Signature	Name (in print)
Date	

T2.62.

**T2.2.25 LETTER OF GOOD STANDING IN TERMS OF COID ACT
(Compensation for Occupational Injuries and Diseases Act)**

INSERT HERE

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T2.2.26 TENDERER'S FINANCIAL STANDING

In terms of the standard conditions of Tender, the Tenderer shall provide information about its commercial position, which includes information necessary for the Purchaser to evaluate the Tenderer's financial standing.

To that end the Tenderer must provide with its Tender a bank rating, certified by its banker, to the effect that it will be able to successfully complete the contract at the Tendered amount within the specified time for completion.

However, should the Tenderer be unable to provide a bank rating with its Tender, it shall state the reasons as to why it is unable to do so, and in addition provide the following details of its banker and bank account that it intends to use for project:

Name of account holder:

Name of Bank: Branch:

Account number: Type of account:

Telephone number: Facsimile number:

Name of contact person (at bank:

Failure to provide either the required bank details or a certified bank rating with its Tender, will lead to the conclusion that the Tenderer does not have the necessary financial resources at its disposal to complete the contract successfully within the specified time for completion.

The Purchaser undertakes to treat the information thus obtained as confidential, strictly for the use of evaluation of the Tender submitted by the Tenderer.

SIGNATURE: DATE:
(of person authorized to sign on behalf of the Tenderer)

T2.2.27 SUPPLIERS HEALTH AND SAFETY DECLARATION

In terms of Clause 5(1)9(h) of the OHS Act 1993 Construction Regulations 2014 (referred to as "the Regulations" hereafter), a Supplier may only be appointed to perform construction work if the Purchaser is satisfied that the Supplier has the necessary competencies and resources to carry out the work safely in accordance with the Occupational Health and Safety Act No 85 of 1993 and the OHS Act 1993 Construction Regulations 2014.

To that effect a person duly authorized by the Tenderer must complete and sign the declaration hereafter in detail.

Declaration by Tenderer

1. I the undersigned hereby declare and confirm that I am fully conversant with the Occupational Health and Safety Act No 85 of 1993 (as amended by the Occupational Health and Safety Amendment Act No 181 of 1993), and the OHS Act 1993 Construction Regulations 2014.
2. I hereby declare that my company / enterprise have the competence and the necessary resources to safely carry out the construction work under this contract in compliance with the Construction Regulations and the Purchaser's Health and Safety Specifications.
3. I hereby undertake, if my Tender is accepted, to provide a sufficiently documented Health and Safety Plan in accordance with CR7(1) of the Construction Regulations, approved by the Purchaser or its representative, before I will be allowed to commence with construction work under the contract. I hereby agree that my company/enterprise will not have a claim for compensation for delay or extension of time because of my failure to obtain the necessary approval for the said safety plan.
4. I confirm that copies of my company's approved Health and Safety Plan, the Purchaser's Safety Specifications as well as the OHS Act 1993 Construction Regulations 2014 will be provided on site and will at all times be available for inspection by the Supplier's personnel, the Purchaser's personnel, the Engineer, visitors, and officials and inspectors of the Department of Labour.
5. I hereby confirm that adequate provision has been made in my Tendered rates and prices in the bill of quantities to cover the cost of all resources, actions, training and all health and safety measures envisaged in the OHS Act 1993 Construction Regulations 2014, including the cost for specific items that may be scheduled in the bill of quantities.
6. I hereby confirm that I will be liable for any penalties that may be applied by the Purchaser in terms of the said Regulations for failure on my part to comply with the provisions of the Act and the Regulations as set out in Regulation 30 of the Regulations.
7. I agree that my failure to complete and execute this declaration to the satisfaction of the Purchaser will mean that I am unable to comply with the requirements of the OHS Act 1993 Construction Regulations 2014, and accept that my Tender will be prejudiced and may be rejected at the discretion of the Purchaser.
8. I am aware of the fact that, should I be awarded the contract, I must submit the notification required in terms of Regulation 4 of the OHS Act 1993 Construction Regulations 2014 (*example attached hereafter*) before I will be allowed to proceed with any work under the contract.

SIGNATURE: DATE:
(of person authorized to sign on behalf of the Tenderer)

T2.2.28 PRO FORMA OHS NOTIFICATION

PRO FORMA NOTIFICATION FORM IN TERMS OF THE OCCUPATIONAL HEALTH AND SAFETY ACT 1993, CONSTRUCTION REGULATIONS 2014

[In terms of Regulation 4 of the Construction Regulations 2014, the successful Tenderer must complete and forward this form prior to commencement of work to the office of the Department of Labour.]

1. (a) Name and postal address of Supplier:

(b) Name of Supplier's contact person:

Telephone number:

2. Supplier's compensation registration number:

3. (a)

.....
Name and postal address of Purchaser:

(b) Name of Purchaser's contact person or agent:

Telephone number

4. (a) Name and postal address of designer(s) for the project:

(b) Name of designer's contact person:

Telephone number

5. Name of Supplier's construction supervisor on site appointed in terms of Regulation 6(1):

Telephone number:

6. Name/s of Supplier's sub-ordinate supervisors on site appointed in terms of regulation 6(2).

7. Exact physical address of the construction site or site office:

8. Nature of the construction work:

9. Expected commencement date:

10. Expected completion date:

11. Estimated maximum number of persons on the construction site:

12. Planned number of Sub-contractors on the construction site accountable to Supplier:

13. Name(s) of Sub-contractors already chosen:

SIGNED BY:

SUPPLIER: DATE:

PURCHASER: DATE:

T2.2.29 LETTER OF INTENT FOR PUBLIC LIABILITY

The Service Provider is required to provide the following insurances:

1. Public Liability Insurance
Cover is: R10 000 000 (Ten million rand)
Period of cover: For the period of performance

Insurance cover requirements will be confirmed on award.

INSERT HERE

FOR INFORMATION USE ONLY

T2.2.30 LETTER OF INTENT FOR PERFORMANCE GUARANTEE

[The Tenderer must attach hereto a letter from the bank or institution with whom it has made the necessary arrangements, to the effect that the said bank or institution will be prepared to provide the required performance guarantee when asked to do so. The Tenderer must also attach proof that the institution that will provide the performance guarantee is registered and in good standing with the Financial Services Conduct Authority.]

INSERT HERE

FOR INFORMATION USE ONLY

T2.2.31 REGISTRATION CERTIFICATES

Valid registration: **CIDB Grading 3ME or Higher**

FOR INFORMATION USE ONLY

T2.2.32 CENTRAL SUPPLIER DATABASE (CSD) REPORT

Insert Here

FOR INFORMATION USE ONLY



CONTRACT NO: 2021/090(A)

PROVISION OF HVAC MAINTENANCE FOR HEAD OFFICE

VOLUME 2 – Offer, Contract, Pricing, Scope of Work and Site Information

Issued by:

Umgeni Water
310 Burger Street
Pietermaritzburg

Tender Queries:

Contact Name: Mbali Ngema
Telephone: 033 341 1323

Name of Service Provider:

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C1.1 Form of Offer and Acceptance	C1.2	Yellow
C1.2 Contract Data	C1.7	Yellow
C.2 PRICING DATA		
C2.1 Pricing Instructions	C2.1	Yellow
C2.2 Pricing Schedule.....	C2.2	Yellow
C.3 SCOPE OF WORK	C3.1	Blue
C.4 SITE INFORMATION.....	C4.1	Green
C.5 ANNEXURES	C5.1	White
C5.1 MAINTENANCE AGREEMENT		
C5.2 DETAILED MAINTENANCE SCHEDULE.		
C5.3 GENERAL TECHNICAL SPECIFICATION.		

C.1 AGREEMENTS AND CONTRACT DATA

IMPORTANT NOTE ON C1.1:

ALL Tenderers MUST complete and sign Form A: OFFER (the first page hereafter).

Form B: ACCEPTANCE will be signed by the Employer and then only in the case of the successful Tenderer.

Form C: SCHEDULE OF DEVIATIONS must be signed by the Employer as well as the successful Tenderer after award of the contract.

Form D: CONFIRMATION OF RECEIPT must be signed by the successful Tenderer on receipt of a fully completed original copy of the Agreement including the Schedule of Deviations, if any.

FOR INFORMATION USE ONLY

C1.1 FORM OF OFFER AND ACCEPTANCE

A. OFFER

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

TENDER NO. 2021/090(A) - PROVISION OF HVAC MAINTENANCE FOR HEAD OFFICE FOR A PERIOD OF THREE (3) YEARS

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

The Tenderer, identified in the Offer signature block, has examined the draft contract as listed in the Acceptance section and agreed to provide this Offer

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

Note: This is a rates based tender. The quantities on the pricing schedule are for obtaining a rate per item. The supplier will charge Umgeni Water based on the rates quoted in the contract.

The Tenderer confirms that he has read the Standard General Services Contract referred to in C1.2 Contract Data.

This Offer may be accepted by the Purchaser by signing the Acceptance part of this Form of Offer and Acceptance and returning one copy of this document to the Tenderer before the end of the period of validity stated in the Tender Data, whereupon the Tenderer becomes the party named as the Supplier in the Conditions of Contract identified in the Contract Data.

Signature(s) (of persons authorized to sign the acceptance)

Name(s)

Capacity

For the Tenderer:

(Insert name and address of organization)

Name & Signature of Witness

Date

B: ACCEPTANCE

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

The terms of the contract are contained in:

- C.1 Agreement, and Contract Data, (which include this Agreement)
- C.2 Pricing Data, including the Bill of Quantities
- C.3 Scope of Work
- C.4 Site Information
- C.5 Annexures

and the schedules, forms, drawings and documents or parts thereof, which may be incorporated by reference into Parts 1 to 5 above.

Deviations from and amendments to the documents listed in the Tender Data and any addenda thereto listed in the Tender Schedules as well as any changes to the terms of the Offer agreed by the Tenderer and the Employer during this process of offer and acceptance, are contained in the Schedule of Deviations attached to and forming part of this Agreement. No amendments to or deviations from said documents are valid unless contained in this Schedule, which must be duly signed by the authorized representatives of both parties.

The Tenderer shall within two weeks after receiving a completed copy of this Agreement, including the Schedule of Deviations (if any), contact the Employer's agent (whose details are given in the Contract Data) to arrange the delivery of any other bonds, guarantees, proof of insurance and any other documentation to be provided in terms of the Conditions of Contract identified in the Contract Data. Failure to fulfil any of these obligations in accordance with those terms shall constitute a repudiation of this Agreement.

Notwithstanding anything contained herein, this Agreement comes into effect on the date when the Tenderer receives one fully completed original copy of this document, including the Schedule of Deviations (if any). Unless the Tenderer (now Service Provider) within five days of the date of such receipt notifies the Employer in writing of any reason why he cannot accept the contents of this Agreement, this Agreement shall constitute a binding contract between the parties.

Signature: (of person authorized to sign the acceptance)

Name: (of signatory in capitals)

Capacity: (of Signatory)

Name of Employer: (organization) Umgeni Water

Address 310 Burger Street, Pietermaritzburg

Telephone number: 033 3411111 **Fax number:**

AS WITNESS

Signature:..... **Name:** (in capitals)

Date:

C: SCHEDULE OF DEVIATIONS

The extent of deviations from the tender documents issued by Umgeni Water prior to the tender closing date is limited to those permitted in terms of the Tender Data and the Conditions of Tender.

A Tenderer's covering letter will not necessarily be included in the final contract document. Should any matter in such letter, which constitutes a deviation as aforesaid become the subject of agreements reached during the process of offer and acceptance, the outcome of such agreement shall be recorded here.

Any other matters arising from the process of offer and acceptance either as a confirmation, clarification or change to the tender documents and which it is agreed by the Parties becomes an obligation of the contract shall also be recorded here.

Any change or addition to the tender documents arising from the above agreements and recorded here shall also be incorporated into the final draft of the Contract.

1. **Subject:**
Details:
.....
2. **Subject:**
Details:
.....
3. **Subject:**
Details:
.....
4. **Subject:**
Details:
.....
5. **Subject:**
Details:
.....
6. **Subject:**
Details:
.....
7. **Subject:**
Details:
.....

By the duly authorized representatives signing this Schedule of Deviations, Umgeni Water and the Tenderer agree to and accept the foregoing Schedule of Deviations as the only deviations from and amendments to the documents listed in the Tender Data and addenda thereto as listed in the Tender Schedules, as well as any confirmation, clarification or change to the terms of the offer agreed by the Tenderer and Umgeni Water during this process of offer and acceptance.

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

FOR THE TENDERER:

Signature:

Name:

Capacity:

Tenderer: *(Name and address of organization)*

Witness:

Signature:

Name:

Date:

FOR UMGENI WATER

Signature:

Name:

Capacity:

Witness:

Signature:

Name:

Date:

D: CONFIRMATION OF RECEIPT

The Tenderer, (now Service Provider), identified in the Offer part of this Agreement hereby confirms receipt from the Employer, identified in the Acceptance part of this Agreement, of one fully completed original copy of this Agreement, including the Schedule of Deviations on this

FOR THE CONTRACTOR:

Signature:

Name:

Capacity:

Signature and name of witness:

Signature:

Name:

C.1.2 CONTRACT DATA (INCLUDING SPECIAL CONDITIONS OF CONTRACT)

The Conditions of Contract are the **Umgeni Water Standard Services Contract** (document number: SCM027), a copy of which may be obtained from the Umgeni Water Supply Chain Management office or can be downloaded from the following web site: www.umgeni.co.za/sustainable_development/sud.asp

Each item of data given below is cross-referenced to the clause in the Conditions of Contract to which it mainly applies.

Special Conditions of Contract

1. National Treasury Central Supplier Database

The successful Tenderer is required to provide proof of registration with the National Treasury Central Supplier Database (CSD) prior to the award of contract.

2. Application of Contract Price Adjustment Factor

Contract Price Adjustment will be applicable

3. Progress Payments

Payment of Payment Certificates shall be effected on or before but not later than the last day of the month following the month in which the Invoice and accompanying statement was dated".

PART 1: DATA PROVIDED BY THE EMPLOYER

Clause	Data
1	The Employer is Umgeni Water
1	The Contract is for the provision of the HVAC maintenance for Head Office for a period of three (3) years.
1	The Period of Performance is 12 months, renewable to a maximum of 36 months from the Commencement Date.
3.4	The authorized and designated representative of the Employer is: Name: Nonhlanhla Shabalala The address for receipt of communications is: Telephone: 031 719 7404 Facsimile: 031 719 7325 E-mail: Nonhlanhla.shabalala@umgeni.co.za Address: 13 Pineside Road, New Germany, 3610
3.5	The location for the performance of the Contract is Head Office (Umgeni Water)
3.13	The programme shall be submitted within 14 Days of the Contract becoming effective.
5.4.1	The Service Provider is required to provide the following insurance: 1. Public Liability Insurance Cover is: R10 000 000 (Ten million rand) Period of cover: For the period of performance Insurance cover requirements should be confirmed on award
5.5	The Service Provider is required to obtain the Employer's prior approval in writing before taking any of the following actions: a) Shutting down any equipment for routine maintenance b) Removal of any equipment off site for repairs
7.2	The Service Provider is required to provide personnel in accordance with the provisions of Clause 7.2 and to complete the Personnel Schedule.
8.1	The Service Provider is to commence the performance of the Services within 14 Days of date that the Contract becomes effective.
12.2.1/2/3	Interim settlement of disputes is to be by mediation
	In the event that the parties fail to agree on a mediator, the mediator is nominated by the Association of Arbitrators (Southern Africa)
12.2.4	Final settlement is by litigation.
13.1.3	All persons in a joint venture or consortium shall carry a minimum General indemnity insurance of the value stipulated in clause 5.4.1 of the Contract Data.
15	The interest rate will be prime interest rate of the Employer's bank at the time that the amount is due.

The additional conditions of contract are:

- a) **Umgeni Water Reserves The Right To Award The Contract In Whole Or In Part**

PART 2: DATA PROVIDED BY THE SERVICE PROVIDER

Clause	Data																
1	The Service Provider is. Name: Address: Telephone: Facsimile:																
5.3	The authorized and designated representative of the Service Provider is: Name: The address for receipt of communications is: Address: Telephone: Facsimile:																
5.5 7.1.2	The Key Persons and their jobs / functions in relation to the services are: <table border="1"> <thead> <tr> <th>Name</th><th>Specific duties</th></tr> </thead> <tbody> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </tbody> </table>	Name	Specific duties														
Name	Specific duties																

PART C2: PRICING DATA

PRICING TO BE DONE BY MEANS OF BILL OF QUANTITIES

C2.1 Bill of Quantities

- 2.1.1 Definition of unit rates** – the tenderer is required to review the scope of work defined within C3 and to determine all the resources required resulting in the unit rates to achieve the work components within the scope.
- 2.1.2 Bill of Quantities** – the tenderer is required to fill in the Bill of Quantities and complete the pricing calculations set down in C2.2 Pricing Schedule, and carry forward the tender amount from the C2.2 Pricing Schedule to the Offer C1.1.
- 2.1.3 Payment** – the tenderer will be paid the amounts per quantity of each item delivered on a monthly basis.
- 2.1.4 Prices** – must remain firm for a 12 month period and thereafter, will be subject to CPI escalation on the anniversary of the contract. A 30 day notice period prior to price increases is required.
- 2.1.5** The service providers shall provide prices (VAT exclusive) for **ALL** items listed in the table. **Failure to provide prices in any of the items listed will deem this tender to be non-responsive.**

C2.2 Pricing Schedule – Bill of Quantities

SECTION A – TIME RELATED COSTS AND DISBURSEMENTS FOR REPAIRS OF HVAC, AIR CONDITIONING UNITS

Item No	Item Description	Unit	Quantity	Rate	Amount Per Item (Excl Vat)
1	PART 1 : DAYWORK (NORMAL)				
1.1	General Foreman	h	10	R	R
1.2	Skilled Labour (Technician) Refrigeration/HVAC	h	10	R	R
1.3	Unskilled Labour (Assistants)	h	20	R	R
BILL 1 – CARRIED TO SUMMARY OF BILL OF QUANTITIES					R
2	PART 2: CALLOUT				
2.1	General Foreman	h	10	R	R
2.2	Skilled Labour (Technician) Refrigeration/HVAC	h	10	R	R
2.3	Unskilled Labour (Assistants)	h	20	R	R
BILL 2 CARRIED TO SUMMARY OF BILL OF QUANTITIES					R

Item Number	Item Description	Unit (A)	No. of Services per Annum (B)	Rate (C)	Amount per Annum (BxC) (excl VAT)
<u>CHILLER & COOLING TOWER PLANT</u>					
3.1	<u>PHASE 2 ROOF PLANTROOM – AIR COOLED CHILLER 1</u>  Manufacturer : TRANE Model Number: RTAD165S				
3.1.1	Major Service. Twice per annum	No	2		
3.1.2	Monthly service and maintenance by HVAC contractor, in accordance with Spoormaker & Partners specification. Refer to Volume 2.	No	12		
3.2	<u>PHASE 3 BASEMENT CHILLER PLANTROOM – WATER COOLED CHILLER 1</u>  Manufacturer : TRANE Model Number: RTWD100				
3.2.1	Major Service .Twice per annum.	No	4		
3.2.2	Monthly service and maintenance by HVAC contractor, in accordance with Spoormaker & Partners specification.	No	24		
3.3	<u>PHASE 3 BASEMENT CHILLER PLANTROOM – WATER COOLED CHILLER 2</u>  Manufacturer : TRANE Model Number: RTWD160				
	TOTAL CARRIED FORWARD				

