



DPW-23 (EC): SCHEDULE FOR IMPORTED MATERIALS AND EQUIPMENT

Project title:	Kimberley DPW: NPO: Additions to air conditioner system		
Tender no:	KIM 07/2022	Reference no:	19/2/4/2/2/2327/461

This schedule should be completed by the tenderer. (Attach additional pages if more space is required)

Item	Material / Equipment	Rand (R) (Excluding VAT)
1.		R
2.		R
3.		R
4.		R
5.		R
6.		R

The Contractor shall list imported items, materials and/or equipment which shall be excluded from the Contract Price Adjustment Provisions (if applicable) and shall be adjusted in terms of currency fluctuations only. Copies of the supplier's quotations for the items, materials or equipment (provided that such costs shall not be higher than the relevant contract rate as listed above) should be lodged with the Principal Agent / Engineer of the Department of Public Works and Infrastructure within 60 (sixty) days from the date of acceptance of the tender. No adjustment of the local VAT amount, nor the contractor's profit, discount, mark-up, handling costs, etc. shall be allowed.

These net amounts will be adjusted as follows:

FORMULA:

The net amount to be added to or deducted from the contract sum:

$$A = V \left(\frac{Z}{Y} - 1 \right)$$

A = the amount (R) of adjustment

V = the net amount (supplier's quotation) (R) of the imported item

Y = exchange rate at the closing date of tender submission

Z = exchange rate on the date of payment.

Name of Tenderer	Signature	Date



public works & infrastructure

Department:
Public Works and Infrastructure
REPUBLIC OF SOUTH AFRICA

PROCUREMENT DOCUMENTS

FOR

KIMBERLEY DPW : NPO: ADDITIONS TO AIR CONDITIONER SYSTEM

VOLUME THREE RETURNABLE DOCUMENTS

THE REGIONAL MANAGER
NATIONAL DEPARTMENT OF PUBLIC WORKS& INFRASTRUCTURE
OLD MAGISTRATE COURT
21-23 MARKET SQUARE
KIMBERLEY
8301

ENQUIRIES: MR L MOTLHALA
TEL: (053) 838 5200

NOVEMBER 2022

NAME OF TENDERER: _____

CIDB NO.: _____

CSD NO.: _____

VOLUME 3: THE CONTRACT

PART C1: AGREEMENT AND

CONTRACT DATA

C1.2 CONTRACT DATA

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VOLUME 3: THE CONTRACT

PART C1: AGREEMENT AND

CONTRACT DATA

C1.2 CONTRACT DATA

DPW-05: (EC) CONTRACT DATA- (GCC (2010)2nd EDITION: 2010)

Project title: Kimberley DPW: NPO: Additions to air conditioner system

Tender / Quotation no:	KIM 07/2022	WCS no:		Reference no:	19/2/4/2/2/2327/461
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	PART 1: DATA PROVIDED BY THE EMPLOYER
	CONDITIONS OF CONTRACT
	<p>The General Conditions of Contract for Construction Works, Second Edition, 2010, published by the South African Institution of Civil Engineering, Private Bag X200, Halfway House, 1685, is applicable to this Contract and is obtainable from www.saice.org.za</p> <p>Bidders to note that materials procured for the works should be from South African manufactures and suppliers. Imported materials shall only be considered under exceptional circumstances, based on compelling technical justifications, and subject to the approval by the NDPWI.</p>

CONTRACT SPECIFIC DATA

The following contract specific data, referring to the General Conditions of Contract for Construction Works, Second Edition, 2010, are applicable to this Contract:

CLAUSES	COMPULSORY DATA
1.1.1.8	<p>Amend Clause 1.1.1.8 to include the word "rights" to read as follows:</p> <p>"Contract Data" means the specific data which, together with these General Conditions of Contract, collectively describe the rights, risks, liabilities and obligations of the contracting parties and the procedures for the administration of the Contract.</p>
1.1.1.13	<p>Amend Clause 1.1.1.13 as follows, clarify when the defects liability period starts:</p> <p>"Defects Liability Period" means the period stated in the Contract Data, commencing on the date indicated on the Certificate of Completion or Certificates of Completion in the event of more than one Certificate of Completion is issued for different parts of the Works, during which the Contractor has both the right and the obligation to make good defects in the materials, Plant and workmanship covered by the Contract.</p> <p>Defects liability period is: 12 months.</p>
1.1.1.14 & 5.14.7	<p>The time for achieving Practical Completion of the whole of the works is: 12 months measured from the <u>Commencement</u> Date. The time thus stated includes special non-working days and the year-end break.</p> <p><u>or, if Practical Completion in portions is required,</u></p> <p>The times for achieving Practical Completion for the portions as set out in the Scope of Works are <i>mutatis mutandi</i>:</p> <p>For portion 1 within N/A</p> <p>For portion 2 within N/A</p> <p>For portion 3 within N/A</p>

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	For portion 4 within N/A <i>(followed by further portions as required)</i>
	The time for achieving Practical Completion of the whole of the Works is: 12 Months, measured from the Commencement Date. The time thus stated includes special non-working days and the year-end break.
1.1.1.15	The name of the Employer is: The Government of the Republic of South Africa in its Department of Public Works and Infrastructure.
1.1.1.16	The name of the Engineer is: Drewett Hubble & Pokorny Inc.
1.1.1.26	The Pricing Strategy is a: Re-measurement Contract.
1.1.1.31	Not applicable to this Contract.
1.1.1.35	Insert the definition of "Value of Works" as Clause 1.1.1.35: "Value of Works" means the value of the Works certified by the Engineer as having been satisfactorily executed and shall include the value of the works done, the value of the materials and/or plant and Contract Price Adjustments.
1.2.1.2	Employer's address: Physical Address: Department of Public Works Transvaal Road Kimberley, 8301 Postal Address: Private Bag X5002 Kimberley 8300 Facsimile: 053 838 5224 Telephone: 053 833 1153
	Engineer's address: Physical Address: 4 Hydro Park Milner Road, Welkom 9459 Postal Address: PO Box 72314 Parkview 2122 Facsimile: Telephone: 082 463 1141
1.3.4	Not applicable to this Contract.

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<p>1.3.5</p>	<p>Replace Clause 1.3.5 with the following provisions:</p> <ul style="list-style-type: none"> (a) The Employer will become the owner of the information, documents, advice, recommendation and reports collected, furnished and/or compiled by the Contractor during the course of, and for the purposes of executing this Contract, all of which will be handed over to the Employer on request, but in any event on the termination and/or cancellation of this Contract for whatever reason. The Contractor relinquishes its retention or any other rights thereon to which it may be entitled. (b) The copyright of all documents, recommendations and reports compiled by the Contractor during the course of and for the purposes of finalizing the Works will vest in the Employer, and may not be reproduced or distributed or made available to any person outside the Employer's service, or to any institution in any way, without the prior written consent of the Employer. The Employer shall have the right to use such material for any other purpose without the approval of information or payment to the Contractor. (c) The copyright of all electronic aids, software programmes etc. prepared or developed in terms of the Contract shall vest in the Employer, who shall have the right to use such material for any other purpose without the approval of, information or payment to the Contractor. (d) In case of the Contractor providing documents, electronic aids, software programs or like material to the Employer, the development of which has not been at the expense of the Employer, copyright shall not vest in the Employer. The Contractor shall be required to indicate to which documents, electronic aids, software programs or like material this provision applies. (e) The Contractor hereby indemnifies the Employer against any action, claim, damages or legal cost that may be instituted against the Employer on the grounds of an alleged infringement of any copyright, patents or any other intellectual property right in connection with the Works outlined in this Contract. (f) All information, documents, recommendations, programs and reports collected or compiled must be regarded as confidential and may not be communicated or made available to any person outside the Employer's service and may not be published either during the currency of this Contract or after termination thereof without the prior written consent of the Employer.
<p>3.1.3</p>	<p>1. The Engineer's authority to act and/or to execute functions or duties or to issue instructions are expressly excluded in respect of the following:</p> <ul style="list-style-type: none"> (a) Appointment of nominated Sub-contractors – clause 4.4.3; (b) Granting of an extension of time and/or ruling on claims associated with claims for extension of time – clauses 5.12.3, 10.1.5; (c) Acceleration of the rate of progress and determination of the cost for payment of such acceleration – clause 5.12.4; (d) Rulings on claims and disputes – clauses 10.1.5, 10.2.3 and 10.3.3; (e) Suspension of the Works – clause 5.11.1; (f) Final Payment Certificate – clause 6.10.9; (g) Issuing of <i>mora</i> notices to the Contractor – clauses 9.1.1, 9.1.2.1 and 9.2.1; (h) Cancellation of the contract between the Employer and Contractor – clauses 9.1.1, 9.1.2.1 and 9.2.1.