Item Number	Item Description	Unit (A)	No. of Services per Annum (B)	Rate (C)	Amount per Annum (BxC) (excl VAT)
	TOTAL BROUGHT DOWN				
3.3.1	Major Service. Twice per annum	No	2		
3.3.2	Monthly service and maintenance by HVAC contractor, in accordance with Spoormaker & Partners specification. Refer to Volume 2.	No	12		
3.4	 PHASE 3- COOLING TOWERS- ROOF Model no.: SULZTER Serial no.:EWK324/09/30				
3.4.1	Major service of cooling tower. Twice per annum	No	8		
3.4.2	Bi Monthly service and maintenance by HVAC contractor, in accordance with Spoormaker & Partners specification. Refer to Volume 2.	No	24		
	BILL 3 CARRIED TO SUMMARY OF BILL OF QUANTITIES				

Item Number	Item Description	Unit (A)	No. of Services per Annum (B)	Rate (C)	Amount per Annum (BxC) (excl VAT)
4.1 <u>PUMPS</u>	<u>PHASE 2 ROOF PLANTROOM</u> <u>PRIMARY CHILLED WATER PUMPS 1&2</u>  Primary Chilled Water Pump No.1&2 Manufacturer: Eagle Pump Model: ET80-26.				
4.1.1	Major Service on pump and motor. Twice per annum.	No	4		
4.1.2	Bi Monthly service and maintenance by HVAC contractor, in accordance with Spoormaker & Partners specification.	No	12		
4.2 <u>PHASE 3 BASEMENT CHILLER PLANTROOM</u>	<u>PRIMARY CHILLED WATER PUMP 1</u>  Primary Chilled Water Pump No.1 Manufacturer: Eagle Pump Model : ET80-20				
4.2.1	Major Service on pump and motor. Once per annum.	No	1		
4.2.2	Monthly service and maintenance by HVAC contractor, in accordance with Spoormaker & Partners specification.	No	12		
4.3 <u>PHASE 3 BASEMENT CHILLER PLANTROOM</u> <u>PRIMARY CHILLED WATER PUMP 2</u>	 Primary Chilled Water Pump No.2 Condensor Water Pump No.2 Manufacturer: Eagle Pump Model : ET65-20				
	TOTAL CARRIED FORWARD				

Item Number	Item Description	Unit (A)	No. of Services per Annum (B)	Rate (C)	Amount per Annum (BxC) (excl VAT)
	TOTAL BROUGHT DOWN				
4.3.1	Major Service on pump and motor. Once per annum.	No	1		
4.3.2	Monthly service and maintenance by HVAC contractor, in accordance with Spoormaker & Partners specification.	No	12		
4.4	<u>PHASE 3 BASEMENT CHILLER PLANTROOM</u> <u>CONDENSOR WATER PUMP 1</u>  Condenser Water Pump No.1 Manufacturer: Eagle Pump Model : E100-32.				
4.4.1	Major Service on pump and motor. Once per annum.	No	1		
4.4.2	Monthly service and maintenance by HVAC contractor, in accordance with Spoormaker & Partners specification. Refer to Volume 2.	No	12		
4.5	<u>PHASE 3 BASEMENT CHILLER PLANTROOM</u> <u>CONDENSOR WATER PUMP 2</u>  Condenser Water Pump No.2 Manufacturer: Eagle Pump Model : ET80-32				
4.5.1	Major Service on pump and motor. Once per annum.	No	1		
4.5.2	Monthly service and maintenance by HVAC contractor, in accordance with Spoormaker & Partners specification.	No	12		
	TOTAL CARRIED FORWARD				

Item Number	Item Description	Unit (A)	No. of Services per Annum (B)	Rate (C)	Amount per Annum (BxC) (excl VAT)
	TOTAL BROUGHT DOWN				
4.6	PHASE 3 BASEMENT PLANTROOM SECONDARY CHILLED WATER PUMPS 1,2&3  Secondary Chilled Water Pump No.1,2&3 Manufacturer: Eagle Pump Model : E80-40.				
4.6.1	Major Service on pump and motor. Once per annum.	No	3		
4.6.2	Monthly service and maintenance by HVAC contractor, in accordance with Spoormaker & Partners specification. Refer to Volume 2.	No	36		
	BILL 4 CARRIED TO SUMMARY OF BILL OF QUANTITIES				

Item Number	Item Description	Unit (A)	No. of Services per Annum (B)	Rate (C)	Amount per Annum (BxC) (excl VAT)
5.1 MCC - ELECTRICAL PANELS	<u>PHASE 2 ROOF PLANTROOM MCC PANEL</u> 				
	Major service of MCC. Once per annum.	No	1		
5.1.1	Monthly service and maintenance by HVAC contractor, in accordance with Spoormaker & Partners specification.	No	12		
5.2	<u>PHASE 3 BASEMENT PLANTROOM MCC PANEL</u> 				
5.2.1	Major service of MCC. Once per annum.	No	1		
5.2.2	Monthly service and maintenance by HVAC contractor, in accordance with Spoormaker & Partners specification.	No	12		
BILL 5 CARRIED TO SUMMARY OF BILL OF QUANTITIES					

Item Number	Item Description	Unit (A)	No. of Services per Annum (B)	Rate (C)	Amount per Annum (BxC) (excl VAT)
6.1	AIR HANDLING UNITS Phase 2 – ROOF – FAHU1  Make : TROX Model Number : TCHWS-7.				
6.1.1	Monthly service and maintenance by HVAC contractor, in accordance with Spoormaker & Partners specification. Refer to Volume 2.	No	12		
6.2	Phase 2 – ROOF – FAHU2  Make : TROX Model Number : TCHWS-7				
6.2.1	Monthly service and maintenance by HVAC contractor, in accordance with Spoormaker & Partners specification. Refer to Volume 2.	No	12		
	TOTAL CARRIED FORWARD				

Item Number	Item Description	Unit (A)	No. of Services per Annum (B)	Rate (C)	Amount per Annum (BxC) (excl VAT)
	TOTAL BROUGHT DOWN				
6.3.	Phase 3 – ROOF – FAHU1  Make : APACHE Model Number : 46FS100				
6.3.1	Monthly service and maintenance by HVAC contractor, in accordance with Spoormaker & Partners specification.	No	12		
6.4	Phase 1 – ROOF – FAHU1  Make : APACHE Model Number : 46FS100				
6.4.1	Monthly service and maintenance by HVAC contractor, in accordance with Spoormaker & Partners specification.	No	12		
	BILL 6 CARRIED TO SUMMARY OF BILL OF QUANTITIES				

Item Number	Item Description	Unit (A)	No. of Services per Annum (B)	Rate (C)	Amount per Annum (BxC) (excl VAT)
7.1 BUFFER TANKS	Phase 1 – ROOF – BUFFER TANK 				
7.1.1	Monthly service and maintenance by HVAC contractor, in accordance with Spoormaker & Partners specification.	No	12		
7.2	Phase 3 – BASEMENT PLANTROOM BUFFER TANK 				
7.2.1	Monthly service and maintenance by HVAC contractor, in accordance with Spoormaker & Partners specification.	No	12		
	BILL 7 CARRIED TO SUMMARY OF BILL OF QUANTITIES				

Item Number	Item Description	Unit (A)	No. of Services per Annum (B)	Rate (C)	Amount per Annum (BxC) (excl VAT)
8.1	Water Treatment System (Closed Circuit) 				
8.1.1	Monthly Water treatment by specialist service provider, in accordance with Spoormaker & Partners specification.	No	12		
8.2	PHASE 3 –COOLING TOWER PLANT 				
8.2.1	Monthly Water treatment by specialist service provider, in accordance with Spoormaker & Partners specification.	No	12		
8.3	Make-up Tank and Booster Pumps				
8.3.1	Major service to make-up tank and booster pumps. Twice per annum.	No	2		
8.3.2	Monthly service and maintenance by HVAC contractor, in accordance with Spoormaker & Partners specification.	No	12		
BILL 8 CARRIED TO SUMMARY OF BILL OF QUANTITIES					

Item Number	Item Description	Unit (A)	No. of Services per Annum (B)	Rate (C)	Amount per Annum (BxC) (excl VAT)
	CHILLED WATER FAN COIL UNITS				
	PHASE 3				
Chilled Water Fan Coil & Cassette Units	Quarterly Service and maintenance by HVAC contractor, in accordance with Spoormaker & Partners detailed maintenance specification.	No	252		
	BILL 9 CARRIED TO SUMMARY OF BILL OF QUANTITIES				
Cold Rooms					
10.1	Major service of Cold room equipment. Twice per annum	No	4		
10.2	Monthly service and maintenance by HVAC contractor, in accordance with Spoormaker & Partners specification.	No	24		
	BILL 10 CARRIED TO SUMMARY OF BILL OF QUANTITIES				
11.1	Monthly service and maintenance by HVAC contractor, in accordance with Spoormaker & Partners specification.	No	24		
Split Units(Server Room – Ground Floor)					
	BILL 11 CARRIED TO SUMMARY OF BILL OF QUANTITIES				
12.1	Major service to Axial flow fans. Once per annum	No	7		
12.1	Monthly service and maintenance by HVAC contractor, in accordance with Spoormaker & Partners specification.	No	84		
Extract Systems					
	BILL 12 CARRIED TO SUMMARY OF BILL OF QUANTITIES				
13.1	Monthly service and maintenance by HVAC contractor, in accordance with Spoormaker & Partners specification.	No	336		
DX SPLITS					
	BILL 13 CARRIED TO SUMMARY OF BILL OF QUANTITIES				
14.1	Monthly service and maintenance by HVAC contractor, in accordance with Spoormaker & Partners specification.	No	12		
HVAC Building Management System (BMS)					
	BILL 16 CARRIED TO SUMMARY OF BILL OF QUANTITIES				
15.1	Monthly service and maintenance by HVAC contractor, in accordance with Spoormaker & Partners specification.	No	84		
KITCHEN EXTRACT CANOPY					
	BILL CARRIED FORWARD				
	BILL BROUGHT DOWN				
	BILL 17 CARRIED TO SUMMARY OF BILL OF QUANTITIES				

Item Number	Item Description	Unit (A)	No. of Services per Annum (B)	Rate (C)	Amount per Annum (BxC) (excl VAT)
16.1 MISCELLANEOUS - LIFT MOTOR ROOM VENTILATION	Monthly service and maintenance by HVAC contractor, in accordance with Spoormaker & Partners specification.	No	36		
	BILL 18 CARRIED TO SUMMARY OF BILL OF QUANTITIES				
17.1 NEW INSTALLATIONS, BREAKDOWNS, SPARES, MODIFICATIONS)		No	SUM		R500,000.00
	BILL 19 CARRIED TO SUMMARY OF BILL OF QUANTITIES				

BILL SUMMARY		
Bill No	Description	Amount
1	Bill No. 1- Daywork (Normal)	
2	Bill No. 2- Callout	
3	Bill No.3- Chiller and Cooling Tower Plant	
4	Bill No. 4- Pumps	
5	Bill No.5 – Motor Control Centre (MCC)	
6	Bill No. 6 – Chilled Water Air Handling Units	
7	Bill No. 7 – Buffer Tanks	
8	Bill No. 8 - Water Treatment System	
9	Bill No.9 – Chilled Water Fan Coil Units	
10	Bill No. 10 – Cold Rooms	
11	Bill No. 11 – Split Units	
12	Bill No. 12 – Extract Systems	
13	Bill No. 13 – DX Splits Units	
14	Bill No. 16 – Building Management System (BMS)	
15	Bill No. 17 – Kitchen Extract System	
16	Bill No. 18 –Miscellaneous Lift Motor Room Ventilation	
17	Bill No. 20 – New installations ,breakdowns, spares, modifications	R500,000.00
A	SUBTOTAL A CARRIED FORWARD TO FINAL SUMMARY	

A - Total for all Items excluding VAT (Use to calculate CPG amount and percentage)	R
B - Escalation @ 10% of A	R
C - Subtotal (A + B)	R
D - VAT @ 15% of C	R
E - Total including VAT (C+D)	R

PART C3: SCOPE OF WORK

The scope of work includes the maintenance of the HVAC (Heating Ventilation and Air-conditioning Systems) serving the Umgeni Water Head Office Complex in Pietermaritzburg

1. Employer's objectives

The employer requires the full time services of an HVAC maintenance company to service and maintain their HVAC plant and equipment to ensure optimal performance and operation

2. Description of the services

Maintenance agreement and the Spoormaker & Partners specification for a detailed list of the services required.

3. Extent of the services

The successful tenderer will be appointed to maintain and service the HVAC systems at Umgeni Water Head Office.

4. Use of reasonable skill and care

The tenderer is to demonstrate reasonable skill and care in the maintenance of complex chilled water systems.

5. Co-operation with other services providers

The successful tenderer will be required to co-operate fully with Umgeni Water in the event of breakdowns that may arise in order to run air-con system effectively and efficiently,

6. Brief

Proper maintenance, servicing of HVAC and precisely to the scope of work.

7. Reference data

Refer to the Operating and Maintenance Manuals on Site.

8. Applicable national and international standards

Refer to Volume 2 for the list of applicable national, regional and international standards applicable.

9. Particular/Generic specifications

Refer to the Spoormaker & Partners Specification

10. Approvals

All approvals to be by Umgeni Water Property Division

11. Procurement

State requirements appropriate to the methodology and procedures that are to be followed. (See Annex A of SANS 10396:2003).

12. Access to land / buildings / sites

Access to Umgeni Water Head Office

13. Planning and programming

Refer to Returnable Schedule T2.2.A16 and state requirements for format of programme, level of detail, critical path activities and their dependencies, frequency of updating, key dates, etc.

14. Software application for programming

Tenders must be familiar with the use of a Building Management system. The current HVAC BMS and controls was provided by SATCHTECH.

15. Quality management

Refer to Returnable Schedule T2.2.A9 and Briefly describe;

- what quality management systems the service provider will be required to operate, and
- the intention of the Employer in terms of the monitoring of quality management, who will carry out such monitoring (Employer or agent) and if the monitoring forms part of a quality management system or will require only an occasional verification.

16. Format of communications

All written communication shall be via email. Refer to Volume 3 for the detailed records to be kept..

17. Key personnel

Refer to Returnable Schedule T2.2.17 and C1.2 Part 2: Contract Data to be provided by the Service Provider.

18. Management meetings

Management meeting between Umgeni Water and the successful maintenance contractor will be confirmed on appointment of the maintenance contractor

19. Forms for contract administration

Job card will be provided as per the standard Umgeni Water forma

20. Electronic payments

Payment shall be as per the Umgeni Water policies & procedures

21. Daily records

The contractor shall keep the necessary records of time sheets, call outs, problems logged

22. General indemnity insurances

Refer to C.1.2 Contract Data Clause 5.4.1 and state number of copies and the place where policies are to be presented.

23. Payment certificates

State requirements for substantiation of claims in payment certificates to expedite verification and certification by Employer's representative.

24. Use of documents by the Employer

All documents will be for record and maintenance purposes.

25. Property provided for the Service provider's use

All properties will be providers to the contractor for maintenance as per tender document

26. Proof of compliance with the law

All certificates of compliance relating the Maintenance and work on HVAC systems or associated electrical system to be provided

PART C4: SITE INFORMATION

1. Service Providers will be subject to Umgeni Water's access control procedures
2. The working hours applicable to the sites are 08h00 to 16h30 Monday to Friday
3. Vehicles entering the sites must be free from oil leaks as vehicles with leaks will be denied access to our sites.
4. The site applicable to this contract is:

Name of Worksite	Address	Contact Details	GPS Coordinates
Umgeni Water Head Office	310 Burger Street, Pietermaritzburg	Tel: 031 719 7404 Fax: 031 719 7325 E-mail: nonhlanhla.shabalala@umgeni.co.za Contact Person: Nonhlanhla Shabalala	Lat:29.603079 Long:30.384852

C5.1 MAINTENANCE AGREEMENT

AIR-CONDITIONING PLANT MAINTENANCE AGREEMENT between

UMGENI WATER
("Employer")

and

]
("Contractor")

1. INTERPRETATION

In this Agreement, clause headings are for convenience and shall not be used in its interpretation and, unless the context clearly indicates a contrary intention –

- 1.1. an expression which denotes –
 - 1.1.1. any gender includes the other genders;
 - 1.1.2. a natural person includes an artificial or juristic person and vice versa;
 - 1.1.3. the singular includes the plural and vice versa;
- 1.2. the following expressions shall bear the meanings assigned to them below and cognate expressions bear corresponding meanings –
 - 1.2.1. "Agreement" means this Agreement and the appendices thereto;
 - 1.2.2. "Annual Maintenance Consideration" means any Annual Maintenance Consideration in respect of which the Contractor shall have submitted a Tender under and in terms of the Subcontract to supply and install the Equipment referred to under the definition of Certificate of Works Completion;
 - 1.2.3. "Call-Back Rate" means the number of times the Contractor shall, in each twelve month period of this Agreement, be required by the Employer to provide Corrective Maintenance in respect of the Equipment, or any part thereof;
 - 1.2.4. "Call-Back Response Time" means the call-back response time(s) referred to in 4.8;
 - 1.2.5. "Certificate of Works Completion" means the Certificate of Works Completion as shall be issued by the Principal Agent in terms of the Principal Building Agreement according to which the Building in [] shall be or has been constructed for the Employer, by a principal building Contractor to which the Contractor has contracted, by means of a subcontract to supply and install the Equipment in the foregoing Building;
 - 1.2.6. "Commencement Date" means the first anniversary of the Final Completion Date;
 - 1.2.7. "Contractor" means [];
 - 1.2.8. "Corrective Maintenance" means repairs maintenance to Equipment failing or malfunctioning while in service in order to correct such failing or malfunctioning and to restore the Equipment to normal functioning and satisfactory operating condition;
 - 1.2.9. "Employer" means [];
 - 1.2.10. "Equipment" means the entire air-conditioning plant and equipment to be installed in or situated in the Employer's building [];
 - 1.2.11. "Equipment Manufacturers Maintenance Instructions" means the maintenance instructions which –
 - 1.2.11.1. Are contained within the Operating and Maintenance Manuals;
 - 1.2.11.2. have been prepared and issued by any manufacturer or supplier of the Equipment;
 - 1.2.11.3. shall have been delivered to the Employer by the contractor or subcontractor which shall have supplied and/or installed the Equipment;
 - 1.2.12. "Final Completion Date" means the date specified in the Certificate of Works Completion;
 - 1.2.13. "High Priority Equipment" means equipment which affects the performance of HVAC system in critical areas or substantial portions of the HVAC system eg. chillers, pumps, computer room AC units, smoke extraction fans etc;
 - 1.2.14. "Low Priority Equipment" means equipment which affect performance of the HVAC system in a small portion of a comfort zone eg. diffusers, ceiling FCU etc;
 - 1.2.15. "Maintenance Activity Schedules" means the maintenance activity schedules as referred to in 13;

- 1.2.16. "Maintenance Management Systems means the management system referred to in 7;
- 1.2.17. "Maintenance Programme" means the Maintenance programme referred to in 8;
- 1.2.18. "Maintenance Quality Assurance means the quality assurance and standards referred to in 6;
- 1.2.19. "Maintenance Service" means the supply by the Contractor of Predictive Maintenance, Preventative Maintenance and Corrective Maintenance in respect of the Equipment in terms of this Agreement;
- 1.2.20. "Maximum Equipment Downtime" means the Maximum Equipment Downtime referred to in 14;
- 1.2.21. "Medium Priority Equipment" means equipment which affect performance of HVAC sub-systems in a local comfort zone or non critical areas eg. VAV AHU's, tea kitchen ventilation etc;
- 1.2.22. "Operating and Maintenance Manuals" means the operating and maintenance manuals which-
 - 1.2.22.1. have been prepared and issued by any manufacturer and/or supplier of the Equipment; and
 - 1.2.22.2. shall have been delivered to the Employer by the contractor or the subcontractor which shall have supplied and/or installed the Equipment;
- 1.2.23. "Parties" means the Employer and the Contractor;
- 1.2.24. "Party" means either the Employer or the Contractor;
- 1.2.25. "Predictive Maintenance" means the collection of data, performing of tests and inspections, determining and monitoring trends to enable timely identification of, and to predict, degradation of the Equipment, or any part thereof, or loss of performance in order that Preventative Maintenance can be performed prior to Equipment failure;
- 1.2.26. "Preventative Maintenance" means maintenance carried out within the anticipated endurance time of the Equipment or any part thereof (including the replacement of worn components when components have reached the end of their operational life or if components are no longer capable of meeting their operational design criteria) in order to ensure the safe, efficient and reliable operation of the Equipment according to their design criteria;
- 1.2.27. "Response Time" means the response times referred to in 4.8;
- 1.2.28. "Site" means the Employer's Building referred to Umgeni Water Head Office];
- 1.3. any reference to any statute, regulation or other legislation shall be a reference to that statute, regulation or other legislation as at the signature date, and as amended or substituted from time to time;
- 1.4. if any provision in a definition is a substantive provision conferring a right or imposing an obligation on any party then, notwithstanding that it is only in a definition, effect shall be given to that provision as if it were a substantive provision in the body of this agreement;
- 1.5. where any term is defined within a particular clause, other than this 1, that term shall bear the meaning ascribed to it in that clause wherever it is used in this agreement;
- 1.6. where any number of days is to be calculated from a particular day, such number shall be calculated as excluding such particular day and commencing on the next day. If the last day of such number so calculated falls on a day which is not a business day, the last day shall be deemed to be the next succeeding day which is a business day;
- 1.7. any reference to days (other than a reference to business days), months or years shall be a reference to calendar days, months or years, as the case may be;
- 1.8. any term which refers to a South African legal concept or process (for example, without limiting the foregoing, winding-up or curatorship) shall be deemed to include a reference to the equivalent or analogous concept or process in any other jurisdiction in which this agreement may apply or to the laws of which a party may be or become subject.