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	<p>2. In order to be legally binding and have legal bearing and consequence, any ruling in respect of the above matters (a) to (h) must be on an official document, signed and issued by the Employer to the Contractor.</p> <p>3. The Contractor must submit claims, demands, notices, notifications, updated particulars and reports in writing, as well as any other supporting documentation pertaining thereto, in respect of any of the above listed matters (a) to (h), to the Engineer within the time periods and in the format(s) as determined in the relevant clauses of the Conditions of Contract. Failing to deliver such to the Engineer timeous and in the correct format will invalidate any claim and the consequences of such failure will <i>mutatis mutandis</i> be as stated in clause 10.1.4.</p> <p>4. Clauses 6.10.9 and 10.1.5 shall be amended as follows to indicate the limitation on the Engineer's authority in respect thereof:</p> <p>Clause 6.10.9 – Amend to read as follows:</p> <p>Within 14 days of the date of final approval as stated in the Final Approval Certificate, the Contractor shall deliver to the Engineer a final statement claiming final settlement of all moneys due to him (save in respect of matters in dispute, in terms of Clauses 10.3 to 10.11, and not yet resolved). The Employer shall within 14 days issue to the Contractor a Final Payment Certificate the amount of which shall be paid to the Contractor within 28 days of the date of such certificate, after which no further payments shall be due to the Contractor (save in respect of matters in dispute, in terms of Clauses 10.3 to 10.11 and not yet resolved).</p> <p>Clause 10.1.5 – Amend to read as follows:</p> <p>Unless otherwise provided in the Contract, the Employer shall, within 28 days after the Contractor has delivered his claim in terms of Clause 10.1.1 as read with Clause 10.1.2, deliver to the Contractor his written and adequately reasoned ruling on the claim (referring specifically to this Clause). The amount thereof, if any, allowed by the Employer shall be included to the credit of the Contractor in the next payment certificate.</p> <p>5. Insert the following under 3.1.3: Provided that, notwithstanding any provisions to the contrary in the Contract, the Employer shall have the right to reverse and, should it deem it necessary, to amend any certificate, instruction, decision or valuation of the Engineer and to issue a new one, and such certificate instruction, decisions or valuations shall for the purposes of the Contract be deemed to be issued by the Engineer, provided that the Contractor shall be remunerated in the normal manner for work executed in good faith in terms of an instruction issued by the Engineer and which has subsequently been rescinded.</p>
3.2.2.1	<p>Amend Clause 3.2.2.1 to insert the word "Plant" to read as follows:</p> <p>Observe the execution of the Works, examine and test material, Plant and workmanship, and receive from the Contractor such information as he shall reasonably require.</p>
3.2.3.2	<p>Amend Clause 3.2.3.2 to insert the word "Plant" to reads as follows:</p> <p>Notwithstanding any authority assigned to him in terms of Clauses 3.2.2 and 3.2.4, failure by the Engineer's Representative to disapprove of any work, workmanship, Plant or materials shall not prejudice the power of the Engineer thereafter to disapprove thereof and exercise any of his powers in terms of the Contract in respect of thereof.</p>
4.8.2.1	<p>Amend Clause 4.8.2.1 to include the word "person", as follows:</p> <p>Makes available to the Employer, or to any such contractor, person or authority, any roads or ways for the maintenance of which the Contractor is responsible, or</p>

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4.8.2.2	Amend Clause 4.8.2.2 to include "Employer" and "contractors", as follows: Provides any other facility or service of whatsoever nature to the Employer or to any of the said contractors, persons or authorities,
5.3.1	The documentation required before commencement with Works execution are: Health and Safety Plan (Refer to Clause 4.3) Initial programme (Refer to Clause 5.6) Security (Refer to Clause 6.2) Insurance (Refer to Clause 8.6)
5.3.2	The time to submit the documentation required before commencement with Works execution is: 21 days.
5.4.2	The access to, and possession of, the Site referred to in Clause 5.4.1 shall be exclusive to the Contractor. In the event of access to, and possession of, the Site is not exclusive to the Contractor, the following limitations apply:
5.8.1	The non-working days are: Saturdays and Sundays The special non-working days are: (1) Public Holidays; (2) The year-end break commencing on 16 December until the Sunday preceding the first working Monday of January of the succeeding year.
5.9.1	Amend Clause 5.9.1 as follows: On the Commencement Date, the Engineer shall deliver to the Contractor three (3) copies, at no cost to the Contractor, of the drawings and any instructions required for the commencement of the Works. The cost of any additional copies of such drawings and/or instructions, as may be required by the Contractor, will be for the account of the Contractor.
5.13.1	The penalty for failing to complete the Works is: R5 060,00 per day <u>or, if completion in portions is required,</u> The penalty for failing to complete portion 1 of the Works is: R per day. The penalty for failing to complete portion 2 of the Works is: R per day. The penalty for failing to complete portion 3 of the Works is: R per day. The penalty for failing to complete portion 4 of the Works is: R per day. <i>Followed by further portions as required.</i> The penalty for failing to complete the whole of the works is: R5 060,00 per day.

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5.14.1	<p>Amend the second paragraph of Clause 5.14.1 as follows:</p> <p>When the Works are about to reach the said stage, the Contractor shall, in writing, request a Certificate of Practical Completion and the Engineer shall, within 14 days after receiving such request, issue to the Contractor a written list setting out the work to be completed to justify Practical Completion. Should the Engineer not issue such a list within the 14 days, the Contractor shall notify the Employer accordingly. Should the Employer not issue such a list within 7 days of receipt of such notice, Practical Completion shall be deemed to have been achieved on the 14th day after the contractor requested the Certificate of Practical Completion.</p>
5.16.1	<p>Amend Clause 5.16.1 to delete the proviso in the third paragraph of this clause.</p>
5.16.2	<p>Amend Clause 5.16.2 as follows:</p> <p>No certificate other than the Final Approval Certificate referred to in Clause 5.16.1 shall be deemed to constitute approval of the Works or shall be taken as an admission of the due performance of the Contract or any part thereof, nor of the accuracy of any claim made by the Contractor, nor shall any other certificate exclude or prejudice any of the powers of the Engineer and/or the Employer.</p>
5.16.3	<p>The latent defect period for all works is: 5 years.</p>
6.2.1	<p>The type of security for the due performance of the Contract, as selected by the Contractor in the Contract Data, must be delivered to the Employer.</p>
6.2.3	<p>Amend Clause 6.2.3 as follows:</p> <p>If the Contractor has selected a performance guarantee as security, he shall ensure that it remains valid and enforceable as required in terms of the Contract.</p>
6.5.1.2.3	<p>The percentage allowance to cover overhead charges is:</p> <p>33%, except on material cost where the percentage allowance is 10%.</p>
6.8.2	<p>Contract Price Adjustment (CPA) will be applicable: No.</p> <p>If CPA is indicated as "Yes" above the value of payment certificates is to be adjusted by a Contract Price Adjustment Factor:</p> <p>The value of the certificates issued shall be adjusted in accordance with the Contract Price Adjustment Schedule with the following values:</p> <p>The value of "x" is 0.15.</p> <p>The values of the coefficients are:</p> <p>a = 0.25. (Labour) b = 0.3 (Contractor's equipment) c = 0.3 (Material) d = 0.15 (Fuel)</p> <p>The values of the coefficients for "Repair and Maintenance Project" (RAMP) contracts are:</p> <p>a = 0.35 (Labour) b = 0.20 (Contractor's equipment) c = 0.35 (Material) d = 0.10 (Fuel)</p>



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6.8.2	<p>The urban area nearest the Site is Kimberley. (Select urban area from Statistical News Release, P0141, Table 7.1.)</p> <p>The applicable industry for the Producer Price Index for materials is NA. (Select the applicable industry from Statistical News Release, P01421, Table 11.)</p> <p>The area for the Producer Price Index for fuel is NA. (Select the area from Statistical News Release, P01421, Table 12.)</p> <p>The base month is 20 .(The month prior to the closing of the tender.)</p>
6.8.3	Price adjustments for variations in the costs of special materials are not allowed.
6.10.1.5	The percentage advance on materials not yet built into the Permanent Works is: 85 % .
6.10.3	The limit of retention money is dependent on the security to be provided by the Contractor in terms of Clause 6.2.1.
6.10.5	<p>Replace Clause 6.10.5 with the following:</p> <p><u>In respect of contracts up to R2 million and in respect of contracts above R2 million where the Contractor elects a security by means of a 10% retention, 50% of the retention shall be released to the Contractor when the Engineer issues the Certificate of Completion in terms of clause 5.14.4. The remaining 50% of the retention shall be released in accordance with the provisions of the conditions of contract and will become due and payable when the Contractor becomes entitled, in terms of Clause 5.16.1, to receive the Final Approval Certificate.</u></p> <p><u>In respect of contracts above R2 million, where the Contractor elects a security by means of a cash deposit or fixed guarantee of 5% of the Contract Sum (excl. VAT) and a 5% retention of the Value of the Works (excl. VAT), the cash deposit or fixed guarantee, whichever is applicable, shall be refunded to the Contractor or return to the guarantor, respectively, when the Engineer issues the Certificate of Completion in terms of Clause 5.14.4. The 5% retention of the Value of the Works (excl. VAT) shall become due and payable when the Contractor becomes entitled, in terms of Clause 5.16.1, to receive the Final Approval Certificate.</u></p> <p><u>In respect of contracts above R2 million, where the Contractor elects a security by means of a cash deposit or a variable guarantee of 10% of the Contract Sum (excl. VAT), the cash deposit or the variable guarantee, whichever is applicable, will be reduced to 5% of the Value of the Works (excl. VAT) when the Engineer issues the Certificate of Completion in terms of Clause 5.14.4. The balance of the cash deposit shall become due and payable or the variable guarantee shall expire when the Contractor becomes entitled in terms of Clause 5.16.1 to receive the Final Approval Certificate.</u></p>
7.9.1	<p>Insert the following at the end of Clause 7.9.1:</p> <p>Provided that, should the Contractor on demand not pay the amount of such costs to the Employer, such amount may be determined and deducted by the Employer from any amount due to or that may become due to the Contractor under this or any other previous or subsequent contract between the Contractor and the Employer.</p>
8.2.2.1	<p>Insert the following as a second paragraph to Clause 8.2.2.1:</p> <p>The Contractor shall at all times proceed immediately to remove or dispose of any debris arising from damage to or destruction of the Works and to rebuild, restore, replace and/or repair the Works, failing which the Employer may cause same to be done and recover the reasonable costs associated therewith from the Contractor.</p>

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8.4.3	<p>Insert a new Clause 8.4.3 as follows:</p> <p>The Contractor shall on receiving a written instruction from the Engineer immediately proceed at his own cost to remove or dispose of any debris and to rebuild, restore, replace and/or repair such property and to execute the Works.</p>
8.6.1.1.1	Amend Clause 8.6.1.1.1 to read as follows:Contract Sum plus 10%.
8.6.1.1.2	The value of Plant and materials supplied by the Employer to be included in the insurance sum is: Nil
8.6.1.1.3	The amount to cover professional fees for repairing damage and loss to be included in the insurance sum is: Nil
8.6.1.3	<p>Amend Clause 8.6.1.3 to delete reference to limit of indemnity, to read as follows:</p> <p>Liability insurance that covers the Contractor against liability for the death of, or injury to any person, or loss of, or damage to any property (other than property while it is insured in terms of Clause 8.6.1.1) arising from or in the course of the fulfillment of the Contract, from the Commencement Date to the date of the end of the Defects Liability Period, if there is one, or otherwise to the issue of the Certificate of Completion.</p>
8.6.1.5	<p>1. Public liability insurance to be effect by the Contractor to a minimum value of:</p> <p><input type="checkbox"/> R5 million</p> <p>or</p> <p><input type="checkbox"/> R</p> <p>With a deductible not exceeding 5% of each and every claim.</p> <p>2. Support insurance is to be effected by the Contractor to a minimum value of:</p> <p>R</p> <p>With a deductible not exceeding 5% of each and every claim.</p>
8.6.5	<p>Amend Clause 8.6.5 as follows:</p> <p>Save as otherwise provided in the Contract Data, the insurances referred to in Clause 8.6.1 shall be effected with an insurance company registered in the Republic of South Africa. The Contractor shall submit the insurance policy to the Employer for approval, if so requested.</p>
8.6.7	<p>Amend Clause 8.6.7 as follows:</p> <p>If the Contractor fails to effect and keep in force any of the insurances referred to in Clause 8.6.1, the Employer may cancel the Contract in terms of Clause 9.2.</p>
8.6.8	<p>Insert a new Clause 8.6.8 in provide for high risk insurance for projects executed on areas classified as "High Risk Areas".</p> <p>HIGH RISK INSURANCE</p> <p>In the event of the project being executed in a geological area classified as a "High Risk Area", that is an area which is subject to highly unstable subsurface conditions that might result in catastrophic ground movement evident by sinkhole or doline formation the following will apply:</p>



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8.6.8	<p>(1) Damage to the Works The Contractor shall, from the date of Commencement of the Works until the date of the Certificate of Completion, bear the full risk of and hereby indemnifies and holds harmless the Employer against any damage to and/or destruction of the Works consequent upon a catastrophic ground movement as mentioned above. The Contractor shall take such precautions and security measures and other steps for the protection of the Works as he may deem necessary.</p> <p>When so instructed to do so by the Engineer, the Contractor shall proceed immediately to remove and/or dispose of any debris arising from damage to or destruction of the Works and to rebuild, restore, replace and/or repair the Works, at the Contractor's own costs.</p> <p>(2) Injury to Persons or Loss of or damage to Properties The Contractor shall be liable for and hereby indemnifies and holds harmless the Employer against any liability, loss, claim or proceeding arising during the Contract Period whether arising in common law or by Statute, consequent upon personal injuries to or the death of any person whomsoever resulting from, arising out of or caused by a catastrophic ground movement as mentioned above.</p> <p>The Contractor shall be liable for and hereby indemnifies the Employer against any and all liability, loss, claim or proceeding consequent upon loss of or damage to any moveable, or immovable or personal property or property contiguous to the Site, whether belonging to or under the control of the Employer or any other body or person whomsoever arising out of or caused by a catastrophic ground movement, as mentioned above, which occurred during the Contract Period.</p> <p>(3) It is the responsibility of the Contractor to ensure that he has adequate insurance to cover his risk and liability as mentioned in Clauses 8.6.8(1) and 8.6.8 (2) above. Without limiting his obligations in terms of the Contract, the Contractor shall, within 21 days of the Commencement Date and before Commencement of the Works, submit to the Employer proof of such insurance policy, if requested to do so.</p> <p>(4) The Employer shall be entitled to recover any and all losses and/or damages of whatever nature suffered or incurred consequent upon the Contractor's default of his obligations as set out in Clauses 8.6.8 (1), 8.6.8 (2) and 8.6.8 (3). Provided that, should the Contractor on demand not pay the amount of such costs to the Employer, such amount may be determined and deducted by the Employer from any amount due to or that may become due to the Contractor under this or any other existing or subsequent contract between the Contractor and the Employer.</p>
9.1.4	<p>Amend Clause 9.1.4 as follows:</p> <p>In the circumstances referred to in Clauses 9.1.1, 9.1.2 or 9.1.3 (provided that the circumstances in 9.1.3 is not due to the fault of the Contractor, his employees, contractors or agents), and whether or not the Contract is terminated under the provisions of this Clause, the Contractor shall be entitled to payment of any increased cost of or incidental to the execution of the Works which is specifically attributable to, or consequent upon the circumstances defined in Clauses 9.1.1, 9.1.2 or 9.1.3;</p>
9.1.5	<p>Amend Clause 9.1.5 as follows:</p> <p>If the Contract is terminated on any account in terms of this Clause (provided that the circumstances in 9.1.3 is not due to the fault of the Contractor, his employees, contractors or agents), the Contractor shall be paid by the Employer (insofar as such amounts or items have not already been covered by payments on account made to the Contractor) for all measured work executed prior to the date of termination, the amount (without retention), payable in terms of the Contract and, in addition:</p>
9.1.6	<p>This Clause is not applicable to this Contract.</p>

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9.2.1.3.8	<p>Insert a new Clause 9.2.1.3.8 as follows:</p> <p>Has failed to effect and keep in force any of the insurances referred to in Clause 8.6.1,</p>
9.2.4	<p>Insert a new Clause 9.2.4 as follows, to provide for unilateral termination by the Employer:</p> <p>The Employer shall be entitled at any time to unilaterally terminate or cancel this Contract or any part thereof. Save for the following, the Contractor shall not be entitled to claim any other amounts whatsoever in respect of such termination or cancellation of this Contract. The Employer shall be obliged to pay the Contractor as damages and/or loss of profit the lesser of:</p> <p>9.2.4.1 An amount not exceeding 10% of the Contract Sum;</p> <p>9.2.4.2 10% of the value of incomplete work; or</p> <p>9.2.4.3 The Contractor's actual damage or loss as determined by the Employer after receipt of evidence substantiating any such damage or loss.</p>
9.3.2.2	<p>Amend Clause 9.3.2.2 as follows to delete the proviso on lien:</p> <p>The ownership of Plant and unused materials brought onto the Site by the Contractor, and for which the Employer has not made any payment, shall revert to the Contractor and he shall, with all reasonable dispatch, remove from the Site such Plant, materials and all Construction Equipment and Temporary Works.</p>
9.3.3	<p>Insert the following at the end of Clause 9.3.3</p> <p>After cancellation of the Contract by the Contractor, the Contractor, when requested by the Employer to do so, shall not be entitled to refuse to withdraw from the Works on the grounds of any lien or a right of retention or on the grounds of any other right whatsoever.</p>
10.1.3.1	<p>Amend Clause 10.1.3.1 as follows to insert the word "Plant":</p> <p>All facts and circumstances relating to the claims shall be investigated as and when they occur or arise. For this purpose, the Contractor shall deliver to the Engineer, records in a form approved by the Engineer, of all the facts and circumstances which the Contractor considers relevant and wishes to rely upon in support of his claims, including details of all Construction Equipment, labour, Plant and materials relevant to each claim. Such records shall be submitted promptly after the occurrence of the event giving rise to the claim.</p>
10.1.6	<p>Insert a new Clause 10.1.6 as follows:</p> <p>If the Employer fails to give his ruling within the period referred to in Clause 10.1.5 he shall be deemed to have given a ruling dismissing the claim.</p>
10.2.1	<p>Amend Clause 10.2.1 as follows:</p> <p>In respect of any matter arising out of or in connection with the Contract, which is not required to be dealt with in terms of Clause 10.1 or which does not require the decision or ruling of the Employer, the Contractor or the Employer shall have the right to deliver a written dissatisfaction claim to the Engineer. This written claim shall be supported by particulars and substantiated.</p>
10.2.2	<p>Amend Clause 10.2.2 as follows:</p> <p>If, in respect of any matter arising out of or in connection with the Contract, which is not required to be dealt with in terms of Clause 10.1 or which does not require the decision or ruling of the Employer, the Contractor or the Employer fails to submit a claim within 28 days after the cause of dissatisfaction, he shall have no further right to raise any dissatisfaction on such matter.</p>

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10.3.2	Amend Clause 10.3.2 as follows to replace "adjudication" with "court": If either party shall have given notice in compliance with Clause 10.3.1, the dispute shall be referred to court proceedings in terms of Clause 10.8, unless amicable settlement is contemplated.
10.3.3	Replace "Engineer" with "Employer".
10.4.2	Amend Clause 10.4.2 as follows to provide for submission to court: If the other party rejects the invitation to amicable settlement in writing or does not respond in writing to the invitation with 14 days, or amicable settlement is unsuccessful, either party may submit the dispute to court.
10.4.4	Amend Clause 10.4.4 to delete reference to "adjudication" and "arbitration" to read as follows: Save for reference to any portion of any settlement or decision which has been agreed to be final and binding on the parties, no reference shall be made by or on behalf of either party in any subsequent court proceedings, to any outcome of an amicable settlement, or to the fact that any particular evidence was given, or to any submission, statement or admission made in the course of the amicable settlement.
10.5 10.6 &10.7	The entire provisions of these Clauses are not applicable to this Contract.
10.10.3	Amend Clause 10.10.3 as follows to reword and remove reference to "arbitrator": The court shall have full power to open up, review and revise any ruling, decision, order, instruction, certificate or valuation of the Engineer and Employer and neither party shall be limited in such proceedings before such court to the evidence or arguments put before the Engineer or Employer for the purpose of obtaining his ruling.