- 1.8.1. "Maintenance Service" means the supply by the Contractor of Predictive Maintenance, Preventative Maintenance and Corrective Maintenance in respect of the Equipment in terms of this Agreement;
- 1.8.2. "Maximum Equipment Downtime" means the Maximum Equipment Downtime referred to in 14;
- 1.8.3. "Medium Priority Equipment" means equipment which affect performance of HVAC sub-systems in a local comfort zone or non critical areas eg. VAV AHU's, tea kitchen ventilation etc;
- 1.8.4. "Operating and Maintenance Manuals" means the operating and maintenance manuals which-
- 1.8.4.1. have been prepared and issued by any manufacturer and/or supplier of the Equipment; and
- 1.8.4.2. shall have been delivered to the Employer by the contractor or the subcontractor which shall have supplied and/or installed the Equipment;
- 1.8.5. "Parties" means the Employer and the Contractor;
- 1.8.6. "Party" means either the Employer or the Contractor;
- 1.8.7. "Predictive Maintenance" means the collection of data, performing of tests and inspections, determining and monitoring trends to enable timely identification of, and to predict, degradation of the Equipment, or any part thereof, or loss of performance in order that Preventative Maintenance can be performed prior to Equipment failure;
- 1.8.8. "Preventative Maintenance" means maintenance carried out within the anticipated endurance time of the Equipment or any part thereof (including the replacement of worn components when components have reached the end of their operational life or if components are no longer capable of meeting their operational design criteria) in order to ensure the safe, efficient and reliable operation of the Equipment according to their design criteria;
- 1.8.9. "Response Time" means the response times referred to in 4.8;
- 1.8.10. "Site" means the Employer's Building referred to Umgeni Water Head Office];
- 1.9. any reference to any statute, regulation or other legislation shall be a reference to that statute, regulation or other legislation as at the signature date, and as amended or substituted from time to time;
- 1.10. if any provision in a definition is a substantive provision conferring a right or imposing an obligation on any party then, notwithstanding that it is only in a definition, effect shall be given to that provision as if it were a substantive provision in the body of this agreement;
- 1.11. where any term is defined within a particular clause, other than this 1, that term shall bear the meaning ascribed to it in that clause wherever it is used in this agreement;
- 1.12. where any number of days is to be calculated from a particular day, such number shall be calculated as excluding such particular day and commencing on the next day. If the last day of such number so calculated falls on a day which is not a business day, the last day shall be deemed to be the next succeeding day which is a business day;
- 1.13. any reference to days (other than a reference to business days), months or years shall be a reference to calendar days, months or years, as the case may be;
- 1.14. any term which refers to a South African legal concept or process (for example, without limiting the foregoing, winding-up or curatorship) shall be deemed to include a reference to the equivalent or analogous concept or process in any other jurisdiction in which this agreement may apply or to the laws of which a party may be or become subject.

2. BASIS

It is the basis of this Agreement that the Contractor shall, during the period of this Agreement, and any extensions thereof, supply the Employer with a Maintenance Service for and in respect of the Equipment in terms of the provisions contained in this Agreement, the Operating and Maintenance Manuals and the Equipment Manufacturers Maintenance Instructions.

3. SCOPE

- 3.1. The Maintenance Service which shall be supplied by the Contractor to the Employer shall -
- 3.1.1. consist of Corrective Maintenance, Preventative Maintenance and Predictive Maintenance;
 - 3.1.2. achieve the maintenance objectives set forth in 4 below; and
 - 3.1.3. be performed and supplied in accordance with the provisions of this Agreement

4. MAINTENANCE OBJECTIVES

Without limiting the Contractor's obligations in terms of this Agreement, the Contractor shall, by means of the supply of the Maintenance Service in terms of 2 and 3 ensure –

- 4.1. the safety and comfort of persons using the Equipment;
- 4.2. the accuracy and reliability of the performance of the Equipment;
- 4.3. that the Maintenance Service is carried out at all times irrespective of whether or not such maintenance is necessitated by faulty design, faulty materials or faulty workmanship employed in connection with the manufacture and/or installation of the Equipment, or by reason of fair wear and tear;
- 4.4. that the Maintenance Service is carried out in accordance with the Maintenance Programme, the Maintenance Quality Assurance and the Maintenance Management System;
- 4.5. that the Equipment and associated spares are kept clean and presentable at all times;
- 4.6. that the frequency of Equipment break-downs shall not result in the target number of (8) eight call-backs per annum being exceeded on the basis that –
 - 4.6.1. the actual call-back rate shall be recorded by the Contractor on a monthly basis and assessed and calculated on a twelve monthly basis;
 - 4.6.2. each twelve month period referred to in 4.6.1 shall, in each case, be the twelve month period preceding each anniversary of the Commencement Date;
- 4.7. that the Maintenance Programme shall be structured and implemented so as to ensure that a Maximum Equipment Downtime shall not be exceeded;
- 4.8. that at any time of the day or night, seven days a week, inclusive of statutory holidays, throughout the period of this Agreement, the Contractor (his Technician) shall be available to respond to call-backs with regard to breakdowns of Equipment on the basis that –
 - 4.8.1. the response times shall be reckoned from the time the call is received by the Contractor to the time the Contractor's technician arrives on Site;
 - 4.8.2. the response time during normal working hours shall be two hours; the response time outside of normal working hours shall be three hours;

5. MAINTENANCE WORK

- 5.1. Maintenance Work comprises –
 - 5.1.1. Predictive Maintenance;
 - 5.1.2. Preventative Maintenance;
 - 5.1.3. Corrective Maintenance.
- 5.2. The Contractor shall perform Predictive Maintenance in accordance with the Equipment Manufacturer's Maintenance Instructions and the Operating and Maintenance Manuals and in accordance with good maintenance practice to ensure that the objectives in 4 are attained in respect of the Equipment.
- 5.3. The Contractor shall, following on Predictive Maintenance and as may be evidenced thereby, report any trends detected of Equipment degradation, loss of performance or frequency of failure to the Employer.
- 5.4. The Contractor shall perform the Preventative Maintenance in accordance with the Equipment Manufacturer's Maintenance Instructions and the Operating and Maintenance Manuals, and as may become evident by Predictive Maintenance to ensure achievement of the objectives in 4.
- 5.5. Without limiting the generality of 5.4, the Preventative Maintenance shall comply with the Maintenance Activities Schedules.
- 5.6. The Contractor shall arrange with the Employer and obtain approval for the date, time and duration when Equipment shall be out of service for purposes of performing the Preventative Maintenance and/or the Predictive Maintenance provided that the Maximum Equipment Downtimes shall not be exceeded by such Maintenance Service.
- 5.7. The Contractor shall perform the Corrective Maintenance on broken down Equipment within the Maximum Equipment Downtimes.

5.8. Following Corrective Maintenance, the Contractor shall deliver a written report to the Employer recording -

5.8.1. date and time of the failure

5.8.2. reason for the failure;

5.8.3. date and time when Corrective Maintenance completed;

5.8.4. details of Corrective Maintenance supplied; and the results of any post Corrective Maintenance testing performed to ensure satisfactory operation of the Equipment.

5.9. Without limiting the generality of 5.1 through to 5.9, it shall be the obligation of the Contractor in connection with the Maintenance Service –

5.9.1. to ensure that Maintenance Service shall be performed by Competent persons who are qualified Air-Conditioning Equipment Mechanic/s experienced and skilled in maintaining equipment similar to which are subject matter of this Agreement and who are employed and supervised by the Contractor. The Employer reserves the right to request and be granted copies of certificates of qualification/competence for the foregoing technicians;

5.9.2. to maintain locally or nationally an inventory of all regularly wearing parts or parts relative to the Equipment whose failure can be reasonably predicted/anticipated;

5.9.3. to provide and keep or have access to a national or international inventory of all wearing parts in respect of the Equipment's maintenance and operation. The Employer reserves the right to inspect the spares inventory at any time during the term of this Agreement;

5.9.4. to ensure that major Equipment components not included in the local or national inventory of spares are sourced and ordered prior to these components failing or not being able to deliver the Maintenance Service in terms of this Agreement;

5.9.5. to supply, repair and replace all parts of every description made necessary by Preventative or Corrective Maintenance without expense to the Employer when such replacement or repair is deemed necessary by the Contractor in accordance with this Agreement. Only parts that are correctly designed, manufactured and suitable in all respects, shall be used;

5.9.6. to replace all parts timeously, thereby limiting the incidence of break-downs, unplanned maintenance or repair and consequently maintain maximum equipment operation;

5.9.7. to ensure that the break-time does not exceed the Maximum Equipment Downtime;

5.9.8. to carry out all software, print and Equipment changes or revisions, which may become necessary to ensure an operation that conforms to the original design and performance specification or a subsequent, documented and approved revised specification, without expense to the Employer;

5.9.9. to notify the Employer of all improvements or revisions related to the Equipment. These notifications shall take the form of technical notices or sales releases under a covering letter from the Contractor;

5.9.10. to ensure that all wiring diagrams and other drawings of a technical nature related to the Equipment kept up to date and are available for the sole use of the Contractor, Employer or its technical personnel. The wiring diagrams enclosed in plastic protection sleeves shall be located and retained in suitably sized and constructed steel cabinets/enclosures situated within the machine room. Any amendments to these wiring diagrams shall be marked up as a revision and the diagrams reprinted by the Contractor within a ten day period after such change occurring;

5.9.11. to provide within a one month period after being appointed for the Maintenance Service under this Agreement, a maintenance site register located in the machine room and maintain accurate records of all service procedures, site visits, stoppages, breakdowns, planned repairs and safety related Equipment operation tests and checks;

5.9.12. to provide within a one month period after being appointed for the Maintenance Service under this Agreement, a customer communication logbook situated at a mutually agreed location for effective two-way communication, between the Employer and the Contractor's personnel. This logbook shall accurately record each and every site visit;

5.9.13. to provide on request by the Employer or its duly appointed agents, computer generated reports detailing a history of the equipment call-backs, repairs and breakdown repairs;

5.9.14. to inform the Employer verbally and in writing and act immediately on any potentially hazardous or undesirable situation which may cause harm to persons or which may damage or reduce the life expectancy of the Equipment, even if the hazardous or undesirable situation does not form part of the Contractor's responsibilities;

5.9.15. to inform the Employer in writing at least forty-eight hours prior to carrying out of any modification to the existing Equipment deemed necessary by the Contractor, even if this modification may benefit the equipment or if the cost of this modification is for the Contractor's account.

6. QUALITY ASSURANCE

- 6.1. The Contractor shall, as an integral part of the Maintenance Service, and the supply thereof to the Employer, adopt a quality system and the standards which shall comply with SABS 150 9001:1994 or SABS 150 9002:1994 as appropriate.
- 6.2. The Contractor shall, forthwith after the Commencement Date, provide the Employer with satisfactory written proof of the Contractor's certification in respect of the quality system in 6.1.
- 6.3. If the Contractor is not in possession of a valid certificate, as referred to in 6.2, he shall submit to the Employer, forthwith after the Commencement Date –
 - 6.3.1. a written advice of the steps the Contractor shall then currently be taking towards achieving such certification and the date by which such certification shall be accomplished; and
 - 6.3.2. copies of the Contractor's programme of activities leading to such certification and a statement of progress to date; which information the Employer shall be entitled to verify; and
 - 6.3.3. the Contractor's then current quality assurance system which shall be adjusted in such reasonable respects by the Contractor as the Employer may require in writing

7. MAINTENANCE MANAGEMENT SYSTEM

7.1. Spare Parts Inventory

Schedule of spare parts required to ensure that Maximum Equipment Downtimes are not exceeded, and updated inventory of spare parts and parts on order;

7.2. Job Cards

The Contractor shall draw up the necessary Job Cards from the Maintenance Programme, or in response to emergency call outs, or equipment failure, and hand the completed cards to the Employer for verification and acceptance that the work has been duly executed. The format of the Job Cards shall be approved by the Employer;

7.3. Cost Control

Obtaining and recording of quotations for materials or equipment, selecting the most competitive Supplier, obtaining approval from the Employer before placing orders, and monthly submission of proven cost of materials and equipment to the Employer;

7.4. Performance Logging

Check performance of top and medium priority sub-systems and controls against the control drawings, commissioning date and set points on a monthly basis and re-commission or re-calibrate if necessary;

7.5. Complaints

Record complaints' date, time and details, and details of the faults detected and corrective action taken;

7.6. Reporting

Preparation of Reports, on the half yearly inspections and on repairs which have taken place during the period preceding the inspection, to be submitted not later than two weeks after the inspection to the Employer. Monthly water treatment reports, bi-annual oil sample analysis reports, and annual vibration test reports on high priority equipment;

7.7. Equipment Inventory

Provide and maintain an up-to-date equipment inventory;

7.8. Equipment History System

Implement a system whereby each item on equipment's history of maintenance and repairs are recorded and retrievable at all times.

8. MAINTENANCE PROGRAMME

- 8.1. The Contractor shall forthwith after the Commencement Date for the ensuing twelve month period, and thereafter of each anniversary of the Commencement Date, for each ensuing twelve month period of this Agreement, prepare and deliver to the Employer a Maintenance Programme in weekly subdivisions indicating when specific Predictive Maintenance and Preventative Maintenance shall be performed in respect of the Equipment.

- 8.2. The Maintenance Programme in 8.1 shall be prepared in accordance with the provisions of this Agreement, the Equipment Manufacturer's Maintenance Instructions and the Operating and Maintenance Manuals.
- 8.3. The frequency of maintenance activities shall be in accordance with the Equipment Manufacturer's Maintenance Instructions and trends obtained from Predictive Maintenance test results and other Predictive Maintenance information.
- 8.4. The Contractor shall monitor maintenance progress against the Maintenance Programme and shall submit monthly progress reports to the Employer.
- 8.5. In the event of any delays against the Maintenance Programme, the Contractor shall expedite the Maintenance Service to make up any delays, in accordance with this Agreement.
- 8.6. The Contractor shall deploy sufficient staff to ensure completion of the Maintenance Service within the Maintenance Programme and within normal working hours.

9. MAINTENANCE STAFF AND MEETINGS

- 9.1. The Contractor shall employ and manage his maintenance staff to ensure timely, efficient execution of the Maintenance Services with minimum interruption to the Employer, and in accordance with the provisions of this Agreement.
- 9.2. The Contractor shall attend maintenance co-ordination meetings and any other meetings called by the Employer.

10. LIMITATION OF RESPONSIBILITY OF CONTRACTOR

- 10.1. The Contractor shall not be obliged in terms of this Agreement to provide a Maintenance Service in respect of repairs, replacement or services necessitated by the improper operation of Equipment or negligence of Employer's staff or misuse of the Equipment, or from any other cause beyond the reasonable control of the Contractor, except for defective design, workmanship or materials employed in respect of the Equipment or normal wear and tear thereof.
- 10.2. The Contractor shall not in terms hereof be obliged to furnish any additional Equipment or alterations thereto as recommended by the Insurance Companies or Authorities.
- 10.3. In the event that unauthorised additions, alterations, repairs or adjustments are made to the Equipment by others resulting in mechanical damage, the Contractor shall not be liable under this Agreement to provide a Maintenance Service in respect thereof.

11. GENERAL RESPONSIBILITIES OF CONTRACTOR

11.1. General Responsibilities of Contractor

- 11.1.1. The Contractor must be fully conversant and experienced with the type of Equipment installed and must be capable of rectifying malfunctioning of Equipment installed.
- 11.1.2. The Contractor guarantees performance at all times of the Equipment, subject to proper operation of the Equipment by the Employer as defined by the Operating and Maintenance Manual, except for the specified routine and annual maintenance and breakdown times.
- 11.1.3. The Contractor shall perform as a minimum the service and maintenance work as specified in this Agreement and as contained in the maintenance schedules in the Operating and Maintenance Manuals and the Equipment Manufacturers Maintenance Instructions of the Equipment.
- 11.1.4. The Contractor shall ensure that, in consultation with the Employer, all his activities are carried out with a view to optimising the energy consumption of the Equipment in the buildings.
- 11.1.5. The Contractor shall abide by the Employer's housekeeping rules.
- 11.1.6. In addition to the equipment contained in the Equipment Inventory, the Contractor shall maintain as the need arises all general items not provided with specific maintenance instructions. These items shall include but not be limited to the following –
- 11.1.6.1. **Housekeeping**
Replace all globes and fluorescent tubes in plant room areas (globes and fluorescent tubes shall be drawn from the Employer's store). Cleaning and general painting in plantroom areas;
- 11.1.6.2. **General HVAC Electrical**
Perform any HVAC Electrical work not specifically associated with DB's and MCC's in the Equipment Inventory;

- 11.1.6.3. **Piping**
Maintain all refrigerant chilled water, hot water, condenser water, make-up water, and drain piping including supports. Inspect for any repair corrosion, any other forms of damage and leaks;
- 11.1.6.4. **Ductwork and Attenuators**
Inspect for and repair corrosion or mechanical damage to ducting, attenuators and their supports;
- 11.1.6.5. **Grilles and Constant Volume Diffusers**
Inspect and repair method of fixing, balancing device and paint touch up;
- 11.1.6.6. **Insulation**
Inspect and repair all damage to refrigerant piping, chilled and hot water piping, and duct insulation and maintain integrity of vapour barriers;
- 11.1.6.7. **Corrosion Protection**
Inspect and repair corrosion;
- 11.1.6.8. **Water Treatment**
Provide water treatment including chemicals in accordance with the recommendations of the Specialist. Direct Subcontractor appointed by the Contractor. Perform monthly analysis with reports. Water samples for Legionella testing will be taken to the CSIR or the South African Institute for Medical Research for analysis and reporting twice a year, once in June/July and once in January/February on all Equipment. The results of such tests shall be delivered to the Employer forthwith after the receipt thereof by the Contractor in each case;
- 11.1.6.9. **Filters**
Clean filters and replace damaged filters;
- 11.1.6.10. **Flexible Ducting**
Inspect and repair flexible ducting to diffusers, fans etc;
- 11.1.6.11. **Flexible Hoses**
Inspect flexible water hoses and connections for deterioration and replace/repair where required;
- 11.1.6.12. **Lubrication**
Lubricate all bearings and movable parts in accordance with the Supplier's recommendations;

12. EMPLOYER'S OBLIGATIONS

In addition to its other undertaking and obligations under this Agreement, the Employer shall –

- 12.1. perform simple trouble diagnosis on occurrence of fault, logging in logbook and reporting to Contractor by both telephone and facsimile;
- 12.2. provide safe prompt and reasonable access to the Contractor for Maintenance Service activities, as well as use of all necessary facilities;
- 12.3. return of all substitute equipment installed on a temporary basis to keep the Equipment running;
- 12.4. sign off the Contractor's Job Cards to certify that work has been done by the Contractor, but not accepting responsibility for the quality and adequacy of the work performed;
- 12.5. brief the Contractor on general housekeeping rules;
- 12.6. approve quotations submitted by the Contractor for spares and materials;
- 12.7. record equipment downtimes;
- 12.8. appoint a responsible person for operating the Equipment;
- 12.9. advise the Contractor immediately the Equipment malfunctions or becomes inoperative;
- 12.10. not to authorise or allow any person/s other than the Contractor or its duly authorised employees or agents to carry out any maintenance work on the Equipment during the currency of the Agreement, unless the prior written consent from the Contractor has been obtained. Should any work be carried out by any other company or person, prior to or during the term of the Agreement, the Contractor shall not be liable for any act, occurrence or omission on the part of such company or person/s or equipment supplied;
- 12.11. immediately notify the Contractor of any injury or harm to any person or property resulting from the usage of the Equipment and to make available all relevant information pertaining to equipment incidents;

- 12.12. ensure that the Contractor's workmen shall at all reasonable times have free and undisturbed access to the Equipment for the effective execution of normal maintenance procedures in accordance with this Agreement;
- 12.13. instruct the Contractor on any technical queries;
- 12.14.
- 12.15. instruct the Contractor on any actions as may be required from trends highlighted by the Predictive Maintenance Testing;
- 12.16. instruct the Contractor on required course of action following catastrophic failures, or failures of high priority Equipment;
- 12.17. analyse Post Maintenance Test results and instruct the Contractor on corrective actions required;
- 12.18. chair and record Maintenance Co-ordination and Technical meetings;
- 12.19. monitor progress against the Maintenance Programme.