CONTRACT PARTICIPATION GOAL TARGETS AND CIDB B.U.I.L.D. PROGRAMME

The contractor shall achieve in the performance of the contract the following Contract Participation Goals (CPGs) as described in PG-01.2 (EC): Scope of Work and PG-02.2 (EC): Pricing Assumptions and in accordance with the feasibility study, which forms part of the specifications in the CPG Section of the Specification of this contract.

(a)	Minimum 30% mandatory Subcontracting to SMMEs in accordance with the Preferential Procurement Policy Framework Act, 2000: Preferential Procurement Regulations, 2017 as published in the Government Gazette Notice No. 40553 of 20 January 2017– Condition of Tender.	<i>Not applicable</i>
(b)	Minimum Targeted Local Manufacturers of Material Contract Participation Goal, in accordance with the cidb Standard for Contract Participation Goals for Targeting Enterprises and Labour through Construction Works Contracts as published in the Government Gazette Notice No. 41237 of 10 November 2017, as amended in cidb Best Practice Project Assessment Scheme Notice No. 43726 of 18 September 2020 – Condition of Contract.	<i>Not applicable</i>



(c)	Minimum Targeted Local Building Material Suppliers Contract Participation Goal in accordance with the cidb Standard for Contract Participation Goals for Targeting Enterprises and Labour through Construction Works Contracts as published in the Government Gazette Notice No. 41237 of 10 November 2017, as amended in cidb Best Practice Project Assessment Scheme Notice No. 43726 of 18 September 2020 – Condition of Contract.	Not applicable
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(d)	Minimum Targeted Local Labour Skills Development Contract Participation Goal in accordance with the cidb Standard for Contract Participation Goals for Targeting Enterprises and Labour through Construction Works Contracts as published in the Government Gazette Notice No. 41237 of 10 November 2017, as amended in cidb Best Practice Project Assessment Scheme Notice No. 43726 of 18 September 2020 – Condition of Contract.	Not applicable
(e)	cidb BUILD Programme: Minimum Targeted Enterprise Development Contract Participation Goal in accordance with the cidb Standard for Indirect Targeting for Enterprise Development through Construction Works Contracts, No 36190 Government Gazette, 25 February 2013, as amended in cidb Best Practice Project Assessment Scheme Notice No. 43726 of 18 September 2020 – Condition of Contract.	Not applicable
(f)	cidb BUILD Programme: Minimum Targeted Contract Skills Development Goal in accordance with the cidb Standard for Developing Skills through Infrastructure Contracts as published in the Government Gazette Notice No. 43495 of 3 July 2020, as amended in cidb Best Practice Project Assessment Scheme Notice No. 43726 of 18 September 2020 as amended in cidb Best Practice Project Assessment Scheme Notice No. 43726 of 18 September 2020 – Condition of Contract.	Not applicable
(g)	DPWI National Youth Service training and development programme (NYS) – Condition of Contract.	Not applicable
(h)	Labour Intensive Works – Condition of Contract.	Not applicable
(i)		Not applicable
(j)		Not applicable



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	PART 2: DATA PROVIDED BY THE BIDDER
1.1.1.9	The name of the Bidder is: _____
1.2.1.2	<p>The address of the Bidder is:</p> <p>Postal address:</p> <p>_____</p> <p>_____</p> <p>_____ Postal Code: _____</p> <p>Tel: _____ Fax: _____</p> <p>TAX / VAT Registration No: _____</p> <p>Physical address:</p> <p>_____</p> <p>_____</p> <p>_____ Postal Code: _____</p> <p>E-mail address: _____</p>
6.2.1	<p>The security to be provided by the Contractor shall be one of the following:</p> <p>(a) Cash deposit of 10 % of the Contact Sum(excl. VAT) <input type="checkbox"/> YES or <input type="checkbox"/> NO</p> <p>(b) Variable performance guarantee of 10 % of the Contract Sum (excl. VAT) <input type="checkbox"/> YES or <input type="checkbox"/> NO</p> <p>(c) Retention of 10 % of the value of the Works(excl. VAT) <input type="checkbox"/> YES or <input type="checkbox"/> NO</p> <p>(d) Cash deposit of 5 % of the Contract Sum (excl. VAT) plus retention of 5 % of the value of the Works(excl. VAT) <input type="checkbox"/> YES or <input type="checkbox"/> NO</p> <p>(e) Performance guarantee of 5 % of the Contract Sum (excl. VAT) plus retention of 5 % of the value of the Works(excl. VAT) <input type="checkbox"/> YES or <input type="checkbox"/> NO</p> <p>NB: Guarantees submitted must be issued by either an insurance company duly registered in terms of the Insurance Act [Long-Term Insurance Act, 1998 (Act 52 of 1998) or Short-Term Insurance Act, 1998 (Act 53 of 1998)] or by a bank duly registered in terms of the Banks Act, 1990 (Act 94 of 1990) on the pro-forma referred to above. No alterations or amendments of the wording of the pro-forma will be accepted.</p>

PART C2: PRICING DATA
C2.1 PRICING INSTRUCTIONS

PG-02.1 (EC) PRICING ASSUMPTIONS – GCC (2010) 2nd Edition 2010

Project title:	<i>Kimberley DPW: NPO: Additions to air conditioner system</i>		
Tender / Quotation no:	<i>KIM 07/2022</i>	Reference no:	<i>19/2/4/2/2/2327/461</i>

C2.1 Pricing Assumptions

C2.1.1 GENERAL

The Bill of Quantities forms part of the Contract Documents and must be read and priced in conjunction with all the other documents comprising the Contract Documents, which include the Conditions of Tender, Conditions of Contract, the Specifications (including the Project Specification) and the Drawings.

C2.1.2 DESCRIPTION OF ITEMS IN THE SCHEDULE

The Bill of Quantities has been drawn up generally in accordance with Civil Engineering Quantities 1990 issued by the SA Institution of Civil Engineers.

The short descriptions of the items in the Bill of Quantities are for identification purposes only and the measurement and payment clause of the Standardized Specifications and the Particular Specifications, read together with the relevant clauses of the Project Specification and directives on the drawings, set out what ancillary or associated work and activities are included in the rates for the operations specified.

C2.1.3 QUANTITIES REFLECTED IN THE SCHEDULE

The quantities given in the Bill of Quantities are estimates only, and subject to remeasuring during the execution of the work. The Contractor shall obtain the Engineer's detailed instructions for all work before ordering any materials or executing work or making arrangements for it.

The Works as finally completed in accordance with the Contract shall be measured and paid for as specified in the Bill of Quantities and in accordance with the General and Special Conditions of Contract, the Specifications and Project Specifications and the Drawings. Unless otherwise stated, items are measured net in accordance with the Drawings, and no allowance has been made for waste.

The validity of the contract will in no way be affected by differences between the quantities in the Bill of Quantities and the quantities finally certified for payment.

C2.1.4 PROVISIONAL SUMS

Where Provisional sums or Prime Cost sums are provided for items in the Bill of Quantities, payment for the work done under such items will be made in accordance with Clause 45 of the General Conditions of Contract 2004. The Employer reserves the right, during the execution of the works, to adjust the stated amounts upwards or downwards according to the work actually done under the item, or the item may be omitted altogether, without affecting the validity of the Contract.

The Tenderer shall not under any circumstances whatsoever delete or amend any of the sums inserted in the "Amount" column of the Bill of Quantities and in the Summary of the Bill of Quantities unless ordered or authorized in writing by the Employer before closure of tenders. Unauthorized changes made by the Tenderer to provisional items in the Bill of Quantities, or to the provisional percentages and sums in the Summary of the Bill of Quantities will lead to the disqualification of the Tenderer.

C2.1.5 PRICING OF THE BILL OF QUANTITIES

The **bills of quantities / lump sum document** forms part of and must be read and priced in conjunction with all the other documents forming part of the **contract documents**, the Standard Conditions of Tender, Conditions of Contract, Specifications, Drawings and all other relevant documentation.

The prices and rates to be inserted by the Tenderer in the Bill of Quantities shall be the full inclusive prices to be paid by the Employer for the work described under the several items, and shall include full compensation for all cost and expenses that may be required in and for the completion and maintenance during the defects liability period of all the work described and as shown on the drawings as well as all overheads, profits, incidentals and the cost of all general risks, liabilities and obligations set forth or implied in the documents on which the Tender is based.

Each item shall be priced and extended to the "Total" column by the Tenderer, with the exception of the items for which only rates are required, or items which already have Prime Cost or Provisional Sums affixed thereto. If the Contractor omits to price any items in the Bill of Quantities, then these items will be considered to have a nil rate or price.

The Tenderer is required to check the Bills of Quantities and the numbers of the pages and should any be found to be missing or in duplicate, or should any of the typing be indistinct, or any doubt of obscurity arise as to the meaning of any description or particulars of any item, or if this Tender Enquiry contains any obvious errors, then the Tenderer must immediately inform the Principal Agent and have them rectified or explained in writing as the case may be. No liability whatsoever will be admitted by reason of the Contractor having failed to comply with the foregoing instruction.