13. MAINTENANCE ACTIVITY SCHEDULES

- 13.1. The Contractor shall forthwith after the Commencement Date, prepare and deliver to the Employer Maintenance Activity Schedules relative to the Equipment in accordance with the Operating and Maintenance Manuals and/or the Equipment Manufacturer's Maintenance Instructions.
- 13.2. The Maintenance Activity Schedules shall be in such format as shall be approved by the Employer and shall be prepared by the Contractor and delivered to the Employer with such frequency and such intervals as shall reasonably be required by the Employer.
- 13.3. A specimen Maintenance Activity Schedule is attached hereto as Appendix 1 on the basis that in the event of the Contractor's Maintenance Activity Schedules, to be prepared in accordance with 13.1 and 13.2, conforming to the format of Appendix 1, it shall be deemed that the Employer has, as required under 13.2, approved the format thereof.

14. MAXIMUM EQUIPMENT DOWNTIMES

- 14.1. The Contractor shall plan and execute this Agreement in such a way, and ensure that spares, materials and staff are sufficiently available, to limit the downtime of the Equipment to the following Maximum Equipment Downtimes.
- 14.2. Planning of Predictive and Preventative Maintenance must ensure that there will be no interruption to comfort conditions or services provided by the Equipment.
- 14.3. The following Maximum Equipment Downtimes shall apply to this Agreement –

14.3.1. High Priority Equipment

Preventative Maintenance	Major Service	2 Hours
Preventative Maintenance	Minor Service	1 Hour
Corrective Maintenance for Breakdowns		1 Day

14.3.2. Medium Priority Equipment

Preventative Maintenance	Major Service	4 Hours
Preventative Maintenance	Minor Service	2 Hours
Corrective Maintenance for Breakdowns		2 Days

14.3.3. Low Priority Equipment

Preventative Maintenance	Major Service	8 Hours
Preventative Maintenance	Minor Service	4 Hours
Corrective Maintenance for Breakdowns		4 Days

15. INSPECTIONS

- 15.1. The Employer or its duly appointed agents shall retain the right to witness and/or verify the performance of any maintenance work by the Contractor in terms hereof at any time.
- 15.2. **Contractor's Annual Inspections/Surveys**

- 15.2.1. To enable the Contractor effectively to monitor the Equipment's Maintenance Service, detailed annual inspections of the Equipment shall be undertaken by the Contractor's senior personnel (supervisor level);
- 15.2.2. The details of the annual inspections, date of inspection and the condition of the Equipment shall be recorded on a checklist signed and certified by the Contractor's Representative.
- 15.2.3.
- 15.2.4. Should any defects or remedial work be required in terms of the Annual Inspection, the Contractor shall expeditiously undertake the Corrective Maintenance work. Should any of the items noted in the Annual Inspection not be rectified within a two week period, the Contractor shall forward the Employer with a copy of a detailed works programme.
- 15.2.5. The Employer or its duly appointed agents shall have the right to request copies of the Annual Inspection checklists.
- 15.3. **Independent Inspections**
- 15.3.1. The Employer shall have the right to authorise independent inspections of individual or entire Equipment installations using suitably qualified personnel at any time and the results of such inspections shall be promptly communicated in writing to the Contractor. Should any defects or remedial work be required in respect of Equipment in terms of this Agreement, the Contractor shall expeditiously undertake within a mutually agreed time period the Corrective Maintenance. When the Contractor's work has been completed satisfactorily, the Employer or its duly appointed agent(s) shall be notified in writing. In the opinion of the Employer, a further follow-up inspection by the Employer or its agent(s) may be conducted.
- 15.3.2. Should the follow-up inspection show that the work as agreed and undertaken by the Contractor has not been satisfactorily carried out, the procedure as detailed in 15.3.1 shall be repeated until the established standard of maintenance has been attained.
- 15.3.3. The Independent Inspections under 15.3.1 and 15.3.2 shall in no way limit the Contractor's responsibility with respect to any obligation or liabilities in terms of this Agreement.

16. MAINTENANCE CONSIDERATION REPLACEMENT PARTS FACILITIES BONUS

- 16.1. For purposes of this clause 16, unless the context requires otherwise –
- 16.1.1. "Monthly Maintenance Charge" has the meaning ascribed thereto in 16.2;
- 16.1.2. "Employer's Parts Stock" means those replacement parts, relative to the Equipment, which the Contractor shall, in terms of the Tender, have stipulated, shall be acquired and maintained by the Employer on site at its cost or failing which as shall be indicated by the Contractor in each Maintenance Programme delivered in terms of 8; provided however that if the Employer, in its sole discretion, regards the Employer's Parts Stock so indicated to be unreasonable in the circumstances, the Employer's Parts Stock shall be determined by any independent consulting engineer appointed by the Employer for such purposes which consulting engineer's determination shall be final and binding on both the Employer and the Contractor;
- 16.1.3. "Tender" means the tender and the tender documents which the Contractor shall, as a subcontractor, have submitted for purposes of executing the works involving the supply and installation of the Equipment in its relevant building;
- 16.1.4. "Tender Mark-up" means the percentage mark-up which the Contractor shall have indicated in the Tender, he shall require in respect of the supply of replacement parts other than the Employer's Parts Stock.
- 16.2. Subject to 16.3, the remuneration payable by the Employer to the Contractor in respect of the supply of the Maintenance Service under this Agreement, shall be the Annual Maintenance Consideration which shall, in addition to VAT thereon, be paid by the Employer to the Contractor during each twelve monthly period of this Agreement, in twelve equal instalments ("Monthly Maintenance Charge") on the last business day of every month, the first of which instalments shall be so paid on the last business day of the month within which the Commencement Date falls, and the subsequent of which instalments shall be so paid on the last business day of each succeeding month; provided that the monthly instalment for the period from the Commencement Date to the end of the month in which the Commencement Date falls, shall be pro rated on the basis of a thirty day month.
- 16.3. The Annual Maintenance Consideration shall be adjusted annually on the anniversary of the Commencement Date according to the following escalation formula -

$$AAMC = \frac{AMC \times CPI}{100}$$

CPI

where

AAMC is the adjusted Annual Maintenance Consideration payable as from each anniversary of the Commencement Date;

AMC is the Annual Maintenance Consideration payable as at the Commencement Date for the first annual period of this Agreement;

CPI' is the Consumer Price Index on each anniversary of the Commencement Date on the basis that the reference herein to the Consumer Price Index is a reference to the Consumer Price Index for all expenditure groups, Metropolitan and other areas (Base 1995 = 100) as published from time to time by Statistics South Africa in Statistical Release P0141.1 provided that if after the commencement date, such index shall cease to be published the Parties shall use such other index as may be available and acceptable to both of them, or failing such acceptance on index determined in writing as fair and reasonable by the independent chartered accountants employed at the time by the Employer to audit its books of account; and

CPI is the Consumer Price Index on the Commencement Date.

- 16.4. In providing the Maintenance Service the Contractor shall -
- 16.4.1. at his cost, and at no expense to the Employer, provide all labour, consumables, tools required for maintenance work, travelling costs, water sample testing, call-outs, standby provisions and electrical maintenance;
- 16.4.2. be entitled and obliged to utilise replacement parts from the Employer's Parts Stock provided that the Contractor shall not be entitled to a mark-up or any other compensation in regard to the use of such replacement parts; and
- 16.4.3. be entitled and obliged to utilise replacement parts other than from the Employer's Parts Stock in which event the Contractor shall be entitled to be reimbursed for such replacement parts so utilised, over and above the Monthly Maintenance Charge, on the basis of the cost to the Contractor of the acquisition of such replacement parts plus the Tender Mark-up thereon.
- 16.5. For purposes of providing the Maintenance Service, the Employer shall provide the Contractor with the Storage Area, the Marking Area and the Parking indicated by the Contractor in the Tender, failing which as shall be agreed between the Parties and failing such agreement as shall be determined by any independent consulting engineer as shall be appointed by the Employer for such purposes, which determination shall be final and binding on the Parties.
- 16.6. If in any continuous period of twelve months during this agreement, the Call-Back Rate is NIL, the Employer shall be obliged to pay the Contractor a bonus which is equal to the Monthly Maintenance Charge provided however that such bonus shall not be due and/or payable more frequently than once in any twelve monthly period, the first of which shall commence on the Commencement Date, and the subsequent of which shall commence on each anniversary of the Commencement Date.

17. COMMENCEMENT AND DURATION

- 0.1 Subject to 18, 19 and 21, this Agreement shall -
- 0.1.1 commence on the Commencement Date; and
- 0.1.2 thereafter continue until terminated by either Party in terms of 17.2 or otherwise as provided in this Agreement.
- 0.2 Either Party may unilaterally terminate this Agreement on the basis that -
- 0.2.1 such termination shall take effect ninety days after the date upon which a written notice of termination is delivered by any Party to the other;
- 0.2.2 neither Party shall be entitled to deliver a notice of termination in terms of 17.2.1

prior to the fifth anniversary of the Commencement Date.

FOR INFORMATION USE ONLY

18. TERMINATION

Notwithstanding anything to the contrary contained in this Agreement, the Employer shall be entitled to terminate this Agreement summarily by means of written notice of such termination delivered to the Contractor provided that -

- 0.1 such termination shall take effect on the date of delivery of such termination notice to the Contractor;
- 0.2 such termination is based upon the fact that -
 - 0.2.1 the Equipment being permanently disconnected from operation;
 - 0.2.2 the Employer ceases for any reason to be the registered owner of the building in which the Equipment is installed;
 - 0.2.3 the Employer decides to replace or modernise the Equipment and the Contractor is not the successful tenderer for the installation of new Equipment or the modernisation thereof; or
 - 0.2.4 the Employer ceases to be responsible for the management function of the building in which the Equipment is installed.

19. SUSPENSION OF MAINTENANCE

- 0.1 If the tenant occupancy level in the building in which the Equipment has been installed, drops to a level which is commercially insufficient, the Employer shall be entitled to -
 - 0.1.1 de-commission the Equipment either temporarily or permanently on thirty days written notice thereof to the Contractor;
 - 0.1.2 re-commission the Equipment thereafter once more on thirty days notice to the Contractor.
- 0.2 The Maintenance Consideration and the Parties' respective obligations under this Agreement shall be suspended and not be enforceable during the period of de-commissioning of the Equipment referred to in 19.1, namely from the expiry of the thirty day period from the delivery of the notice in 19.1.1 to expiry of the thirty day period of the delivery of the notice in 19.1.2.
- 0.3 On being requested to de-commission the Equipment, the Contractor shall undertake, under a separately charged order from the Employer to take such actions as shall be necessary to disconnect the Equipment and preserve the Equipment while non-operational.
- 0.4 In the event of any Equipment being withdrawn from service, the Contractor shall for the period of its withdrawal assume no responsibility of any nature for the safety of any persons or goods that are in any way affected by the said withdrawal of such Equipment.
- 0.5 On request by the Employer to re-commission the Equipment, the Contractor shall undertake, under a separately charged order from the Employer, to clean, inspect and report to the Employer any defects which may have occurred during the period the Equipment was not in use, including but not limited to the following: corrosion, malicious damage, water and any other damage to the Equipment.

20. PENALTIES

Without prejudice to the Employer's rights and remedies in terms of 21 below, the Employer shall be entitled to recover (by means of set-off or otherwise) the following penalties from the Contractor as a genuine pre-estimate of the Employer's anticipated damages in the following instances

0.1 Call-back Rate Penalty

- 0.1.1 If the Call-Back Rate exceeds 4 (four) in any twelve month period referred to in 4.6.2, the Employer shall be entitled to recover a penalty from the Contractor equal to 50% of one month's Maintenance Consideration;
- 0.1.2 If the Call-Back Rate exceeds 6 (six) in any twelve month period referred to in 4.6.2, the Employer shall be entitled to recover a penalty from the Contractor equal to one month's Maintenance Consideration;
- 0.1.3 If the Call-Back Rate exceeds 8 (eight) in any twelve month period referred to in 4.6.2, the Employer shall be entitled to recover a penalty from the Contractor equal to two month's Maintenance Consideration.

0.2 Down-Time Penalty

On each occasion on which a Maximum Down-Time is exceeded, the Employer shall be entitled to recover a penalty from the Contractor equal to 10% (ten per centum) of one month's Maintenance Consideration .

0.3 Call-Back Response Time Penalty

- 0.3.1 On each occasion on which a Call-Back Response Time is exceeded, the Employer shall be entitled to recover a penalty from the Contractor equal to 10% (ten per centum) of one month's Maintenance Consideration.
- 0.3.2 In the event of any Call-Back Response Time being exceeded by 24 hours or more, the Employer shall be entitled, without prejudice to any other rights or remedies it may have in terms of this Agreement, including the rights and/or remedies referred to in 20.3.1 and/or 21 hereof to engage a person other than the Contractor ("Third Party") to rectify any fault in the Equipment or Equipment breakdown on the basis that, in such event, the Employer shall be entitled to claim and recover from the Contractor the reasonable charges to the Employer by the Third Party relative to the corrective maintenance which shall have been applied to the Equipment by such Third Party.

21. BREACH

Should either Party ("Defaulting Party") breach any material provision of this Agreement and fail to remedy such breach within fourteen days of receiving written notice from the other Party ("Aggrieved Party"), then the Aggrieved Party shall be entitled, without prejudice to its other rights in law, including without limitation the right to claim and recover damages in lieu of any penalties stipulated for in this Agreement, to cancel this Agreement by written notice delivered to the Defaulting Party or to claim immediate specific performance of all the Defaulting Party's obligations under this Agreement.

22. SECURITY

The Contractor shall deliver to the Employer, within fourteen days of the Employer's written demand therefor, security to the extent of 25% of the Annual Maintenance Consideration for the due and faithful fulfilment by the Contractor of its obligations under this Agreement on the basis that -

- 0.1 such security shall be in the form of a Bank Guarantee issued by a Bank or other financial institution approved by the Employer;
- 0.2 such Bank Guarantee shall, materially conform to the specimen Bank Guarantee attached hereto as Appendix 2;
- 0.3 the cost of such Bank Guarantee shall be for the account of the Contractor.

23. INSURANCE

- 0.1 The Contractor shall at its cost and expense be obliged for the duration of this Agreement to effect and maintain the following policies of insurance with insurers which are acceptable to and have received the prior approval of the

Employer -

- 0.1.1 a Contractor's all risk insurance policy and an insurance policy with SASRIA in the joint names of the Employer and the Contractor and its subcontractors which provides indemnity cover for not less than R2 000 000 (two Million Rand) against physical loss of or damage to works which the Contractor shall effect in addition to and/or in respect of the Equipment and materials on site, in connection therewith;
- 0.1.2 a public liability insurance in the joint names of the Employer, the Contractor and his subcontractors, which provides indemnity cover for not less than R2 000 000 (two Million Rand) and which shall indemnify the Employer, its employees and officials, the Contractor and the Contractor's subcontractors, employees and officials from all claims for the recovery of loss, damage and/or personal injury by any person arising out of the fault of the Contractor or any of its subcontractors employees or officials in connection with the Equipment and/or the provision of the Maintenance Service in terms hereof.
- 0.2 The Contractor shall forthwith after the Commencement Date deliver to the Employer satisfactory written proof of the existence and validity of the Insurance Policies in 23.1 and the Contractor shall, whenever the premiums became due under such policies of insurance, deliver to the Employer proof of the payment of each of such premiums.

24. ARBITRATION

- 0.1 Save as in hereinbefore provided, should any dispute at any time arise between any of the Parties in regard to any matter arising out of this Agreement or its interpretation or rectification or termination or cancellation, any Party shall be entitled, by written notice to the other Party, to require that the dispute be referred to arbitration in accordance with this 28.
- 0.2 The arbitration referred to in 24.1 shall be held -
 - 0.2.1 at Johannesburg;
 - 0.2.2 under the provisions of the Arbitration Act No 42 of 1965, as amended from time to time.
- 0.3 The arbitrator shall be, if the question of issue is -
 - 0.3.1 primarily an accounting matter, an independent practising accountant agreed upon between the Parties or failing such agreement, an accountant appointed by the President of the South African Institute of Chartered Accountants;
 - 0.3.2 primarily a legal matter, a practising senior counsel of not less than five years standing or practising senior attorney of not less than twenty years standing as agreed upon between the Parties or failing such agreement appointed by the chairman of the Johannesburg Bar Council;
 - 0.3.3 any other matter, an independent person, agreed upon between the Parties or failing such agreement a person appointed by the president for the time being of the South African Institute of Civil Engineers.
- 0.4 If agreement cannot be reached within seven business days after the arbitration has been demanded as to whether the question in issue falls under 24.3.1, 24.3.2 or 24.3.3, then a practising senior counsel of not less than five years standing as such agreed upon between the Parties, and failing agreement appointed by the Chairman of the Johannesburg Bar Council as soon as possible thereafter, shall be appointed as arbitrator so that an arbitration can be held and concluded, if possible, within the prescribed period of twenty-one business days.
- 0.5 The Parties irrevocably agree that the decision in those arbitration proceedings -

- 0.5.1 shall be binding on them;
- 0.5.2 shall be carried into effect forthwith;
- 0.5.3 shall, at the request of any one of the Parties, be made an order of any court of competent jurisdiction.

0.6 The arbitrator shall be obliged to give written reasons for his decision.

0.7 Notwithstanding anything to the contrary contained herein, any Party shall in the case of urgency be entitled to seek interim relief from the High Court of South Africa having jurisdiction in respect of Johannesburg, pending a final determination by the arbitrator.

0.8 Notwithstanding the referral of any dispute to arbitration in terms of this clause, all other matters governed by this Agreement shall continue to be so governed.

0.9 This clause shall survive the termination or cancellation of this Agreement for any reason whatsoever.

25. NOTICES

0.1 Each Party chooses as its address for all purposes under this Agreement, ("Chosen Address"), whether for serving any court process or documents, giving any notice, or making any other communications of whatsoever nature and for any other purpose arising from this agreement ("notice") as follows -

0.1.1 Employer - []

Telefacsimile - []

0.1.2 Contractor - []

Telefacsimile []

0.2 Any notice required or permitted to be given under this Agreement shall be valid and effective only if in writing and shall be addressed to be for the attention of the designated officer of the Party to which it is addressed.

0.3 Any Party may by notice to the other Parties change its chosen address to another physical address in the Republic of South Africa and such change shall take effect on the seventh day after the date of receipt by the Party who last receives the notice.

0.4 Any notice to a Party contained in a correctly addressed envelope and -

0.4.1 sent by prepaid registered post to it at its chosen address; or

0.4.2 delivered by hand to a responsible person during ordinary business hours at its chosen address, shall be deemed to have been received, in the case of 25.4.1, on the tenth business day after posting (unless the contrary is proved) and, in the case of 25.4.2, on the date of delivery.

0.5 Notwithstanding anything to the contrary herein, a written notice actually received by a Party, including a notice sent by telefax ("the first notice"), shall be an adequate notice to it notwithstanding that it was not sent or delivered to its chosen address, provided that, within the next three succeeding business days a copy of the first notice is delivered to the chosen address, accompanied by a notice giving the following particulars -

0.5.1 where the first notice was sent by telefax, the date and time of despatch and the

- 0.5.2 telefax number to which it was sent; and
where the first notice was delivered in a manner other than by telefax, the manner of delivery, the date on which it was delivered, the person by whom it was received and where it was received.

26. GOVERNING LAW

Subject to 24 the law governing this Agreement, including without limitation its interpretation and all disputes arising out of this Agreement, is the law of South Africa, and the Parties submit to the exclusive jurisdiction of the South African courts in respect of any matter arising from or in connection with this Agreement, including its termination. The Parties further consent to the jurisdiction of the High Court of South Africa having jurisdiction in respect of Johannesburg.

27. GENERAL

- 0.1 This Agreement constitutes the sole record of the agreement between the Parties with regard to the subject matter hereof. No Party shall be bound by any express or implied term, representation, warranty, promise or the like not recorded herein.
- 0.2 No addition to, variation of, or agreed cancellation of this Agreement shall be of any force or effect unless in writing and signed by or on behalf of the Parties.
- 0.3 No relaxation or indulgence which any Party may grant to any other shall constitute a waiver of the rights of that Party and shall not preclude that party from exercising any rights which may have arisen in the past or which might arise in future.
- 0.4 Any provision of this Agreement which contemplates performance or observance subsequent to any termination or expiration of this Agreement shall survive any termination or expiration of this Agreement and continue in full force and effect.
- 0.5 An approval or consent given by a Party under this Agreement shall not relieve the other Party from responsibility for complying with the requirements of this Agreement nor shall it be construed as a waiver of any rights under this Agreement except as and to the extent otherwise expressly provided in such approval or consent, or elsewhere in this Agreement.

28. EXECUTION

This Agreement has been signed as follows in two originals on behalf of each of the Parties –

- 0.1 Signed at [] on [] 20.....

For the Employer who warrants that he is duly authorised hereto

- 0.2 Signed at [] on [] 20.....

For the Contractor who warrants that he is duly authorised hereto

C5.2- MAINTENANCE SCHEDULE

PART IV.3: REF:- M01A001

SUBJECT: MAINTENANCE SCHEDULE FOR:- CHW FAN COIL UNITS

ITEM	DESCRIPTION	MONTHLY	QUARTERLY	ANNUALLY
1	UNIT CASING			
1.1	Clean unit casing		X	X
1.2	Clean condensate drip pan and condensate drain piping		X	X
1.3	Check access panels and unit casing for tightness (air leaks/infiltration) and seal if necessary	X	X	X
1.4	Check all metal work for rust spots, clean these sections, de-rust, treat and paint if required.		X	X
1.5	Check access panels and unit casing for tightness and seal if necessary.		X	X
1.6	Check unit insulation for deterioration repair and seal if required.		X	X
2	EVAPORATOR FAN			
2.1	Check fan drive: shaft, bearings, couplings, pulleys, impeller, all moving parts etc. for alignment, lubrication and wear and tear, and adjust or rectify if required.		X	X
2.2	Check fan casing, impeller and all other components for deterioration and dirt deposits: clean, treat and correct if necessary.		X	X
2.3	Check fan and motor for abnormal noise and vibration and rectify if required.	X	X	X
2.4	Check fan motor for abnormal temperature and bearing condition and rectify if required..	X	X	X
2.5	Check fan and motor mountings and bracketing for condition and rigidity.		X	X
2.6	Check fan motor electrical connections and wiring for loose and hot connections, damaged insulation and short circuiting and correct if required.	X	X	X
3	COOLING COIL			
3.1	Clean out coil casing, fins and tubes			X
3.2	Check for refrigerant leaks		X	X
3.3	Check for air by-pass or airflow obstruction and rectify if necessary.		X	X
3.4	Check coil, coil frame work etc. for deterioration, rust spots, de-rust, treat, paint and rectify if required.			X
3.5	Check condition of coil fins and comb if required.			X
4	ELECTRICAL AND CONTROL			
4.1	Clean out the electrical and control panels.		X	X

C5.19

ITEM	DESCRIPTION	MONTHLY	QUARTERLY	ANNUALLY
4.2	Check all wire and terminal connections for loose or hot connections and tighten.		X	X
4.3	Check and make sure that all wiring and components are safe and neat.	X	X	X
4.4	Replace indicating light globes where necessary.		X	X
4.5	Check circuit breakers and fuses and investigate reasons for any blown fuses and faulty circuit breakers and rectify faults.	X	X	X
4.6	Check contactors, starters and relays for operation and that moving bridges slide freely and that all contact points are clean. Investigate and rectify cause of excessive burning of contacts.	X	X	X
4.7	Check settings and functioning of timers and time delay switches and adjust if necessary.	X	X	X
4.8	Check all terminal overload settings and adjust correctly if necessary.	X	X	X
4.9	Ensure that the wiring tie up with the drawings.	X	X	X
4.10	Make sure that the cover for the panels are in place.	X	X	X
4.11	Check safeties	X	X	X

PART IV.3:

REF:-M01A002

SUBJECT: MAINTENANCE SCHEDULE FOR:- CHW AIR HANDLING UNITS

ITEM	DESCRIPTION	MONTHLY	QUARTERLY	ANNUALLY
1	UNIT CASING			
1.1	Clean unit casing and plenums	X	X	X
1.2	Clean condensate drip pan and condensate drain piping	X	X	X
1.3	Check access panels and unit casing for tightness (air leaks/infiltration) and seal if necessary	X	X	X
1.4	Check all metal work for rust spots, clean these sections, de-rust, treat and paint if required.		X	X
1.5	Check access panels and unit casing for tightness and seal if necessary.		X	X
1.6	Check unit insulation for deterioration repair and seal if required.		X	X
2	EVAPORATOR FAN			
2.1	Check fan drive: shaft, bearings, couplings, pulleys, impeller, all moving parts etc. for alignment, lubrication and wear and tear, and adjust or rectify if required.		X	X
2.2	Check fan casing, impeller and all other components for deterioration and dirt deposits: clean, treat and correct if necessary.		X	X

C5.19

ITEM	DESCRIPTION	MONTHLY	QUARTERLY	ANNUALLY
2.3	Check fan and motor for abnormal noise and vibration and rectify if required.	X	X	X
2.4	Check fan motor for abnormal temperature and bearing condition and rectify if required..	X	X	X
2.5	Check fan and motor mountings and bracketing for condition and rigidity.		X	X
2.6	Check fan motor electrical connections and wiring for loose and hot connections, damaged insulation and short circuiting and correct if required.	X	X	X
3	COOLING COIL			
3.1	Clean out coil casing, fins and tubes			X
3.2	Check for refrigerant leaks		X	X
3.3	Check for air by-pass or airflow obstruction and rectify if necessary.		X	X
3.4	Check coil, coil frame work etc. for deterioration, rust spots, de-rust, treat, paint and rectify if required.			X
3.5	Check condition of coil fins and comb if required.			X
4	ELECTRICAL AND CONTROL			
4.1	Clean out the electrical and control panels.		X	X
4.2	Check all wire and terminal connections for loose or hot connections and tighten.		X	X
4.3	Check and make sure that all wiring and components are safe and neat.	X	X	X
4.4	Replace indicating light globes where necessary.		X	X
4.5	Check circuit breakers and fuses and investigate reasons for any blown fuses and faulty circuit breakers and rectify faults.	X	X	X
4.6	Check contactors, starters and relays for operation and that moving bridges slide freely and that all contact points are clean. Investigate and rectify cause of excessive burning of contacts.	X	X	X
4.7	Check settings and functioning of timers and time delay switches and adjust if necessary.	X	X	X
4.8	Check all terminal overload settings and adjust correctly if necessary.	X	X	X
4.9	Ensure that the wiring tie up with the drawings.	X	X	X
4.10	Make sure that the cover for the panels are in place.	X	X	X
4.11	Check safeties	X	X	X

PART IV.3:	REF:-M01A003
SUBJECT: MAINTENANCE SCHEDULE FOR:- PUMPS	

ITEM	DESCRIPTION	BI - MONTHLY	QUARTERLY	ANNUALLY
1	Check oil levels and adjust where necessary	X	X	X
2	Check and visually inspect pump coupling for wear.	X	X	X
3	Check and audibly inspect pump and drive motor bearings for wear and lubricate as necessary.	X	X	X
4	Clean down pump and motor and check water flow and remove any blockages from drip tray and drain piping.	X	X	X
5	Change over pump operation sequence.	X	X	X
6	Check and record pump motor operating full load amperages. Record all settings.	X	X	X
7	Check overload settings for correct set points and operation.	X	X	X
8	Check and record pressure gauge readings	X	X	X
9	Ensure all coupling guards are in place and firmly secured into position.	X	X	X
10	Generally clean equipment and plantroom area	X	X	X
11	Fully open and close valves to prevent scale formation on valve seats.		X	X
12	Gland packing to be checked for excessive leakage and adjust or replace as necessary.		X	X
13	Check holding down bolts to be tightened and corrosion removed and painted if necessary.		X	X
14	Flexible drive coupling alignment and rubbers to be checked and rectified if necessary.		X	X
15	Check pump and drive motor hold down bolts and adjust as necessary.		X	X
16	All ferrous metal components to be examined, corrosion, algae and lime scale to be removed and repainted to prevent further corrosion			X

PART IV.3:	REF:-M01A004
SUBJECT: MAINTENANCE SCHEDULE FOR:- DX SPLIT UNITS	

ITEM	DESCRIPTION	MONTHLY	QUARTERLY	ANNUALLY
1	Remove air filters, clean and re-install correctly and ensure that filter frame and media is fitted properly with no by-pass or obstruction.	X	X	X
2	Check and correct condensate drain if necessary.	X	X	X
3	Check condition and operation of thermostat and control.	X	X	X
4	Check electrical wiring and component condition and operation.		X	X
5	Check for correct condenser air path and ensure that unit is free from any re-circulation.	X	X	X
6	Check condenser fan for operation vibration and noise and correct if necessary.	X	X	X
7	Check evaporator fan for operation, vibration and noise and correct if required.	X	X	X
8	Check compressor for operation, vibration and noise and correct if required.	X	X	X
9	Check cooling cycle.	X	X	X
10	Check heating cycle.	X	X	X
11	Check for gas leaks, repair and top-up with refrigerant if required.		X	X
12	Check for pipe insulation damage, repair and vapour seal if required.		X	X
13	Check safeties.		X	X
14	Check unit and unit casing, clean and position and bracketing.	X	X	X
15	Check thermostat sensing bulb for position and bracketing.		X	X
16	Clean condenser coil.			X
17	Clean evaporator coil.		X	X
18	Clean unit sump.		X	X
19	Clean unit casing and components.		X	X
20	Check air grilles and diffusers for condition, correct position and adjustment.		X	X

PART IV.3:	REF:-M01A005
SUBJECT: MAINTENANCE SCHEDULE FOR:- MEDIUM AND LARGE FANS	

AXIAL FLOW AND LARGE PROP FANS

ITEM	DESCRIPTION	MONTHLY	QUARTERLY	ANNUALLY
1	Check fan drive, shaft, bearings, couplings, pulleys, impeller/blades, all moving parts, etc. for alignment, lubrication and wear and tear and adjust or rectify if required.	X	X	X
2	Check fan impeller/blades, casing, mounting, etc. for deterioration and dirt deposits, clean, rust proof, treat and repair if necessary.	X	X	X
3	Check fan and motor for abnormal noise and vibration and rectify if necessary.	X	X	X
4	Check fan and motor for abnormal temperature and bearing condition and rectify if necessary.		X	X
5	Check fan and motor mountings and bracketing for condition and rigidity.		X	X
6	Check motor electrical connections and wiring for loose and hot connections, damaged insulation and short-circuiting and repair if required.		X	X
7	Check circuit breakers, starter, overloads and all other electrical and control components for condition and operation.		X	X
8	Check for short-circuiting of air or airflow obstruction and attend if necessary.	X	X	X

PART IV.3:	REF:-M01A006
SUBJECT: MAINTENANCE SCHEDULE FOR:- SMALL FANS AND EXPELAIR TYPE FANS	

ITEM	DESCRIPTION	MONTHLY	QUARTERLY	ANNUALLY
1	Check conditions of fan box and operation of louvers.		X	X
2	Check solenoid and linkages and repair if necessary.		X	X
3	Check fan motor, electrical connections, switchgear and wiring for condition, operation and for safety.		X	X
4	Check for abnormal noise and vibration and attend to problem.		X	X

PART IV.3:	REF:-M01A007
SUBJECT: MAINTENANCE SCHEDULE FOR:- CHILLERS	

ITEM	DESCRIPTION	MONT HLY	QUART ERLY	ANNUA LLY
1	Check compressor oil level and top up if necessary.	X	X	X
2	Inspect and leak detect entire refrigeration circuits for leaks.	X	X	X
3	Check operation of expansion valves.	X	X	X
4	Check compressor suction and discharge gas pressures and record.	X	X	X
5	Check changeover compressor operating sequence.	X	X	X
6	Check and record compressor operating full load amperages	X	X	X
7	Check and inspect operation of compressor crankcase heater.	X	X	X
8	Examine for unusual knocks, noises and vibrations.	X	X	X
9	Check sight glass for moisture and refrigerant levels	X	X	X
10	Generally clean equipment and plantroom areas.	X	X	X
11	Check electrical power supply, safeties and current protection	X	X	X
12	Drive motor bearings to be lubricated where applicable.		X	X
13	Water analysis and corrosion control tests to be done and a report to be submitted.		X	X
14	Drive motor brushes and slip rings to be checked if applicable.		X	X
15	Flexible drive coupling alignment to be checked if applicable.		X	X
16	Unloading mechanism to be checked for correct operation.		X	X
17	All safety devices to be checked and operation of controls to be tested.		X	X
18	High and low pressure cut –out and oil pressure switch operation and set points to be checked, recorded and re-set if necessary (refer to manufacturer's manual for correct settings).		X	X
19	Check compressor mountings.		X	X
20	Check insulation and vapor seal for deterioration on evaporator and refrigerant piping and repair if necessary.		X	X
21	Check compressor oil, submit oil sample to laboratory for analysis and submit report plus recommendation to clients representative.			X
22	Liquid dryers and strainers to be cleaned or changes as necessary.			X
23	Oil viscosity and cleanliness to be tested and recorded and changed when necessary			X

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ITEM	DESCRIPTION	MONT HLY	QUART ERLY	ANNUA LLY
24	Tube type condensers to be brushed, chemically cleaned and de-scaled.			X
25	Check all metal work for rust spots, clean these sections, de-rust, treat and paint if required.			X

PART IV.3:	REF:-M01A008
SUBJECT: MAINTENANCE SCHEDULE FOR:- COOLING TOWERS	

ITEM	DESCRIPTION	MONT HLY	QUART ERLY	ANNUA LLY
1	Cooling Tower sump to be isolated, drained, cleaned and refilled.	X	X	X
2	Spray nozzles to be cleaned and set correctly	X	X	X
3	Suction strainers to be cleaned	X	X	X
4	Ball valve to be checked for correct operation and water level.	X	X	X
5	Vee belts to be checked for correct tension and alignment and replaced if necessary.	X	X	X
6	Check and record fan motor operating full load amps	X	X	X
7	Check overload settings for correct operation	X	X	X
8	Check and record both inlet and outlet temperatures for tower efficiency.	X	X	X
9	Check and audibly inspect fan and drive motor bearings for wear and lubricate where necessary.	X	X	X
10	Check and clean air intake screens and secure all intake louvers.	X	X	X
11	Generally clean equipment and cooling tower area.	X	X	X
12	Casing to be examined for water leaks and evidence of corrosion which is to be rectified with bitumen based alkaline paint.		X	X
13	Check and inspect fan and drive motor hold down bolts.		X	X
14	Water valves on open condenser water circuits to be fully opened and closed, to prevent lime scale formation from inhibiting the valve.		X	X
15	Valve stems to be lubricated.		X	X
16	Check coupling for alignment.		X	X
17	Check condition of eliminator plates		X	X
18	Check bi-pass valves and controls for correct operation and control.		X	X
19	Check air flow scroll damper control for correct operation.		X	X
20	Wash down and remove algae and lime scale formations.		X	X
21	Strainer material to be replaced, if necessary.			X
22	All ferrous metal components to be examined, corrosion removed and repainted to prevent further corrosion, internally and externally with bitumen based alkaline paint.			X
23	Clean fans and scrolls			X

PART IV.3:	REF:-M01A0010
SUBJECT: MAINTENANCE SCHEDULE FOR:- CONSOLE/ WINDOW UNITS	

ITEM	DESCRIPTION	MONTHLY	6-MONTHLY	ANNUALLY
1.	Remove filter, wash and clean	X		
2.	Check heat – cool and on/off functions	X		
3.	Check fan speeds, noise and for undue vibrations	X		
4.	Remove unit, blow and clean			X
5.	Clean coil with water and cleaning agent		X	

PART IV.3:	REF:-M01A0013
SUBJECT: MAINTENANCE SCHEDULE FOR:- ELECTRICAL SWITCH & CONTROL PANELS	

ITEM	DESCRIPTION	MONTHLY	QUARTERLY	ANNUALLY
1	Panels to be cleaned internally.	X	X	X
2	Terminals to be checked and tightened.	X	X	X
3	Indicating light globes to be replaced where necessary.	X	X	X
4	Circuit breakers and fuses to be checked and investigate reasons for any blown fuses or circuit breakers in OFF position rectify faults and replace blown fuses and faulty circuit breakers.	X	X	X
5	Starters, contactors and relays to be checked to ensure moving bridges slide freely and that all contact points are clean. Investigate and rectify cause of excessive burning of contacts.	X	X	X
6	Time set settings to be checked and correctly adjusted if necessary.		X	X
7	Thermal overload settings to be checked and reset if necessary.			X
8	Star Delta timers to be checked and delay timers to be correctly set.		X	X
9	Automatic sequences to be checked and reset if necessary.			X
10	Electrical heater connections to be checked for correct amperage and faulty elements to be recorded.			X
11	Internal wiring to be tidied up and labeling to be checked.			X
12	Safety controls to be checked and operation of controls to be tested.	X	X	X
13	Control thermostats operation to be checked and calibrated if necessary.		X	X