No alterations, erasures, omissions or additions is to be made in the text and/or conditions of these Bills of Quantities. Should any such alterations, amendments, note/s or addition be made, the same will not be recognized, but reading of these Bills of Quantities as originally prepared by the Quantity Surveyor will be adhered to.

The contractor is cautioned that the use of any quantities appearing in these Bills of Quantities for the purpose of ordering material, it is done at own risk and no liability whatsoever will be admitted by the Employer or Quantity Surveyor for the correctness of such Quantities. Unless otherwise stated, items are measured net in accordance with the drawings, and no allowance is made for waste.

The prices and rates to be inserted by the Tenderer in the Bills of Quantities shall be the full inclusive prices to be paid by the Employer for the work described. Such prices and rates shall cover all costs and expenses that may be required in and for the execution of the work described, and shall cover the cost of all general risks, liabilities, and obligations set forth or implied in the documents on which the tender is based, as well as overhead charges and profit. Market related prices shall be inserted as these will be used as a basis for assessment of payment for additional work that may have to be carried out. The Employer reserves the right to balance the Bill rates where deemed necessary within the Tendered Amount.

A price or rate is to be entered against each item in the Bills of Quantities, whether the quantities are stated or not. An item against which no rate is/are entered, or if anything other than a rate or a nil rate (for example, a zero, a dash or the word "included" or abbreviations thereof) is entered against an item, it will also be regarded as a nil rate having been entered against that item, i.e. that there is no charge for that item. The Tenderer may be requested to clarify nil rates, or items regarded as having nil rates; and the Employer may also perform a risk analysis with regard to the reasonableness of such rates.

Should the full intent and meaning of any description not be clear, the bidder shall, before submission of his tender, call for a written directive from the principal agent, failing which it shall be assumed that the contractor has allowed in his pricing for materials and workmanship in terms of National Best Practice.

All items for which terminology such as "inclusive" or "not applicable" have been added by the Tenderer will be regarded as having a nil rate which shall be valid irrespective of any change in quantities during the execution of the Contract.

The Tenderer shall fill in rates for all items where the words "rate only" appear in the "Total" column. "Rate Only" items have been included where:

- (a) variations of specified components in the make-up of a pay item may be expected; and
- (b) no work under the item is foreseen at tender stage but the possibility that such work may be required is not excluded.

For ‘Rate Only’ items no quantities are given in the ‘Quantity’ column but the quoted rate shall apply in the event of work under this item being required. The Tenderer shall however note that in terms of the Tender Data the Tenderer may be asked to reconsider any such rates which the Employer may regard as unbalanced.

Descriptions in the Bills of Quantities are abbreviated and comply generally with those in the ‘PW 371’ and the principles contained in the latest version of the SANS 1200 in South Africa. It is the intention that the abbreviated descriptions be fully described when read with the applicable measuring system and the relevant preambles and/or specifications. However, should the full intent and meaning of any description not be clear, the bidder shall, before submission of his tender, call for a written directive from the principal agent, failing which it shall be assumed that the contractor has allowed in his pricing for materials and workmanship in terms of National Best Practice.

The price quoted against each item of this Bills of Quantities shall cover the full inclusive cost of the complete work to which it refers, as described in the Conditions of Contract and Specifications and as shown on the Drawings and shall allow for labour, material, transporting, loading, storage, supervision, commissioning, wastage, as well as the builders profit and attendance.

The Tenderer must ensure that he fully completes all columns of the Bill of Quantities including the Final Summary. The fully priced bill of quantities must be submitted with the tender or The Final Summary and the Section Summary pages MUST be returned with the tender document as indicated the PA-03 Notice and Invitation to Tender / PA-04 Notice and Invitation for quotation.

The tenderers are to ensure that they have read and understood the project specifications included in C3: Scope of Work. All the information provided in the Scope of Works form part of the work and must be included in the rates.

‘The Contractor shall be deemed to have inspected and examined the Site and its surroundings and information available in connection therewith and to have satisfied himself before submitting his tender (as far as is practicable) as to:

- (a) the form and nature of the Site and its surroundings, including subsurface conditions,
- (b) the hydrological and climatic conditions,
- (c) the extent and nature of work and materials necessary for the execution and completion of the Works,
- (d) the means of access to the Site and the accommodation he may require

and, in general, shall be deemed to have obtained all information (as far as is practicable) as to risks, contingencies and all other circumstances which may influence or affect his Tender’

C2.1.6 VALUE ADDED TAX

The **contract sum** must include for Value Added Tax (VAT). All rates, provisional sums, etc. in the **bills of quantities / lump sum document** shall be in Rands and cents and shall include all levies and taxes (other than VAT). VAT will be added in the summary of the Bill of Quantities. The rates must however be net (exclusive of VAT) with VAT calculated and added to the total value thereof in the Final Summary. All rates and amounts quoted in the Bill of Quantities

C2.1.7 CORRECTION OF ENTRIES

Incorrect entries shall not be erased or obliterated with correction fluid but must be crossed out neatly. The correct figures must be entered above or adjacent to the deleted entry, and the alteration must be initialled by the Tenderer.

C2.1.8 ARITHMETICAL ERRORS

Arithmetical errors found in the Bill of Quantities as a result of faulty multiplication of addition, will be corrected by the Engineer at the tender evaluation stage, as set out in the Tender Data.

C2.1.9 CONTRACT DOCUMENTS

The Tenderers are advised to examine the bills of quantities, drawings and specifications including all other contract documents and make themselves thoroughly acquainted with the nature and requirements of the work, as no claim for extra payment in this regard will be entertained. Should any parts of the drawings not be clearly intelligible to the Tender, he must, before submitting his tender, obtain clarification from the Principal Agent.

C2.1.10 UNITS OF MEASUREMENT

The units of measurement described in the Bill of Quantities are metric units for which the standard international abbreviations are used. Non-standard abbreviations which may appear in the Bill of Quantities are as follows:

No.	=	Number
%	=	Percent
Sum	=	Lump sum
PCsum	=	Prime cost sum
Prov sum	=	Provisional sum
m ³ .km	=	Cubic metre - kilometre
Km-pas	=	kilometre - pass
m ² .pass	=	square metre – pass

C2.1.11 TRADE NAMES

Tenderers attention is drawn to the fact that wherever trade names or references to any catalogue have been made in these Bills of Quantities, it is purely to establish a standard for the required material. If use is made of any other equally approved material in lieu of the prescribed trade name or catalogue, the necessary price adjustments will be made.

C2.1.12 CONTRACT DOCUMENTS

The Tenderers are advised to examine the bills of quantities, drawings and specifications including all other contract documents and make themselves thoroughly acquainted with the nature and requirements of the work, as no claim for extra payment in this regard will be entertained. Should any parts of the drawings not be clearly intelligible to the Tender, he must, before submitting his tender, obtain clarification from the Principal Agent.

C2.1.13 PAYMENTS

Interim valuations and payments will be prepared on a monthly basis, all in terms of the conditions of contract.

The contractor is to note that no payment will be made for materials stored off site and in the case of materials being stored on site, payment will only be made for such materials on condition that they have not been delivered to the site prematurely, a tax invoice and proof of payment (ownership) is submitted by the Contractor.

C2.1.14 ACCOMMODATION ON SITE

It is imperative to note that no living quarters for construction workers on site will not be permitted for the full duration of the contract unless otherwise stated in the contract data or permission be granted by the Employer.

C2.1.15 LOCAL MATERIAL UTILISATION REPORT (LOCAL CONTENT)

Any reference to words "Bid" or Bidder" herein and/or in any other documentation shall be construed to have the same meaning as the words "Tender" or "Tenderer".
For Internal & External Use

Bidders to note that materials procured for the works should be from South African manufactures and suppliers. Imported materials shall only be considered under exceptional circumstances, based on compelling technical justifications, and subject to the approval by the NDPWI.

The contractor shall achieve in the performance of this contract the prescribed local content deliverables as listed in PA36 and annexures C thereto in the respective designated sectors as published by Department Trade Industry and Competition (DTIC). The Service Provider shall submit an accumulative monthly report to the Employer's representative indicating the percentage targets achieved which must be reconciled upon completion of the project and to form part of the final account.

The contractor shall be responsible for record keeping, documenting and submission of monthly local material utilization report with supporting documentation to the Employer's representative within 7 working days of the beginning of the successive month, in terms of DTI&C designated industry/sector/sub-sector schedule as per the PA36 and Annexures C attached to the tender document. The final percentage achievement to be reconciled upon completion of the project and form part of the final account.

C2.1.16 CONTRACT PARTICIPATION GOALS

The contractor shall achieve in the performance of this contract the following Contract Participation Goals (CPGs) as indicated below:

Provision for pricing of compliance with the achieving the CPGs is made in the Contract Participation Goal Section of the Bills of Quantities and it is explicitly pointed out that all requirements in respect of the aforementioned are deemed to be priced thereunder and no additional claims in this regard shall be entertained

Monthly progressive reports to be submitted to the Employer's representative indicating the percentage targets achieved which must be reconciled upon completion of the project and to form part of the final account.

C2.1.16.1 Minimum 30% Sub-contracting Contract Participation Goal

MINIMUM 30% MANDATORY SUBCONTRACTING TO SMMEs: IMPLEMENTATION OF PREFERENTIAL PROCUREMENT REGULATIONS 2017

30% Mandatory subcontracting is *insert "applicable" or "not applicable"* to this project.

Provision is made within the Contract Participation Goal section in the Bill of Quantities for thirty percent (30%) subcontracting to SMMEs in the execution of this project as described in PG-01.1 (EC) SCOPE OF WORKS C3.5.1. The contractor shall price his Profit and Attendance, all inclusive of associated costs to the contractor for implementation. Allowance must be made for submitting reports to the Employer's Representative on a monthly basis in terms of monthly and accumulative targets achieved with audited supporting documentation.