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ITEM	DESCRIPTION	MONTHLY	QUARTERLY	ANNUALLY
14	Motorized damper, linkages and motors to be checked and operation observed and reset if necessary.	X	X	X

PART IV.3:	REF:-M01A0014
SUBJECT: MAINTENANCE SCHEDULE FOR:- AIR DISTRIBUTION SYSTEMS	

ITEM	DESCRIPTION	MONTHLY	QUARTERLY	ANNUALLY
1	Check all ducting for abnormal air leaks and seal if required.			X
2	Check all flexible duct and canvas connections for deterioration and rectify where required.			X
3	Check grille, louvers and dampers for deterioration and correct if required.			X
4	Check Vermin-screens for cleanliness and deterioration and attend if necessary.			X
5	Clean grilles and diffusers		X	

PART IV.3:	REF:-M01A0015
SUBJECT: MAINTENANCE SCHEDULE FOR:- WATER DISTRIBUTION SYSTEMS	

ITEM	DESCRIPTION	MONTHLY	QUARTERLY	ANNUALLY
1	Check piping and pipe components for water leaks and rectify if necessary.			X
2	Check control valve operation.		X	X
3	Check thermometers and pressure gauges and replace the faulty ones.		X	X
4	Check pressures and temperatures to ensure correct operation.	X	X	X

PART IV.3:	REF:-M01A0016
SUBJECT: MAINTENANCE SCHEDULE FOR:- HEATER	

ITEM	DESCRIPTION	MONTHLY	QUARTERLY	ANNUALLY
1	ELECTRICAL AND CONTROL			
1.1	Clean out the electrical and control panels.		X	X
1.2	Check all wire and terminal connections for loose or hot connections and tighten.		X	X
1.3	Check and make sure that all wiring and components are safe and neat.	X	X	X
1.4	Replace indicating light globes where necessary.		X	X
1.5	Check circuit breakers and fuses and investigate reasons for any blown fuses and faulty circuit breakers and rectify faults.	X	X	X
1.6	Check contactors, starters and relays for operation and that moving bridges slide freely and that all contact points are clean.	X	X	X

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	Investigate and rectify cause of excessive burning of contacts.			
2.	HEATERS			
2.1	Check space temperatures	X	X	X
2.2	Check safeties	X	X	X
2.3	Check all electrical connections and controls, make sure all connections are tight.		X	X
2.4	Electric heater connections to be checked for correct amperage and faulty elements to be replaced		X	X

PART IV.3: REF:-M01A0016
SUBJECT: MAINTENANCE SCHEDULE FOR:- MOTORISED DAMPERS

ITEM	DESCRIPTION	MONTHLY	QUARTERLY	ANNUALLY
1	Damper settings and operation to be checked and adjusted if necessary	X	X	X
2	PRD's (only) operation to be checked against command value and static pressure sensor setpoint.	X	X	X
3	Motorized damper linkages and motors to be checked and operation observed, lubricate and reset if necessary.		X	X
4	Damper motors to be fastened to shaft.		X	X
5	Check all electrical connections and controls, make sure all connections are tight			X

PART IV.3: REF:-M01A0017
SUBJECT: MAINTENANCE SCHEDULE FOR:- BUILDING MANAGEMENT SYSTEMS

ITEM	DESCRIPTION	MONTHLY	QUARTERLY	ANNUALLY
1.	FIELD			
1.1.	Measure, record and adjust power supply voltages.			X
1.2.	Measure noise levels in transmission lines if needed.			X
1.3.	Check for transmission errors.			X
1.4.	Clean interior of control cubicles.	X		
1.5.	Check condition and alignment of parts.	X		
1.6.	Ensure cables are secured.			X
1.7.	Tighten all terminals.			X
1.8.	Calibrate all sensors.		X	
2.	MANAGEMENT			
2.1.	Check communication (LED'S).	X		
2.2.	Perform BUS communication test.		X	
2.3.	Ensure schedules are as required by client and are programmed.	X		
2.4.	Back up database.		X	
2.5.	Check for points in Manual mode and reset to auto.	X		
2.6.	Check and clear alarm faults.	X		
3.	FIELD INSTRUMENTS			
3.1.	Analog			
3.1.1	Check physical mounting.			X

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ITEM	DESCRIPTION	MONTHLY	QUARTERLY	ANNUALLY
3.1.2	Check and calibrate transducer reading to actual reading.		X	
3.1.3	Provide a report on sensors checked – actual to measured value.		X	
3.1.4	Check terminations			X
3.1.5	Check actuator strokes and actions and set correct if needed.		X	
3.1.6	Prove the movement and operation of all valves.		X	
3.2	Digital			
3.2.1	Activate contacts to ensure signal is detected by system.			X
3.2.2	Check calibration of thermostats and pressure switches.		X	
3.2.3	Prove that the outputs activate the connected electrical equipment (contactor etc.)		X	
3.2.4	Check physical mounting and electrical connections			X
3.3	Fire			
3.3.1	Check operation of detector using approved method for detector type.			X
3.3.2	Inspect and periodic test of break glass units/manual call points		X	
3.3.3	Verify loop response at end of each loop			X

PART IV.3: REF:-M01A0018
SUBJECT: MAINTENANCE SCHEDULE FOR:- WATER TREATMENT

ITEM	DESCRIPTION	MONTHLY	QUARTERLY	ANNUALLY
1	Check and measure galvanic corrosion coupons		X	X
2	Conduct a BMW iron analysis test		X	X
3	Water analysis to monitor product and control parameters in system.		X	X
4	Record results of water analysis of each parameter on chart located on site (chart provided by water treatment sub-contractor).		X	X
5	Submit electronic report of water treatment results to client and consultant.		X	X

PART IV.3: REF:-M01A0019
SUBJECT: MAINTENANCE SCHEDULE FOR:- GENERAL

ITEM	DESCRIPTION	MONTHLY	QUARTERLY	ANNUALLY
1	Attend to any complaints made by the Client's Representative.	X	X	X
2	While attending to any defects and servicing the plant the Contractor shall not unduly disturb the occupants in the areas concerned.		X	X

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3	Replace all inspection panels and covers and re-fix all screws, bolts and nuts and replace if necessary.	X	X	X
4	Clean all plant and equipment and record and report dirty plant condition to correct authority.	X	X	X
5	Lock switch panels and plant rooms and return keys to proper authority.	X	X	X
6	Sign log book and enter details where required.	X	X	X
7	Acknowledgement of service and report to be completed and signed by Client's Representative. Report on remedial work undertaken and on any faults found and replacements and repairs required.	X	X	X

NOTES:

- A copy of each such acknowledgement of service and report to be submitted to the Client by the Contractor within 7 days of each service.
- Air conditioning plants shall never be operated with any safety or overload protection device bridged out.
- When power is initially switched on, after being off or disconnected for more than one hour, the compressors should not be operated for a further period of two hours.
- For every service done on the equipment, kindly clean and disinfect/sanitize the equipment, this can reduce the risk of COVID-19 infections. Always follow standard practices and appropriate regulations specific to that equipment.

C5.3: GENERAL TECHNICAL SPECIFICATION

SUBJECT : INSTRUMENTATION

PART IV SECTION 01

The equipment and/or sub-system supplier/assembler shall provide under the overall responsibility and control of the HVAC Subcontractor, all permanently installed instrumentation necessary for logging and monitoring of status and performance of equipment and components.

In addition, a hand held digital electric instrument, measuring temperature and humidity shall be provided at handover for use by the Employer.

All instruments shall be of such dimensions and mounted in position so that they are easily and accurately readable by an operator standing on the floor.

Test instruments shall be checked for accuracy by the manufacturer or by an approved laboratory with certificates being submitted prior to site tests, showing the degree of accuracy.

1. TEMPERATURE INDICATION

1.1 All direct reading thermometers and temperature reading devices shall have an accuracy of 0.5°C and a range of -10°C to 50°C, unless otherwise specified, with graduation being in steps of 1°C.

1.2 Stem thermometers shall be approximately 150 mm long and dial type thermometers minimum 80mm diameter.

1.3 Wells shall be set vertical or at an angle to retain oil. Pipes smaller than 80 mm bore shall be enlarged at points where wells are installed as per following table:

-	Pipe bore (mm)	15	20	25	32	40	50	65
-	Size of enlargement (mm)	32	40	50	50	50	65	80

1.4 The sensor element shall be at the centre of the pipe.

2. PRESSURE INDICATION

2.1 All dial pressure gauges shall be glycerine filled to prevent pointer vibration. Gauges shall have an accuracy of 2%. The range shall extend to 150% of the maximum operating pressure.

2.2 All inclined manometer differential pressure gauges shall have an accuracy of 2%. The range shall extend to 150% of the maximum operating pressure, with graduation being in steps of 10 Pa.

2.3 All differential dial pressure gauges shall have an accuracy of 2% and shall not be less than 100 mm diameter. Zero pressure reading shall be in the centre, and the range of scale on either side shall extend to 150% of the maximum operating pressure, with provision being made for individual pressure reading.

2.4 Syphon tubing to pressure gauges must be galvanised and must be insulated.

2.5 Pressure gauges must be installed before and after water strainer.

3. HYGROMETERS

3.1 Hygrometers shall have an accuracy of 5% in the range of 20% to 100% relative humidity.

4. FLOW METERS

4.1 Liquid flow shall be measured by means of an in-line orifice, or Venturi tube and differential pressure gauge normally calibrated in litres per second - 5% accuracy.

SUBJECT: IDENTIFICATION

PART IV SECTION 02

All identification shall be legible, and shall be painted or fixed after completion of final finishes. Identification colours shall be in accordance with BS 1710 and/or as instructed or approved by the Architect.

1. SIGHTGLASS/MOISTURE INDICATOR

- 1.1 A sightglass/moisture indicator shall be installed in the refrigerant circuit of each chiller and/or condensing unit.
- 1.2 The indicator shall be suitable to read the recommended moisture levels of the refrigerant used.
- 1.3 The indicator must be after the filter drier and must be visible.

2. LABELS

- 2.1 A label shall be provided under each gauge, meter, instrument, pilot lamp, remote control switch, motor controller and panel mounted item identifying the equipment controlled and/or performance indication by such items.
- 2.2 The labels shall consist of a non-corroding material with a non-glossy appearance, engraved with black lettering on a white background. All labels shall slide in a screwed-on type aluminium bracket unless otherwise approved

3. VALVE TAGS AND CHARTS

- 3.1 Numbered tags including letters to identify the system, shall be brazed to all valves indicated on the drawings, or be fastened by heavy brass chain to such valves.
- 3.2 The metal tags shall be 50 mm in diameter and 1 mm thick, and shall have stamped-in number and letters.
- 3.3 The Subcontractor shall be responsible for submitting a list of all valves and controls, giving location and function, together with diagrammatic charts featuring each piping system with valves and controls, identified by numbers and letters shown on the corresponding tags.

4. DIFFUSERS

- 4.1 Each diffusers/grille shall be labelled with a unique number which shall be reflected on the as build drawing, drawing asset register and commissioning sheets.

5. PIPING

- 5.1 In addition to painting of pipes (including insulation), colour coded polyvinyl chloride bands shall be applied to pipes identifying their content and direction of flow.
- 5.2 Bands shall be provided to piping at valve location, at points where piping enters or leaves a partition, wall, floor or ceiling and at least at every 10 m centres of straight runs. Where piping is concealed, bands shall be applied at valves or other devices whenever access is provided by doors or panels. Exit and entrance points to each vessel, tank or place of equipment shall be identified by bands. Insulated pipes shall be banded after insulation and painting work has been completed.
- 5.3 The band's width shall be minimum 200 mm wide for pipes up to 250 mm diameter and 400 mm wide for larger diameter piping. The pre-printed letters on band, identifying the service shall be at least 20 mm high.
- 5.4 Piping of less than 25 mm nominal bore need not be colour banded but shall be painted all over with the identifying colour of its content.
- 5.5 The flexible hoses serving the access floor and/or ceiling fan coil units shall be colour banded as follows:
 - Hoses with "male" part of coupler: "midnight blue"
 - Hoses with "female" part of coupler: "light blue"
- 5.6 Only one band with a minimum width of 20 mm shall be provided around

5.7 Re-insulation on both ends of the hose.

6. DUCTWORK

6.1 All ductwork shall be identified by writing in words the service of the duct and by pointer showing the direction of flow. Markings shall appear at least at the point of origin and whenever ducting enters or leaves walls, floors or ceilings and for every 20 m centres of straight lines.

6.2 The identification letters shall be at least 50 mm high and the flow arrow 150 mm long.

7. ACCESS PANELS

7.1 Approved tile markers shall be provided in areas where removable ceilings or access panels are positioned to indicate the location of valves and/or other devices.

8. COLOUR CODING

8.1 Unless otherwise indicated, the following colour code shall be used:

	APPLICATION	REFERENCE
1	Steel bases	1
2	Motors	1
3	Condenser frames	1
4	Chiller frames	1
5	Fans	1
6	Pipe brackets	1
7	Air conditioning ducts (supply air)	1
8	Concrete bases	2
9	Drain piping	2
10	Condenser water piping (supply)	3
11	Condenser water piping (return)	4
12	Compressors	4
13	Chilled water piping (return)	5
14	Suction lines	5
15	Chillers	5
16	Chilled water piping (supply)	6
17	Pumps	7
18	Belt guards	8
19	Hot line gas	9
20	Shut off valve handles	9
21	Switches and boxes or covers	9
22	Liquid line	10
23	Condensers	11
24	Cooling towers	12
25	Kitchen ventilation ducts	13

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26	Toilet ventilation ducts	13
27	Air conditioning ducts (return air)	14
28	Ventilation ducts	15
29	Plenums	15
30	Compressed air	5

REFER ENCE	DESCRIPTION	COLOUR CODE
1	Mines Grey	G15P
2	Black	
3	Brilliant green or light orange	Codes BS No 221
4	Magic green or dark orange	G406
5	Light blue	G16P
6	Midnight blue	G116P
7	Azure blue	BSF05
8	Golden yellow	BS49
9	Signal red	G7P
10	White	
11	Carrier green	
12	Aluminium numelon code AN	
13	Eyrest grey	G7P
14	Battleship grey	G13P
15	Beige	BS366

SUBJECT: PAINTING AND PROTECTION AGAINST CORROSION

PART IV SECTION 03

1. GENERAL REQUIREMENTS

- 1.1 The requirements of ISO 12944 shall apply as a minimum to all coating application activities. Supplementary requirements are given in this document. In the event of conflict between this document and the ISO standard, the requirements of this document will prevail.
- 1.2 The sub-contractor shall be responsible for ensuring that the coating manufacturer's instructions, including, but not limited to:
- a. Surface preparation and cleaning.
 - b. Preparation and application of coating materials.
 - c. Shelf life and storage requirements are adhered to:
- 1.3 Only approved coating materials as detailed in the specification shall be used. These shall not be mixed with materials from different manufacturers.
- 1.4 The sub-contractor shall use experienced labour with qualified supervision and inspection. Applicators and supervisors should preferably be qualified to the South African Qualification and Certification Committee for Corrosion Protection (SAQCC) PA1 and SP1.
- 1.5 The sub-contractor shall use colours selected by the design team to the SANS 1091 or RAL colour standards.
- 1.6 The sub-contractor shall ensure that piping and proprietary equipment are adequately protected when stored on site to prevent internal corrosion.

2. GREEN REQUIREMENTS

- 2.1 Any paint/solvent based coating used for piping, support steelwork and air-conditioning ductwork and equipment must have a VOC content of less than 200 g/l in the 'ready-to-use' product. Where the manufacturer requires solvent additions to the as-supplied product strict instructions are required from the manufacturer in terms of the maximum solvent additions allowed to ensure that the ready-to-use product still meets the 200 g/l limit.

3. SURFACE PREPARATION

- 3.1 All sharp edges, burrs, rags and weld splatter shall be removed and weld areas shall be abraded and/or ground.
- 3.2 The surface shall be de-greased and rinsed with solutions supplied by the coating manufacturer prior to mechanical cleaning (clause 4.4 of SANS 10064).
- 3.3 Surface preparation shall be as specified in accordance with ISO 8501-1 and SANS 10064 and shall be conducted before erection of pipes

PART IV SECTION 03

4. COATING/PROTECTION SPECIFICATIONS

APPLICATION	SPECIFICATIONS/CODES
<u>Protective Coatings</u> The external protection of insulated chilled water piping. The external protection of uninsulated steel piping internal and external to buildings in both inland and marine environments and mild steel support structures and black steel kitchen extract ducting internal to buildings in inland and dry environments. Mild steel support structures to buildings in moist conditions and external to buildings in inland environments. Mild steel support structures internal and external to buildings in marine environments.	(Refer to Appendix A) PCS 01 PCS 02 PCS 03 PCS 04
<u>Anti-Corrosive Coatings</u> Air Cooled condenser coils within 35km of the coast or coils where specifically specified	- Salt spray as per ASTM B117 of >5000hrs (corrosion durability) - Cross hatch as per ASTM 3359-93 of 5B (adhesion) - UV resistance as per ASTM D4587 of 500 hours - Heat transfer loss must be less than 1%. - The coating dry film thickness should be 15-30 microns without material bridging between fins. - The coating applicator must provide a declaration ROHS (Restriction of Hazardous Substances).
The external surfaces of galvanised steel ducting internal and external to buildings in both inland and marine environments.	PCS 05
Electric motors, gearboxes, pumps, valves and other proprietary equipment internal or external to buildings in both inland and marine environments.	PCS 06
<u>Hot Dip Galvanizing</u> Due cognisance of the type of article and zinc thickness is required.	SANS 121 (ISO 1461) – Hot dip galvanized coatings on fabricated iron and steel articles – specifications and test methods
<u>Powder Coatings</u> Steel or galvanised components. Architectural aluminium components.	SANS 1274 – Type 6 SANS 1578-1 SANS 1578-2
<u>ANODIZING OF ALUMINIUM</u> Architectural components General purpose aluminium articles	SANS 999 SANS 1407

PART IV SECTION 03

4.1 Should the applicator or manufacturer wish to propose alternative products or coating materials, he shall submit a detailed motivation to Umgeni Water. The motivation shall include, but not be limited to the following:

- Benefit to the Client
 - Product licensor and technical back-up available;
 - Location, experience and ISO quality rating of the production facility;
 - Detailed case histories;
 - Performance guarantee offered;
 - Manufacturer's data sheets for each product.
- Confirmation that the coatings meet the specified VOC requirements.

5. COATING APPLICATION

- 5.1 The sub-contractor shall submit a Quality Plan for approval prior to the commencement of any coating work.
- 5.2 The coating application work shall be carried out in strict accordance with the most recent Product Data Sheet from the coating manufacturer.
- 5.3 The product data sheet shall be deemed to be part of this specification.
- 5.4 Coatings shall not be applied when surface may become damaged due to rain, dust, condensation, surface temp (>30°C) or excessive humidity (>85%).
- 5.5 All surfaces shall be coated as specified. Successive coats shall be of distinctly different colour to the previous coat to ensure correct inter coat coverage. Special attention shall be given to cracks, crevices and edges to ensure complete coverage and paint thickness.
- 5.6 The primer shall be applied as soon as possible after the surface preparation operation, but within 4 hours.
- 5.7 Concealed surfaces shall be completely coated.
- 5.8 All edges, corners, welded joints, flanges, bolt holes and cut ends shall be stripe coated by brush application, prior to the application of the second coat.
- 5.9 No coating shall be applied to any surface containing traces of grit, grease, soil, loose rust, surface contaminants (i.e. dust) or loose corrosion product of any kind.
- 5.10 Surface rust on steelwork shall not exceed Grade B of ISO 8501-1.
- 5.11 Coating that was applied excessively which shows marks of wet running paint or poor workmanship must be sanded down and re-painted.