C2.1.16.2 MINIMUM TARGETED LOCAL BUILDING MATERIAL MANUFACTURERS CONTRACT PARTICIPATION GOAL

The Minimum Targeted Local Building Material Manufacturers CPG is *insert "applicable" or "not applicable"* to this project.

Provision is made within the Contract Participation Goal section in the Bill of Quantities for the Minimum Targeted Local Building Material Manufacturers CPG in the execution of this project as described in PG-01.1 (EC) SCOPE OF WORKS C3.5.2. The contractor shall price his Profit and Attendance, all inclusive of associated costs to the contractor for implementation. Allowance must be

made for submitting reports to the Employer's Representative on a monthly basis in terms of monthly and accumulative targets achieved with audited supporting documentation.

C2.1.16.3 MINIMUM TARGETED LOCAL BUILDING MATERIAL SUPPLIERS CONTRACT PARTICIPATION GOAL

The Minimum Targeted Local Building Material Suppliers CPG is *insert "applicable" or "not applicable"* to this project.

Provision is made within the Contract Participation Goal section in the Bill of Quantities for the Minimum Targeted Local Building Material Suppliers CPG in the execution of this project as described in PG-01.1 (EC) SCOPE OF WORKS C3.5.3. The contractor shall price his Profit and Attendance, all inclusive of associated costs to the contractor for implementation. Allowance must be made for submitting reports to the Employer's Representative on a monthly basis in terms of monthly and accumulative targets achieved with audited supporting documentation.

C2.1.16.4 MINIMUM TARGETED LOCAL LABOUR SKILLS DEVELOPMENT CONTRACT PARTICIPATION GOAL

The Minimum Targeted Local Labour Skills Development CPG is *insert "applicable" or "not applicable"* to this project.

Provision is made within the Contract Participation Goal section in the Bill of Quantities for the Minimum Targeted Local Labour Skills Development CPG in the execution of this project as described in PG-01.1 (EC) SCOPE OF WORKS C3.5.4. The contractor shall price his Profit and Attendance, all inclusive of associated costs to the contractor for implementation. Allowance must be made for submitting reports to the Employer's Representative on a monthly basis in terms of monthly and accumulative targets achieved with audited supporting documentation.

C2.1.16.5 CIDB BUILD PROGRAMME: MINIMUM TARGETED ENTERPRISE DEVELOPMENT: CONTRACT PARTICIPATION GOALS (CPG)

The Minimum Targeted Enterprise Development CPG is *insert "applicable" or "not applicable"* to this project.

A provisional amount has been allowed for within the Contract Participation Goal section in the Bill of Quantities for the Minimum Targeted Enterprise Development CPG in the execution of this project as described in PG-01.1 (EC) SCOPE OF WORKS C3.5.5. The provisional amount allowed is for the appointment of training coordinator, mentor, training service providers and training of the beneficiary enterprises.

The contractor shall price his Profit and Attendance, all inclusive of associated costs to the contractor for implementation. Allowance must be made for submitting reports to the Employer's Representative on a monthly basis in terms of monthly and accumulative targets achieved with audited supporting documentation.

The contractor shall complete a separate bill of quantities upon the award of the project and identification of the respective beneficiaries and the appointment of the training coordinator, mentor, training service providers of which the cost will be offset against the provisional amount allowed in the Bills of Quantities.

C2.1.16.6 CIDB BUILD PROGRAMME: MINIMUM TARGETED TARGETED CONTRACT SKILLS DEVELOPMENT GOALS (CSDG)

The Minimum Targeted Contract Skills Development CPG is *insert "applicable" or "not applicable"* to this project.

A provisional amount has been allowed for within the Contract Participation Goal section in the Bill of Quantities for the Minimum Targeted Skills Development CPG in the execution of this project as described in PG-01.1 (EC) SCOPE OF WORKS C3.5.6. The provisional amount allowed is for:

- stipends payable to the beneficiaries
- appointment of training coordinator
- appointment of mentor (where applicable)
- appointment of training service providers
- other additional costs as per table 3 of the Standard

The contractor shall price his Profit and Attendance (all inclusive of associated costs to the contractor for implementation and reporting), based on the provisional amount in the Contract Participation Goal section in the Bill of Quantities. The contractor shall complete a separate bill of quantities upon the award of the project and identification of the respective beneficiaries. The CPG value to be achieved will be based on the actual contract amount which will be offset against the provisional amount allowed for within the Contract Participation Goal section in the Bill of Quantities.

Allowance must be made for submitting reports to the Employer's Representative on a monthly basis in terms of monthly and accumulative targets achieved with audited supporting documentation.

Payment

The contractor shall upon the appointment of beneficiaries, provide a breakdown of all the associated costs. The contractor shall provide a payment schedule as to how the CPG costs will be claimed against for inclusion in the monthly payment certificates.

(a) Payment to the contractor to accommodate Part/Full Occupational qualification and Trade qualifications:

Should the contractor select Part/Full Occupational qualification and Trade qualifications learners, then the employer shall make provision for payment to the contractor as indicated in Table 3 of the Standard.

The contract skills participation goal, expressed in Rand, shall not be less than the contract amount multiplied by a percentage (%) factor given in Table 2 in the Standard for the applicable class of construction works. Should the contractor select Part/Full Occupational qualification and Trade qualifications learners, then the employer shall make provision for payment to the contractor as indicated in Table 3 of the Standard.

No provision for an additional payment item for the payment of the supervisor and/or mentors for the provision of training as provided for in the Contract Participation Goal section in the Bill of Quantities for the training of part/full time occupational learners and/or trade qualification learners. The associated cost is deemed to be included in general supervision on site.

The contractor shall complete a separate bill of quantities upon award, indicating the type and number of beneficiaries as well as the associated Notional Cost of Training to be provided, on which payment will be based.

(b) Payment to the contractor to accommodate Work Integrated Learners and Candidates for professional registration:

Should the contractor select Work Integrated Learners and/or Candidates for professional registration, then the employer shall make provision for payment to the contractor as indicated in Table 3 of the Standard.

Provisional amounts have been included in the Contract Participation Goal section in the Bill of Quantities for the training of Work Integrated Learners and Candidates for professional registration. The contractor shall price his Profit and Attendance (all inclusive of associated costs to the contractor for implementation and reporting), based on the provisional amount in the Contract Participation Goal section in the Bill of Quantities.

The contractor shall complete a separate bill of quantities upon award, indicating the type and number of beneficiaries as well as the associated Notional Cost of Training to be provided, on which payment will be based.

The CPG value to be achieved will be based on the contract amount as defined by the Standard, which will be offset against the provisional amount allowed for within the Contract Participation Goal section in the Bill of Quantities.

The contractor shall apportion the cost of accommodating work integrated learners (P1 and P2 learners) and candidates for professional registration by using Table 3 in the Standard and this cost will be used to determine the Rand value and will be used in determining the contract participation goal in the Bills of Quantities.

Table 3: Notional Cost of Training; Headcount

Source: cidb Standard for Skills Development

Type of Training Opportunity	Provision for stipends (Unemployed learners only)	Provisions for mentorship	Provisions for additional costs*	Total costs	
				Unemployed learners	Employed learners
Method 1					
Occupational qualification	R7 000	R0	R9 000	R16 000	R9 000
Method 2					
TVET College graduates	R14 000	R0	R9 000	R23 000	N/A
Apprenticeship	R14 000	R0	R12 000	R26 000	R12 000
Method 3					
P1 and P2 learners	R24 000	R20 000	R4 500	R48 500	N/A
Method 4					
Candidates with a 3 year diploma	R37 000	R20 000	R4 500	R61 500	R20 000
Candidates with 4 year qualification	R47 000	R20 000	R4 500	R71 500	R20 000

Note: the required CPG will be recalculated based on the awarded tender amount and "Contract amount" once the beneficiaries have been appointed and actual costs are known. The notional cost of providing training opportunities will increase by CPI on an annual basis based on April CPI. Should the rates increase after bid award or during construction the rates will be adjusted as a remeasuarble item.

Example: Training Target Calculation for a R65,7m GB contract

Contract amount	R65 700 000
Contract duration	12 Months
CSDG	0,50%
Minimum CSDG target	0,50% x R65 700 000 = R328 500 (Minimum requirement)

Table 4: Notional cost recalculation upon appointment of beneficiaries

Skills Types	Number of learners	Notional Cost / Learner / Quarter	Notional cost/learner/year	Total Notional Cost over 12 months Contract
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Method 2: Workplace learning opportunities, with unemployed TVET graduates	1	R23 000	R92 000	R92 000
Method 3: Candidacy for an unemployed learner with a 3-year qualification	1	R61 500	R246 000	R246 000
Total	2			R338 000

C2.1.16.7 NATIONAL YOUTH SERVICE TRAINING AND DEVELOPMENT PROGRAMME

The National Youth Service Training and Development Programme is *insert "applicable" or "not applicable"* to this project.

The programme shall be implemented in terms of the Implementation of the National Youth Service Programme under the Expanded Public Works (EPWP) and shall be priced in the CPG section of the Bills of Quantities.

Provision has been made within the Contract Participation Goal section in the Bill of Quantities for the National Youth Service Training and Development Programme CPG in the execution of this project as described in PG-01.1 (EC) SCOPE OF WORKS C3.5.7. The contractor to price all elements of this section and allowance must be made for submitting monthly reports in the prescribed manner as per examples of reports bound in the specification document.

C2.1.16.8 LABOUR-INTENSIVE WORKS

Labour Intensive Works is *insert "applicable" or "not applicable"* to this project

Where labour intensive work is specified in the Bill of Quantities and indicated by "LI" the contractor must price for and include in rates. Contractors are expected to use their initiative to identify additional activities that can be done labour-intensively to comply with the set minimum labour intensity target. Allowance must be made for submitting monthly reports illustrating the value of the works executed under Labour Intensive Works.

C2.2 Submission of Accrual Reports

The Contractor shall submit accrual reports to the client representative at the end of March and September each year for the duration of the Service Contract period from the date of appointment up to and including project closeout. This is to ensure that PMTE complies with the accounting framework GRAP, which requires that PMTE disclose all its accruals as at the end of each reporting date. Allowance must be made for submitting reports to the Employer's Representative on a monthly basis in terms of monthly and accumulative targets achieved with audited supporting documentation.

DPW-10.2 (EC): VARIABLE CONSTRUCTION GUARANTEE – (GCC (2010) 2nd EDITION: 2010)

Director-General
Department of Public Works
Government of the Republic of South Africa

To: **L. Mthlala**
Private Bag

Sir,

VARIABLE CONSTRUCTION GUARANTEE FOR THE EXECUTION OF A CONTRACT IN TERMS OF GCC (2010) 2nd EDITION 2010

1. With reference to the contract between _____
_____ (hereinafter referred to as the “**contractor**”) and the Government of the Republic of South Africa in its Department of Public Works (hereinafter referred to as the “**employer**”), Contract/Tender No: **KIM 07/2022**, for the **Kimberley DPW: NPO: Additions to air conditioner system** (hereinafter referred to as the “**contract**”) for the sum of R _____, (_____), (hereinafter referred to as the “**contract sum**”).

I / We, _____
in my/our capacity as _____ and hereby
representing _____ (hereinafter referred to as the “**guarantor**”) advise that the **guarantor** holds at the **employer's** disposal the sum of R _____, (_____) being 10% of the **contract sum** (excluding VAT), for the due fulfilment of the **contract**.

2. I / We advise that the **guarantor's** liability in terms of this guarantee shall be as follows:

- (a) From and including the date on which this guarantee is issued and up to and including the day before the date on which the last **certificate of completion** of works is issued, the **guarantor** will be liable in terms of this guarantee to the maximum amount of 10% of the **contract sum** (excluding VAT);
- (b) The **guarantor's** liability shall reduce to 5 % of the **value of the works** (excluding VAT) as determined at the date of the last **certificate of completion** of works, subject to such amount not exceeding 10% of the **contract sum** (excluding VAT);
- (c) This guarantee shall expire on the date of the last **final approval certificate**.

3. The **guarantor** hereby renounces the benefits of the exceptions *non numeratae pecunia; non causa debiti; excussionis et divisionis; and de duobus vel pluribus reis debendi* which could be pleaded against the enforcement of this guarantee, with the meaning and effect whereof I/we declare myself/ourselves to be conversant, and undertake to pay the **employer** the amount guaranteed on receipt of a written demand from the **employer** to do so, stating that (in the **employer's** opinion and sole discretion):

- (a) the **contractor** has failed or neglected to comply with the terms and/or conditions of the **contract**; or
- (b) the **contractor's** estate is sequestrated, liquidated or surrendered in terms of the insolvency laws in force within the Republic of South Africa.

4. Subject to the above, but without in any way detracting from the **employer's** rights to adopt any of the procedures provided for in the **contract**, the said demand can be made by the **employer** at any stage prior to the expiry of this guarantee.
5. The amount paid by the **guarantor** in terms of this guarantee may be retained by the **employer** on condition that upon issue of the last **final approval certificate**, the **employer** shall account to the **guarantor** showing how this amount has been expended and refund any balance due to the **guarantor**.
6. The **employer** shall have the absolute right to arrange his affairs with the **contractor** in any manner which the **employer** deems fit and the **guarantor** shall not have the right to claim his release on account of any conduct alleged to be prejudicial to the **guarantor**. Without derogating from the foregoing, any compromise, extension of the construction period, indulgence, release or variation of the **contractor's** obligation shall not affect the validity of this guarantee.
7. The **guarantor** reserves the right to withdraw from this guarantee at any time by depositing the guaranteed amount with the **employer**, whereupon the **guarantor's** liability ceases.
8. This guarantee is neither negotiable nor transferable, and
 - (a) must be surrendered to the **guarantor** at the time when the **employer** accounts to the **guarantor** in terms of clause 5 above, or
 - (b) shall lapse in accordance with clause 2 (c) above.
9. This guarantee shall not be interpreted as extending the **guarantor's** liability to anything more than payment of the amount guaranteed.

SIGNED AT _____ ON THIS _____ DAY OF _____ 200__

AS WITNESS

1. _____
2. _____

By and on behalf of

(insert the name and physical address of the guarantor)

NAME: _____

CAPACITY: _____
(duly authorised thereto by resolution attached marked Annexure A)

DATE: _____

- A. No alterations and/or additions of the wording of this form will be accepted.**
- B. The physical address of the guarantor must be clearly indicated and will be regarded as the guarantor's *domicilium citandi et executandi*, for all purposes arising from this guarantee.**



C. This GUARANTEE must be returned to: _____

PART C3: SCOPE OF WORK

PART C3: SCOPE OF WORK

PG-01.1 (EC) SCOPE OF WORKS – (GCC (2010) 2nd EDITION: 2010)

Project title:	<i>Kimberley DPW: NPO: Additions to air conditioner system</i>		
Tender no:	<i>KIM 07/2022</i>	Reference no:	<i>19/2/4/2/2/2327/461</i>

C3. Scope of Works

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NOTE: This is an example only. Compiler / Designer to provide the applicable contents.

B: AMENDMENTS TO THE PARTICULAR SPECIFICATIONS

C3.3 PARTICULAR SPECIFICATIONS

C3.4 STANDARD SPECIFICATIONS:

The standard specifications on which this contract is based are the **South African Bureau of Standards Standardized Specifications for Civil Engineering Construction SABS 1200**. *(Note to compiler. "SABS" has been changed to "SANS"; the SABS 1200 specifications are due to be replaced in the foreseeable future by SANS 2100)*

Although not bound in nor issued with this Document, the following Sections of the Standardized Specifications of SABS 1200 shall form part of this Contract:

A - 1986 - GENERAL / D – (etc, to be provide by compiler)

3.5 PROJECT SPECIFICATIONS:

Status

The Project Specification, consisting of two parts, forms an integral part of the contract and supplements the Standard Specifications.

Part1 A contains a general description of the works, the site and the requirements to be met.

Part B contains variations, amendments and additions to the Standardized Specifications and, if applicable, the Particular Specifications.

In the event of any discrepancy between a part or parts of the Standardised of Particular Specifications and the Project Specification, the Project Specification shall take precedence. In the event of a discrepancy between the specifications, (including the Project Specifications) and the drawings and / or the Bill of Quantities, the discrepancy shall be resolved by the Engineer before the execution of the work under the relevant item.

3.5.1 GENERAL

PS-1 PROJECT DESCRIPTION:

This contract is for the replacement of the entire water cooled system with low energy inverter, hear pump split package systems for each Court , these are to be installed with the vertical, split, DX AHUs in the existing Court HVAC plant rooms and remote air cooled condensing unit in the respective court room block open air shafts/Atria; the existing SA ducting is to be connected to the new dx AHP and reused but new supply air grilles are to be installed to serve the court rooms: the existing power supplies feeding the respective court water cooled units are to be reused and run to the new Inverter Condensing Unit control panels located in the ground floor of the air shafts/Atria. The work carried out is also to include for the following:

- 1.1.1 The children and Z court is to be served by ceiling, split inverter cassette units ; the cash hall system is also to be replaced with dx air cooled cassette units. The split DX systems supplying the three small courts and offices are to be replaced with efficient in ceiling split inverter systems (allowance is made to introduce suspended ceilings to contain the dx piping and fresh air supply ducting in all areas where the CHW cassette units are installed).
- 1.1.2 Existing water cooled condensing units and AHPs in the court plant rooms are to be removed and replaced, in the same plant rooms, with new vertical, indoor dx AHUs fitted with pre and secondary filter banks , local electrical Isolators and fault indicators. The new AHU are to be connected to the existing supply ducting systems – which are to be reused (note: AHU plant rooms are sealed and return air and fresh air are drawn into the open plantroom and mixed- these are not hard connected to the AHU) . The Foyer Court is also to be served by a free standing, vertical, indoor dx AHU and the cash hall system is to be replaced with dx split cassette units.
- 1.1.3 The existing switchboard in each Court plant room is to be disconnected and removed and replaced with new switchboard (MCB) (to be connected to the same power supply). The new MCB shall provide power feeds for the new condensing unit and AHU. It shall also have a low voltage section for unit monitoring, dirty filter and fault indication . A new master sensor and switch shall be installed in each court room and shall be connected to the respective condensing unit control panel and controller
- 1.1.4 Each Court indoor AHU is to be connected to its respective, inverter Condensing unit with control panel, located on the ground level in the respective Air Shafts. A cable tray to be run between the indoor AHU and condensing unit to support the refrigeration lines, power supplies and control cables.
- 1.1.5 Building work, casting of plinths for the condensing units, etc. is to be carried out by a specialist registered master builder employed under the contract
- 1.1.6 The existing supply and return air ductwork and fresh air arrangement for the existing court room units is in sound condition and is to be reused to supply the courts; the grilles and diffusers are to be renewed