6. PATCH REPAIR PROCEDURE

- 6.1 Following transport and erection, all areas of coating damage shall be patch repaired by brush application to reinstate the original specified system.
- 6.2 The extent of the damage shall be carefully inspected to assess which coats in the system have been damaged.
- 6.3 When the damage extends to the steel substrate, all coats in the system shall be re-instated. Areas to be primed shall be cleaned of dust, dirt, grease or other deleterious matter and mechanically cleaned to grade St 3 of ISO 8501/1.
- 6.4 All edges of existing coatings shall be feathered back to a hard edge. The patch primer used shall be in accordance with the requirements of the relevant coating system.

7. FASTENERS

- 7.1 All nuts and bolts shall be either hot dip galvanised or stainless steel unless otherwise specified.
- 7.2 All galvanised nuts and bolts shall be de greased, patch primed and finish coated in accordance with the specification for the respective area of the plant.
- 7.3 Washers shall be fitted to each nut and bolt.
- 7.4 A minimum of two full threads of the bolt must be visible behind the nut once tightened.
- 7.5 Bolt protrusion behind nut shall not exceed 25mm once tightened.
- 7.6 Threaded hanger rod ends shall not protrude more than 25mm below the bottom of the support bracket. .

- 7.7 Support brackets shall be coated to PCS 02. Any damage to the bracket coatings during installation shall be repaired in accordance with the PATCH REPAIR PROCEDURE.
- 7.8 If the galvanized threaded hanger rods are damaged or cut during installation the damaged zinc coating shall be repaired in accordance with SANS 121 (ISO 1461) by means of epoxy zinc rich paint. The zinc rich paint shall contain a minimum of 80% zinc in the dry film and the thickness shall be 30 micron greater than the specified galvanizing zinc thickness. The damaged area shall be thoroughly cleaned and the repair coating shall overlap onto the surrounding sound zinc for a distance of at least 25 mm.
- 7.9 The zinc rich paint for repairs shall be as recommended by the HDGASA, i.e. either Zincfix (Speccoats) or Galvpatch (Drivelines and Sprayflow cc).
- 7.10 The use of aerosol spray repair coatings is not permitted.

8. THE PREVENTION OF GALVANIC CORROSION

- 8.1 Care must be taken to prevent or mitigate the corrosion caused by dissimilar metal contact on cooling coils, tubes and tube plates, pipes, flanges, frames etc. Typical metals encountered would be copper, aluminium, zinc, mild steel and stainless steel.
- 8.2 The junctions between dissimilar metals must be electrically insulated where possible.
- 8.3 Pipe flanges between dissimilar metals must be insulated using insulating gaskets for the flange faces and insulating sleeves and washers for all nuts and bolts.
- 8.4 Where the insulation of the junction between dissimilar metals is not practical, the cathode surface on the electrolyte or 'wet' side must be coated for a minimum distance of 100 mm from the junction. The applied coating must effectively isolate the coated surface from the electrolyte.

9. INSPECTIONS AND TESTING

- 9.1 The sub-contractor shall have the necessary equipment and qualified staff to carry out the quality control required to ensure compliance with the specification. The coating inspector shall preferably be qualified to either the South African Qualification and Certification Committee for Corrosion Protection (SAQCC) Level 1 or NACE CIP Level 1.
- 9.2 The following inspections and tests shall be performed by the sub-contractor and witnessed by the design team in accordance with the approved Quality Plan on corrosion protection.
- 9.3 Visual inspection for paint film defects shall be performed after each coat is applied. All defects including pinholes, sags and runs shall be corrected before the next full coat is applied.
- 9.4 Painted surface must be continuous, smooth and uniform

10. Dry Film Thickness

- 10.1 Dry film thickness shall be measured in accordance with ISO 2808:1967. Instrument calibration shall be on the smooth calibration disc provided by the instrument manufacturer.
- 10.2 The required dry film thickness is given in recommended 'windows' for each coat in the relevant coating specification, i.e. required minimum and acceptable maximum. As the various brand coatings are being guaranteed by the respective coating manufacturers, the minimum and maximum thickness requirements must be as specified in the relevant manufacturer's Product Data Sheet. Any reading outside the manufacturer's specified range is cause for rejection and may require the removal of the entire coating and reapplication thereof.
- 10.3 Actual readings and not averages shall be recorded.

11. QUALITY ASSURANCE

11.1 Sub-contractor Qualification

- 11.1.1 The design team may, at its discretion, require a Quality Audit of the painting sub-contractor to ensure that he has the management, facilities, skilled staff and quality control facilities and staff, to carry out both the coating application and the required quality control during application of coatings to ensure compliance with specification.
- 11.1.2 The sub-contractor shall accept full responsibility for the quality of his work and of materials used, irrespective of any quality surveillance that may be carried out by the design team.

11.1.3 The sub-contractor shall keep at least the following records in his QA File on site:

- Product Data Sheets
- Material batch records
- Psychrometric records
- Records of surface preparation
- Dry film thickness measurements per coat
- Copies of inspection reports issued by the coating manufacturer
- Copies of inspection reports issued by the design team

12. DATA BOOK

12.1 Upon completion of the works, the sub-contractor shall provide Umgeni Water with a Data Book containing all the relevant Quality Control documents and records pertaining to the works.

12.2 This data book shall contain, as a minimum, the following:

- The relevant PCS specifications
- The Quality Plan
- Copies of all Batch Release Certificates from the paint manufacturer
- All relevant QC Records listed above
- Copies of all design team reports
- Copies of all Release Certificates

12.3 The sub-contractor shall keep a copy of the Data Book for his own records.

13. GUARANTEES

13.1 Umgeni Water requires performance guarantees for the applied coating systems. Such guarantees shall be provided jointly by the coating manufacturer and coating applicator. The minimum guarantee period will be 8 years and the criteria for failure will not exceed Ri 3 of ISO 4628-3.

13.2 Although visible coating defects such as blistering, cracking, flaking and peeling are not always associated with visible rusting, they indicate defects that could either lead to substrate corrosion or are shielding substrate corrosion that has already taken place beneath the coating. Any such defects noted during the guarantee period shall be repaired.

13.3 This joint guarantee must be submitted at the time of tender.

13.4 All guarantees in the terms of protection against corrosion shall be ceded to the client.

PART IV SECTION 03

APPENDIX A

PROTECTIVE COATING SPECIFICATIONS

SPECIFICATION NO: PCS 01

Description: The external protection of insulated chilled water piping.

	Surface Preparation	Primer Coat	Intermediate Coat	Finishing System
Supplier	Degrease Wire brush St 3	Al filled surface tolerant epoxy primer 50 – 125 microns	High build micaceous iron oxide epoxy 75 – 150 microns	Insulation + vapour barrier
International	Degrease Wire brush St 3	Interseal 670HS Aluminium	Intergard 475HS MIO	-
VOC g/l	-	182	193	
Jotun	Degrease Wire brush St 3	Jotamastic 80 Al Std comp B	Penguard Midcoat MIO Red,Grey	-
VOC g/l	-	145	180	
Plascon	Degrease Wire brush St 3	Plascon Plascotuff 3000 (PEX3004/PEH 3)	Plascon Plascotuff 3000 (PEX3004/PEH 3)	-
VOC g/l	-	150	150	
Stoncor	Degrease Wire brush St 3	Carbomastic 15	Carboguard 893	-
VOC g/l	-	88	195	-

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SPECIFICATION NO: PCS 02

Description: The external protection of un-insulated steel piping internal and external to buildings in both inland and marine environments and mild steel support structure internal to buildings in and dry environments.

	Surface Preparation	Primer Coat	Intermediate Coat	Finishing Coat
Supplier	Degrease Wire brush St 3	Al filled surface tolerant epoxy primer 50 – 125 microns	High build micaceous iron oxide epoxy 75 - 150 microns	Water borne acrylic latex 50 – 75 microns
International	Degrease Wire brush St 3	Interseal 670HS Aluminium	Intergard 475HS MIO	Intercryl 700
VOC g/l	-	182	193	15
Jotun	Degrease Wire brush St 3	Jotamastic 80 Al Std comp B	Penguard Midcoat MIO Red,Grey	Waterfine Topcoat Standard shades
VOC g/l	-	145	180	70
Plascon	Degrease Wire brush St 3	Plascon Plascotuff 3000 (PEX3004/PEH 3)	Plascon Plascotuff 3000 (PEX3004/PEH 3)	Plascon Metalcare WB Enamel (WBE)
VOC g/l	-	150	150	60
Stoncor	Degrease Wire brush St 3	Carbomastic 15	Carboguard 893 MIO	Carbocrylic 3350
VOC g/l	-	88	195	24

SPECIFICATION NO: PCS 03

Description: Mild steel support structures internal to buildings in moist condition and external to buildings in inland environments.

Hot-dip galvanise to SANS 121 (ISO 1461)

PART IV SECTION 03

SPECIFICATION NO: PCS 04/PCS 05

Description PCS 04 Mild steel support structures internal and external to buildings in marine environments.

Galvanise (un-passivated) + duplex coating

Description PCS 05: The external surfaces of galvanised steel ducting internal and external to buildings in both inland and marine environments.

	Surface Preparation	Primer Coat	Finishing Coat
Supplier	Galvanised Iron Precleaner	Epoxy Galvanising primer 50 – 80 microns	Water borne acrylic latex 50 – 75 microns
International	Galvanised Iron Precleaner	Interseal 670HS Aluminium	Intercryl 700
VOC g/l	-	182	15
Jotun	Galvanised Iron Precleaner	Jotamastic 80 Al Std comp B	Waterfine Topcoat Standard shades
VOC g/l	-	145	70
Plascon	Galvanised Iron Precleaner GIC	Plascon Plascotuff 3000 (PEX3004/PEH 3)	Plascon Metalcare WB Enamel (WBE)
VOC g/l	-	150	60
Stoncor	Galvanised Iron Precleaner	Carboclad 900	Carbocrylic 3350
VOC g/l	-	22	24

SPECIFICATION NO: PCS 06

Description: Electric motors, gearboxes, pumps, valves and other proprietary equipment internal and external to buildings in both inland and marine environments. Over manufacturer's standard finish.

Note: Conduct an adhesion test on the proprietary coating in accordance with SANS 5159. If the adhesion coefficient is less than 8, return item to manufacturer for replacement. If the adhesion coefficient is 8 or 10, apply upgrade system as above.

	Surface Preparation	Primer Coat	Finishing Coat
Supplier	St3 Degrease	Epoxy maintenance primer 50 - 125 microns	Water borne acrylic latex 50 – 75 microns
International	St3 Degrease	Interseal 670HS Aluminium	Intercryl 700
VOC g/l	-	182	15
Jotun	St3 Degrease	Jotamastic 80 Al Std comp B	Waterfine Topcoat Standard shades
VOC g/l	-	145	70
Plascon	St3 Degrease	Plascon Plascotuff 3000 (PEX3004/PEH 3)	Plascon Metalcare WB Enamel (WBE)
VOC g/l	-	150	60
Stoncor	St3 Degrease	Carbomastic 15	Carbocrylic 3350
VOC g/l	-	88	24

SUBJECT: INSULATION

PART IV: SECTION 04

1. GENERAL

- 1.1 This is a performance specification that requires an equipment submission.
- 1.2 In case of conflict, this specification takes preference over material and application codes. If the conflict is fire related, the relevant fire code takes preference over this specification.

2. CODES

Insulation shall be applied as specified in SANS Standards 1238 –2005 and 0173-2003.

3. FIRE

- 3.1 All thermal and acoustic insulation materials, adhesives, straps and finishes used shall, when tested in accordance with SANS Standard 1238-2005 and BS standard 476, comply with the stated indexes for surface spread of flame, heat contribution, smoke contribution and fire index.
- 3.2 Material shall be free from substances, which in the event of a fire would generate appreciable quantities of smoke, noxious or toxic fumes.
- 3.3 Flexible ducting complete with insulation shall be constructed of non-combustible material as required in terms of the building regulations provided that:
- Approved combustible flexible connections may be used where the length of such connection does not exceed 1.5m and such connection does not pass through any wall or floor which is required to have a specified fire resistance.
 - Approved combustible flexible joints not more than 250mm in length may be used in any plant room where such plant room is protected by a smoke detection system.

4. ENVIRONMENTAL

- 4.1 Insulation materials and finishes shall prevent rotting, mould, fungal growth and attack by vermin, be non-hygroscopic and in all respects to be suitable for continuous use throughout the range of operating temperatures and within the environment indicated.
- 4.2 Insulation material and their finishes shall be free from any form of asbestos.
- 4.3 No exposed glass fibre shall be permitted in contact with air.
- 4.4 The insulation material shall not contain CFC's and shall be ozone and ultraviolet resistant with an ODP value of 0
- 4.5 The thermal resistance of the material shall not degenerate below the thermal resistance value quoted over the life span of the product.
- 4.6 All thermal insulation for pipes and ducts shall have no ozone-depleting substances associated with either the manufacture or composition of the product. Fibre-based woven insulation products (e.g. glass fibre, mineral wool, polyester etc.) and foil insulation are not manufactured using blowing agents may be used.
- 4.7 The Contractor is to provide written confirmation that all insulation materials installed are as per specification. Contractor is also to provide manufacturer's data sheets for each insulation product,

5. QUALITY ASSURANCE

- 5.1 Prior to insulation being fitted, all pressure testing shall be satisfactorily completed. The Specialist Insulation Contractor is, however, allowed to start insulating ductwork before testing provided that all joints are uncovered and visible for inspection.

5.2 The HVAC Sub-contractor shall arrange inspections by the Consulting Engineer for the following events:

5.3 **Piping**

- i. Samples (For piping, supports, fittings etc. as agreed with the Consulting Engineer)
- ii. After paint application to surfaces to be insulated
- iii. After second vapour barrier application
- iv. Completion of cladding

5.4 **Ducting**

- i. Samples (As agreed with the Consulting Engineer)
- ii. Finished product

5.5 Insulation shall be stored in a dry and protected environment, and shall be protected after installation. Any materials with signs of physical or moisture damage will be rejected.

6. EQUIPMENT SUBMISSIONS/SAMPLES

6.1 Sample sections of final insulation will be required prior to commencement, as part of the quality control and performance testing.

6.2 An equipment submission shall be submitted for review, containing details on low density insulation on straight pipes runs, high density insulation at pipe supports, insulation for valves, flanges, etc. and insulation for storage vessels. For information required in the equipment submission, refer to Table F.

7. INSULATION MATERIALS/LIFE EXPECTANCY

7.1 The selection of an insulated material shall comply with the manufacturers operating limits for the insulation, including but not limited to criteria for temperature, humidity and compressive strength.

7.2 The materials selected for insulation, vapour barrier and cladding shall be compatible and suitable for the type of application, and shall be galvanic neutral.

7.3 The thickness shall comply as a minimum with the thickness stated in the enclosed table A – E.

7.4 Material selected shall have a median life expectancy of 20 years.

7.5 Insulation materials relying on reflectance and air gaps shall provide certified test results for reflective surface covered with dust and equivalent on site thickness of air gap.

7.6 Materials shall tightly fit the outer perimeter of the medium insulated.

7.7 Acceptable insulation materials for piping:

- i. Pre-formed fibrous insulation sections (minimum density 80kg/m³)
- ii. Pre-formed closed cell foam (minimum density 32kg/m³)
- iii. Pre-formed closed cell elastomeric (minimum density 48 kg/m³)

7.8 Acceptable insulation materials for pipe fittings:

- i. Fibrous insulation rope with plaster finish
- ii. Closed cell elastomeric (min density 48kg/m³)

7.9 Acceptable insulation materials for ducting:

- i. Blanket/sheet glass fibre (minimum density 16kg/m³)
- ii. Fire Retardant Polystyrene or equivalent (minimum density 24kg/m³)
- iii. Closed cell foam (minimum density 24kg/m³)

8. VAPOUR BARRIER

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- 8.1 The insulation of ductwork, piping and or plant operating below ambient dew point temperature shall be provided with a vapour seal.
- 8.2 Wherever a vapour seal is discontinued the vapour seal shall be brought back to the surface of the duct, pipe or plant.
- 8.3 The vapour barrier shall be continuous at pipe supports.
- 8.4 Wherever a vapour seal is damaged or pierced it shall be sealed with tape of the same material.
- 8.5 Cold surface insulation relying on closed cell properties of the material for a vapour barrier shall have a minimum moisture resistance value of $\mu > 5000$.
- 8.6 Acceptable vapour barriers:
- i. Foil Reinforced Kraft (FRK), duct wrap or equivalent, all joints sealed with aluminium tape
 - ii. Mylar Foil factory fitted and all joints sealed with aluminium tape
 - iii. Factory fitted PVC and all joints sealed with black tape
 - iv. Factory fitted Canvass with all joints properly lapped and continuous sealed with canvass material and coated by a polymeric type vapour barrier strictly in accordance with the manufacturers' recommendation but a minimum of two coats, first a white coat, followed by a blue coat.
- 8.7 All vapour barrier joints (longitudinal and circumferential) shall have a minimum overlap of 50 mm and shall be glued and taped.
- 8.8 Exposed vapour barrier shall be UV resistant.

9. APPLICATION

9.1 General

- 9.1.1 Where specified thickness of insulation exceeds commercially available sizes, insulation shall be applied in two or more layers, with all joints staggered and with overlaps of minimum 50mm. Insulation layers shall be strapped and glued into position.
- 9.1.2 Where cladding is required in terms of this specification, the standard for inland environments shall be "galvanised sheetmetal" and for marine environments, stainless steel or aluminium.
- 9.1.3 Cladding shall be strapped at 300mm intervals – no pop rivets or screws shall be used.
- 9.1.4 Installation material used on duct work, piping and plant operating at or below ambient dew point temperatures or installed in areas where the insulation can be soaked by (rain) water shall be of the closed cell type and shall be provided with a vapour seal (refer Clause 6). All joints on cladding shall be weather proof.
- 9.1.5 Equipment manufacturer's nameplates shall not be covered by insulation.
- 9.1.6 Flanges, valves and strainers shall be insulated. Removable sections shall be insulated with synthetic rubber and taped.
- 9.1.7 Collars, bases and manholes of storage vessels shall be insulated. Manhole covers shall be semi removable. Storage vessel legs shall be insulated up to 50mm off the floor surface.
- 9.1.8 Heat exchangers shall be insulated.
- 9.1.9 Pumps and machinery shall not be insulated unless specifically indicated on the drawings.
- 9.1.10 All chilled water and refrigerant suction distribution systems shall be insulated and vapour sealed.
- 9.1.11 Cladding shall be compatible with the nature of material insulated and the vapour barrier. Where electrostatic build up or lightning strike is a possible given site conditions, cladding shall be earthed and bridged to ensure a continuous medium.
- 9.1.12 Cladding shall overlap a minimum of 30mm for $< \phi 150$ mm pipes and 50mm for $\geq \phi 150$ mm pipes.
- 9.1.13 To prevent thermal bridging at supports, insulation props of similar material, preformed to suit the pipe, sufficient density to support the pipe, fluid and coverings, and equal thickness to insulation shall be provided. Wooden blocks will not be accepted.
- 9.1.14 Material similar to Poly ISO Cyan Urate with a minimum density of 80kg/m³ and minimum length of 120mm can be used.
- 9.1.15 Minimum thickness specified in tables A – E, is based on thermal conductivity. The specialist insulation supplier should ensure that the correct thickness/density of material is used to prevent damage during construction and squashing at pipe supports.
- 9.1.16 Fixing of insulation shall allow for expansion of piping.
- 9.1.17 Condensate drain piping of equipment installed inside ceiling voids shall be insulated from the equipment to the drain point for a minimum distance of 2m or further if condensation is evident

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- 9.1.18 Side stream filtration unit & piping and chilled water piping to and from dosing pod must be insulated.
- 9.1.19 External cladding and uninsulated sections of ducting that is exposed to rain shall be cross bend with the highest point in the centre of the ducting where installed horizontally to prevent standing water. No drilling of cladding on top of insulation is allowed.
- 9.1.20 External cladding seams of piping must be installed in a position that ensures there is no water ingress via the seam. The seam angle and overlap section must ensure efficient water run off and all joints must be water tight.
- 9.1.21 All insulated piping, including refrigerant piping shall be protected by a sheetmetal sleeve where it penetrates a structure and fire sealed if it is a fire wall.
- 9.1.22 When using preformed close cell foam insulation on piping a bonding medium similar to Bitumen must be used and applied over the protective coating that forms the basis of protection against corrosion.
- 9.1.23 The coverage of the Bitumen must be 100% of the insulated area.
- 9.1.24 All joints in insulation and termination against pipe supports must be glued.
- 9.1.25 Flexible connections shall not be insulated.

9.2 Ducting

9.2.1 Refer to table D.

9.2.2 Duct insulation shall be fastened to ducting in accordance with the following table:

DUCT SIZE	FASTENERS
<300mm	Adhesive (100% coverage of area)
300mm ≤ duct <600mm	Adhesive and straps at 300mm centres
≥ 600mm	Adhesive and pins at 300mm centres

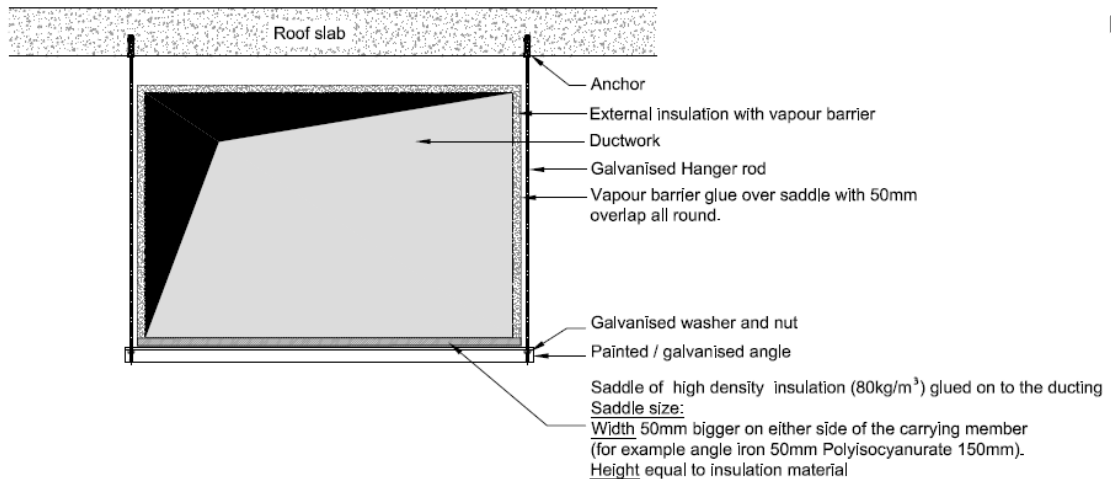
- 9.2.3 If strapping is used in the installation, it shall be applied without damaging the insulation. Strapping shall be of the polypropylene type. Locking clips shall be plastic.
- 9.2.4 Pins shall be applied to sides and bottom. Mechanical pin washer shall not compress insulation more than 15%. Sharp edges of mechanical pin washers shall face away from the insulation to prevent damage to the vapour barrier.
- 9.2.5 No pins shall be used after HEPA filter but only straps.
- 9.2.6 The vapour barrier shall be re-instated after installation of pins.
- 9.2.7 Adhesive shall be applied to the bottom and sides of the duct to ensure bonding of the insulating material to the sheet metal.
- 9.2.8 The table below details the spacing of the mechanical fasteners for rigid internal and external insulating material.

DUCT SYSTEM	SPACING OF MECHANICAL FASTENERS FOR EXTERNAL DUCT INSULATION		
Low, medium and high pressure	From Side of duct	From Flanges	Between Centres
	75mm	75mm	300mm

DUCT SYSTEM	SPACING OF MECHANICAL FASTENERS FOR INTERNAL DUCT INSULATION		
Low, medium and high pressure	From Side of duct	From Flanges	Between Centres
	75mm	75mm	400mm

- 9.2.9 Duct supports must not be against flanges/duct joints. Minimum distance from flanges/joints is 150mm.
- 9.2.10 At Coastal areas high density insulating material is required between the ducting and duct support bracket.

- 9.2.11 Ensure that the hangers and supports are large enough to allow the insulating material and the vapour barrier to be fitted between the duct and the hanger or support. Insert, between the duct and each hanger or support, a saddle of high density insulating material of acceptable quality, and of the same thickness as the insulating material with width at least equal to that of the carrying member (for example the angle). Ensure that the compressibility of the saddle material is such that, under working conditions, a saddle is not compressed to less than 85% of its original thickness. Bond the saddle onto the duct with 100% coverage of adhesive (refer to figure below for details). Fit saddles on all load-bearing surfaces of the external insulating material.



- 9.2.12 As an alternative to transverse joints specified in SANS 1238 the flanged joints such as MEZ-flanges will also be considered provided that these type of flanges meet the following specification.

LONGEST SIDE OF DUCT (mm)	FLANGE HEIGHT (mm)	MATERIAL THICKNESS OF FLANGES	NO OF INTERMEDIATE CLAMPS
100 – 300	20	1mm	Nil
300 – 600	20	1mm	1

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601 – 1200	20	1mm	2
1201 – 1800	30	1.2mm	3
1801 – 2400	30	1.2mm	4
OVER 2400	TO SANS 1238		

- 9.2.13 MEZ-flanges or equivalent products shall be manufactured from cold rolled steel and hot-dip galvanised after manufacture. The sealant between mating flanges and between the flange and sheet-metal shall comply with SANS 1238.
- 9.2.14 Ductwork connected to equipment, such as cooling towers, evaporative condensers, plenum chambers etc. shall be provided with flanges for easy removal of the equipment.
- 9.2.15 "Where ducting passes through walls or partitions it shall have a suitable timber frame surrounding it. There shall be a 10mm clearance between all sides of the ducting and the timber frame."
- 9.2.16 Strapping must not be used on bends and transformation sections. Mechanical pins must be used.

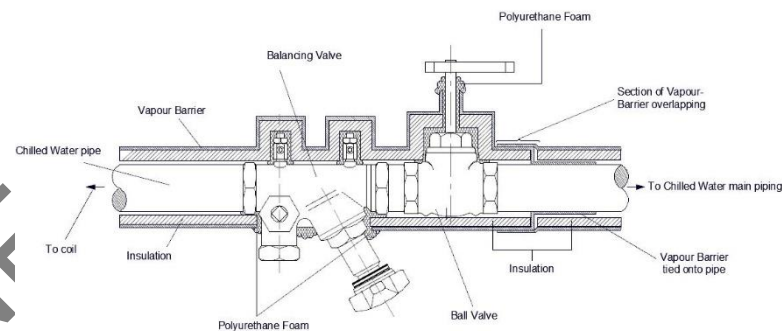
9.3 Chilled Water Insulation

- 9.3.1 Refer to table A.
- 9.3.2 Flexible closed cell rubber insulation (Kaiflex) shall not be used on equipment exposed to Ambient conditions, lights, close to or near heat generated equipment.
- 9.3.3 Special Clauses for Coastal Application

The "Coastal Conditions" or "Coastal Application" shall be deemed to mean any installation within 35km of the ocean. For Coastal Conditions the following apply:

- 9.3.3.1 The vapour barrier must be sealed directly onto the chilled water pipe after the valve cluster of the cooling coil. This also applies where balancing valves or ball valves are used or flexible hose connections.

The insulation should overlap the vapour barrier. The vapour barrier must remain continuous on the outside of the pipe



Where good thermal conducting vapour barrier such as aluminium foil is used, the foil should not come into contact with the pipe, but polyurethane foam or other closed cell insulation should rather be injected to seal the vapour barrier off, onto the pipe, after the valve cluster.

- 9.3.4 Refer to Section 09.02 for correct installation of balancing valve in pipe system.

The following vapour barrier materials are acceptable:

- Mastic PK2415
- SAFBOND cloth type
- Foil to Mylar

The following type of vapour barrier are not acceptable:

- Foilcraft

9.4 HOT WATER INSULATION

- 9.4.1 Refer to table B
9.4.2 Hot insulation shall provide adequate heat conservation and protection against burn injuries. Insulation surface temperature shall not exceed 50°C at an ambient of 30°C.

9.5 Refrigerant Piping

- 9.5.1 Refer to table E.

9.6 Steam

- 9.6.1 Refer to table C.

10. ACCEPTABLE CONTRACTORS

- 10.1 Insulation shall in all instances be applied by specialist "Insulation Contractors" and be of the highest standard. The Insulation contractor must be approved by Umgeni Water

A.1 CHILLED WATER (INLAND CONDITIONS)					
DIAMETER	Minimum R Value	MINIMUM THICKNESS/ THERMAL CONDUCTIVITY			LOCATION/FINISH
	m ² K/W	0.038 – 0.05	0.034 – 0.038	0.022 – 0.024	
15-50	0.5	25	19	15	Refer to section 04 clause 8 Concealed – Vapour Barrier Exposed - 0.5mm galvanised sheet metal painted to an approved colour. External cladding arranged to shed water and all joints water tight. Tanks – 0.6 mm cladding.
65-80	0.66	40	25	20	
100 - 300	0.79	50	30	20	
>=350 "header"	1.32	100	50	50	
storage tanks	2.6	150	100	75	

A.2 CHILLED WATER (COASTAL CONDITIONS)					
DIAMETER	Minimum R Value	MINIMUM THICKNESS/ THERMAL CONDUCTIVITY			LOCATION/FINISH
	m ² K/W	0.038 – 0.05	0.034 – 0.038	0.022 – 0.024	
15 - 22	0.66	40	25	20	Refer to section 04 clause 8 Concealed – Vapour Barrier, Exposed - 0.5mm aluminium sheet metal painted to an approved colour. External cladding arranged to shed water and all joints water tight. Tanks – 0.6 mm cladding
25 - 40	0.79	40	30	20	
50 - 100	1.0	50	38	25	
150 - 300	1.32	N/A	50	40	
>=350	2.0	N/A	75	50	
Storage tanks	2.6	n/a	100	75	

B: HOT WATER						
DIAMETER	Minimum R Value	MINIMUM THICKNESS/ THERMAL CONDUCTIVITY			VAPOUR BARRIER	LOCATION/FINISH
	m ² K/W	0.038 – 0.05	0.034 – 0.038	0.022 – 0.024		
15 - 32	0.5	25	19	NA	None for interior and exterior	<i>Concealed – Canvas</i>
40 - 100	0.5	25	19	NA		Exposed - 0.5mm galvanised sheet metal painted to an approved colour. External cladding arranged to shed water and all joints water tight.
125 - 200	0.6	30	25	NA		
> 200	0.77	40	30	NA		

C: STEAM AND CONDENSATE RETURNS						
DIAMETER	Minimum R Value	MINIMUM THICKNESS/ THERMAL CONDUCTIVITY			VAPOUR BARRIER	LOCATION/FINISH
	m ² K/W	0.038 – 0.05	0.034 – 0.038	0.022 – 0.024		
15 - 32	0.66	25	25	NA	None for interior and exterior	<i>Concealed – Vapour Barrier</i>
40 - 100	0.79	40	30	NA		Exposed - 0.5mm galvanised sheet metal painted to an approved colour. External cladding arranged to shed water and all joints water tight.
125 - 200	1.0	50	40	NA		
≥ 200	1.6	80	60	NA		

D: EXTERNALLY INSULATED DUCTING (No internally insulated ducting will be accepted unless specifically approved by the Engineer)						
SIZE	Minimum R Value	MINIMUM THICKNESS/ THERMAL CONDUCTIVITY			VAPOUR BARRIER	LOCATION/FINISH
	m ² K/W	0.038 – 0.05	0.034 – 0.038	0.022 – 0.024		
All interior	0.5	25	19	12	Refer to section 04 clause 8	Concealed – Vapour Barrier Exposed – 0.6mm galvanised sheet metal painted to an approved colour. External cladding arranged to shed water and all joints water tight, or double skin with vapour barrier
All exterior	1.0	50	40	25		

E: REFRIGERANT PIPING						
SIZE	MINIMUM THICKNESS/ THERMAL CONDUCTIVITY			VAPOUR BARRIER		LOCATION/FINISH
	0.038 – 0.05	0.034 – 0.038	0.022 – 0.024			
≤ 100	NA	25 interior 30 exterior	15 interior 25 exterior	None inside	for	Concealed – Vapour Barrier Exposed – in GMS trunking
>100	NA	40	40	Refer to section 04 Clause 8 for outdoor installation		

F: EQUIPMENT SUBMISSION INFORMATION REQUIRED			
Item	Description	Minimum Requirement	Tendered
A	Signed off specification	Included	
B	The type of material/trademark of the material, volumetric mass in Kg/m ³ , operating range	Included	
C	The coefficient of thermal conductivity in W/m°C (stabilized over time)	To suit material and thickness	
D	Confirmed thickness of insulation	To suit material and k-value	
E	Coefficient of thermal expansion in mm per °C	To suit installation method statement	
F	Water/moisture absorption properties	Absorb <1% of weight in moisture	
G	Compressive strength	To suit material and thickness	
H	Confirm compliance with codes (section 2)	Complies fully	
I	Confirm compliance with fire specification (section 3)	Complies fully	
J	Confirm compliance with environmental specification (section 4)	Complies fully	
K	Minimum surface temperature in °C and confirmation that surface condensation will not occur.	To suit material and thickness	
L	Maximum surface temperature in °C	< 50°C	
M	Expected heat gain/loss to end of typical pipe/duct run	<2.5% of capacity for piping <10% of capacity for ducting	
N	Detailed installation method statement	Included	

SUBJECT: SOUND AND VIBRATION CONTROL

PART IV SECTION 05

The Subcontractor shall be responsible for the rectification of any excessive noise and/or vibration caused by the operation of the air conditioning and ventilation system installed under this subcontract.

The Subcontractor shall be responsible for the detail design of concrete inertia blocks, if required or specified, but such blocks will be provided by others.

The Subcontractor shall be responsible for the detailed selection and design of bases and isolator in conformance with the requirements specified in latest ASHRAE – Handbook-HVAC Applications – Section 48 - Noise and Vibration Control - Guide for Selection of Vibration Isolators.

1. ISOLATION OF MECHANICAL EQUIPMENT

- 1.1 All equipment shall be orientated or screened in such a way that maximum sound radiation patterns are directed so as to cause least disturbance.
- 1.2 All rotating machinery shall be balanced. The critical speed shall be at least 20% above the operating speed.
- 1.3 Vibration isolation mountings shall be provided for all vibration inducing equipment and associated pipe work and ducting. Mountings shall be installed in accordance with the manufacturer's instructions. However, the Subcontractor shall be responsible to ensure that amplitude of motion and vibration transmission will not exceed the specified limits.
- 1.4 Floor mounted equipment shall be erected on a concrete plinth, which shall protrude at least 25 mm above finished screeded floor level.
- 1.5 Isolators shall be selected to give both horizontal and vertical flexibility (compression and shear). The amplitude of motion due to operation of the supported equipment shall not exceed 3 mm.
- 1.6 Spring isolators shall be designed and installed in such a way that the ends of the springs are constricted to remain parallel during deflection. For stability, the outside diameter of springs shall be at least equal to their compressed height at rated load. Springs shall have a minimum additional travel to solid, equal to 20% of the rated deflection. Each spring mounting shall be set on 7 mm thick neoprene acoustical pads.
- 1.7 Ceiling mounted equipment must be provided with AV mountings as per suppliers instructions.

2. ISOLATION OF PIPING AND DUCTS

- 2.1 All connections to equipment shall be sufficiently flexible to prevent excessive strain to allow the equipment freedom to move and to prevent plant vibration being conducted. Initially, special flexible connection may be omitted in a piping system and use shall be made of natural flexibility of resilient hangers or mountings for vibration isolation. However, flexible connections shall be inserted and other necessary adjustments be made, at the Subcontractor's expense, should the need arise.
- 2.2 All ductwork and piping within 15 m from connected vibration-inducing equipment shall be hung on resilient hangers. The first four hanger supports shall be capable of supporting piping at a fixed elevation during installation and, in addition, shall have a secondary adjustment to transfer the load to the spring element within the mounting, after the system has been filled with water.
- 2.3 The Subcontractor may be required to disconnect the piping after the installation is completed to demonstrate that no strain is exerted at the connections to the equipment.
- 2.4 Noise suppressors shall be installed downstream of all steam pressure reducing valves.
- 2.5 Where piping and ductwork passes through walls, floors or ceilings or plantrooms, acoustical seals shall be employed to confine airborne noises to the inside of such rooms.

3. SOUND ATTENUATION

- 3.1 Sound attenuating units or treatment shall be provided as indicated and/or required to control the noise from air conditioning and ventilation systems to within the limits specified.

- 3.2 It should be noted that the provisions for sound attenuation shown on the Engineer's drawings (or the absence of same) are based on average published data for equipment noise and inherent attenuation. The Subcontractor shall, nevertheless produce his own calculations, and select isolators/isolating methods following a recognised certified method and Guidelines - ASHRAE Systems Volume Chapter 32 for noise levels in the areas specified for the sound power of the actual selected equipment, and provide additional silencing equipment and/or treatment if necessary.
- 3.3 To minimise the need for sound attenuation, fans shall be selected to operate near their maximum efficiency point when producing the required air quantity and static pressure.
- 3.4 Sound attenuators and acoustic treatment in ducts shall be fire, fungus and erosion proof.
- 3.5 "Package" attenuators shall normally be flanged for bolted connections, and flexible duct connectors shall be used as shown or required.
- 3.6 Attenuators shall have an air resistance not exceeding 75 Pa measured at sea level at maximum air quantity.
- 3.7 Attenuating material must be fixed, glued and covered to supplier's specification to prevent decay of material in air stream.
- 3.8 The attenuator entering face profile must be curved in order to reduce possibility of air noise and reduce pressure drop across attenuator.

4. NOISE MEASUREMENT

- 4.1 The Subcontractor shall submit sound pressure levels measured on the completion of the installation, detailing the sound pressure levels in dB (re: $2 \times 10^{-5} \text{N/m}^2$), for the seven International Standard Octave Bands measured by means of a sound meter in at least six (6) areas within the building, as selected by the Architect.
- 4.2 Measurements for sound pressure level data shall be taken by the Subcontractor, or at his expense by an approved organisation, under full or nearly full cooling and air flow conditions.

SUBJECT: LIFE CYCLE COST ADJUSTMENT FOR EQUIPMENT

PART IV SECTION 06

1. ENERGY CONSUMPTION AND MAINTENANCE COSTS

- 1.1 The annual cost of energy consumed and total annual maintenance and service costs are an essential input in the adjudication process to select the appropriate equipment/tender. The selection will be based on the lowest total life cycle cost for a 15 year period. The present day tender price which might be used in comparing the various tenders is based on the application of a present day cost formula which allocates the appropriate influence to:
- a. Initial Capital Cost.
 - b. Estimated Annual Electricity Costs.
 - c. The Annual Maintenance Costs.
 - d. The Average Interest Rate.
 - e. The Estimated Energy Costs Escalation Rate.
 - f. The Estimated Labour and Material Escalation Rate (Consumers Index).
- 1.2 Because initial cost is not the only determining factor, tenderers are advised to carefully consider energy efficiency and quality of equipment offered, if requested in the Schedules of Components and Equipment.