- 1.1.7 The existing water cooled package units have been largely removed by the previous contractor; the existing, incomplete, chilled water piping between the roof (13th floor) and the respective court room plant rooms (ground, first and second floors) to be dismantled and removed under this contract. A credit to be provided for the salvage value of the heavy grade steel pipework – which is to be removed from site and sold. Associated building work: openings in shafts etc for piping are to be made good: closed-up, plaster and painted. The old chillers (located on the ground floor) are to be removed from site and disposed off according to the DPW instruction. All rigging and plant positioning cost are to be included in the contract value.
- 1.1.8 The new installations are designed, and shall be engineered/selected to maintain 22 deg C +/- 2 deg C in the courts in summer and winter at design at outdoor air temperatures of 38 deg C and -2 deg C respectively.
- 1.1.9 Concrete plinths shall be cast in the floor of the air shafts/atria to position the condensing units- which shall be centrally located top assist with ventilation
- 1.1.10 A “central monitoring system (CMS)” alarm and fault monitoring system is proposed which will linked to a new supplied proprietary LED display unit in the manager’s office and will provide information on the plant alarms and running condition, this system will also be used by the contractor to remotely monitor the plant during the 12 month free maintenance and guaranteed period; wall boxes and conduits into the ceiling void to be provided for the local court room switches - which shall be simple devices for the magistrates and judges to control the HVAC from their positions in the courts : all controls and electrics are to be provided for under the HVAC contract as required by the plant and this specification for a complete operating system
- 1.1.11 Making safe, removal of existing HVAC water cooled units and Dx equipment from the floors; the removal of chilled and hot water piping; the sealing and making good of the openings and fire proofing where necessary , the cleaning, storage, repair and reinstallation of the same as required for the Contract.
- 1.1.12 Dx piping shall be run in hard copper refrigerant grade copper suitable for R410a, insulated in fire and smoke retardant insulation and shall be to the engineers approval. Dx piping will be insulated using high density, “armaflex” with vapour proofing.
- 1.1.13 Only licensed and coded welders shall be employed on the job; a welding plan and proposal shall be presented or approval by the engineer before any welding commences on site; piping shall be kept sealed and cleaned at all times and shall run nitrogen during welding to prevent any oxidation . All welds shall have a welders identification system which will enable to trace who the welder was in the event of welding failures. All dx lines shall be vacuum tested to 500 microns for 2 h without any movement before charging
- 1.1.14 DX inverter, heat pump type air conditioning installations shall be high efficiency R 410A systems for both cooling and heating and shall be fitted with head pressure controls and defrosting for low temperature applications. The units shall be able to run continually in heating mode at -2deg C (outside air)
- 1.1.15 Donn tee type suspended ceilings shall be installed by a ceiling specialist with acoustic tiles shall be installed in the cash hall and waiting area and shall house the chilled water cassette units proposed for these areas.
- 1.1.16 Complete electrical installations for all the systems installed: New AHP plant switchboards; new power supply to the remote condensers; all controls connected to a proprietary monitoring system for alarm and operating system reporting.
- 1.1.17 Complete internet interfaced, proprietary, data based remote monitoring system connected to the HVAC plant via Cat 5E/cat 6 data cable for field bus system running Modbus, Lonworks, and Bacnet to operator display and field units. – All monitored points and plant conditions and alarms shall be displayed on the display panel mimic drawings; simple proprietary operating software shall be provided. . A blue tooth interface system to local PC shall be provided for internet interface and remote monitoring
- 1.2 All the work shall be carried out in full conformance with the Department's general technical specifications for HVAC installations. Workmanship and equipment shall be of the best quality and standard.

1.3 All the work shall be carried out to the agreed building programme and shall be arranged to complement the Clients requirements and coordination

In addition to the above the scope of work shall include, but not be limited to the work described herein:

- 1.4.1 The design, selection, production of dimensioned shop drawings, delivery, rigging and installation of the complete HVAC systems their electrical and control installations; the removal of all redundant plant and making good of building work which has been disturbed, power, cable and water connections and piping
- 1.4.2 The coordination of the Mechanical works with all other trades and services in the area; the coordination of shop drawings with reflected ceiling and other services
- The complete electrical and controls installation to all mechanical plant. The contractor shall provide new feeds to all plant and equipment, or reuse existing power feeds as specified
- All power supplies to all HVAC equipment shall be included in this contract also the connection to existing power supplies
- HVAC contractor to provide indoor and outdoor weather proof isolators and to wires in conduit or trunking for all internal equipment and armoured cabling for all outdoor equipment.
- The mechanical contractor will provide a local isolator/starter for all mechanical equipment: air handling plants, condensing units etc.
- The contractor will install recessed wall boxes and conduits for the air conditioning system thermostats and controls into the ceiling to the the contractors shop drawings which shall be fully dimensioned.
- The entire electrical installation shall comply with the DOPW electrical specification for mechanical installations (The Department of Public Works "Standard Specification for the Electrical Installation and Electrical Equipment Pertaining to Mechanical Services", Issue IXa December 1999 shall also apply to this contract) and to SANS 10142 and shall be fully weatherproof. No surface cable shall be allowed internally except in Plantrooms. Cables to wall mounted controls shall be run in recessed conduit and wall boxes (provided by the Contractor under this contract). At the end of the Contract the Mechanical contractor shall provide a COC for the electrical installations associated with his plant in accordance with the requirements of SANS 0142.
- 1.4.3 The production of builders work shop drawings showing all dimensioned plinths and penetrations required through the building structures and roof to be formed by the Builder under this contract
- 1.4.4 All penetrations of the building shall be fully weatherproofed. Wall penetrations shall be provided with pvc sleeves and shall be fully sealed caulked and waterproofed
- 1.4.5 The installation of reused split, AC units complete in all respects; all to be supplied with wall mounted fixed switch/controllers, unistrut mounted external DX condensing units, insulated refrigerant piping to each unit; pvc condensate pipes fitted with tundish and running to falls collecting the condensate from all the DX and cassette units; connection of condensate riser to plumbing system. Flexible spiral steel reinforced hose connections between the drip pans and the drain piping fitted with compression fittings for easy removal and cleaning (no jubilee clips)
- Supply grilles and diffusers (and plenum boxes) shall be installed and fixed to plaster ceilings using proprietary powder coated "Tee" frames, with welded edge; ceiling mounted grilles and diffusers not supplied with frames shall be built into the plaster ceilings by the ceiling contractor- to the mechanical shop drawing detail and dimensions. Where suspended tile or tongue and groove timber ceilings are

provided the HVAC contractor shall support all equipment from the slab (not from the ceiling), equipment shall be set out symmetrically in the ceilings and where more than one tile is to be cut to accept the HVAC equipment this shall be detailed on a ceiling shop drawing so that the ceiling contractor can provide the appropriate opening which shall be coordinated with the other trades, frames or flanges shall be used to neatly fix the diffusers Court room supply and return natural anodised air grilles are to be removed and replaced with new powder coated aluminium grilles.

- 1.4.6. All holes through the walls for piping and cabling shall be cored/drilled by the (not chopped) to suit ducting, piping and cabling installation. Work shall be neat and the holes shall be plastered and painted after installation of sleeves for pipes and cables.
- 1.4.7. Any DX refrigerant piping, control and power cabling and open armoured AC cables shall be run on and strapped to galvanised cable tray/ladder fixed on the roof trusses/slabs etc and additional supports (by AC Contractor) as required.
- 1.4.9 All outdoor exposed cables and refrigeration pipes between the evaporator and condenser shall be protected from the weather and UV exposure and shall run in GMS trunking pop riveted closed and painted the colour of the walls.
- 1.4.10 The external condensers shall be mounted on floor plinths or a unistrut framework well away from wall to prevent any obstruction of air flow. Internal evaporators shall be mounted so that they are fully accessible for maintenance purposes.
- 1.4.11 Cable entries to equipment shall be glanded and weatherproof and entries into trunking shall be grommetted. Roof boards shall be fully weatherproofed and shall have double sealed doors, all entries shall be from the bottom and weatherproof ventilation openings shall be provided at high level
- 1.4.12 Condensate pipes, refrigeration pipes and cables shall be concealed above ceilings and in walls i.e. no pipes shall be visible below the ceiling. Condensate pipes shall be PVC piping with access bends and tees supported at less than 800mm centres and run to falls to drain point outside the building or to a SVP as provided by the plumber. Access fittings shall be provided as required for cleaning and clearing blockages as required.
- 1.4.13 All flexible connections to refrigeration piping shall be insulated in seamless “armaflex” insulation rated for the prevailing conditions (minimum 22mm thickness), suitably taped and vapour proofed and sealed at the ends. Where exposed they shall be contained in GMS steel (0.55mm thick preformed sections banded and not screwed) cladding.
- 1.4.14 Dx piping shall be insulated and vapour proofed with seamless “armaflex” insulation rated for the prevailing conditions (minimum 22mm thickness), suitably taped and vapour proofed and sealed at the ends. Where exposed they shall be contained in GMS steel (0.55mm thick preformed sections banded and not screwed) cladding.
- 1.4.15 Fire rating shall be acceptable to the Kimberley Fire Department. Vapour barrier to be provided and maintained at all times and no condensation allowed
- 1.4.16 AC ductwork shall be manufactured to SANS (low pressure); be internally insulated with 25mm sonic liner, fitted with mezz flanges and measured on site to fit between, other services, trusses; beams etc. spigots shall be cut and fitted at the factory. No loose insulation shall be allowed. Fresh air ducts in the building shall be externally insulated with 25mm FBI glued to the duct and banded to present a continuous vapour barrier, where they shall be internally insulated with sonic liner as above, Ventilation ductwork shall be as above but un-insulated. Return and supply air plenum boxes shall be internally lined with 25mm sonic liner for acoustic purposes. All outdoor ducting shall have all joints wrapped and waterproofed with waterproofing tape and then painted and sealed.

- 1.4.17 Diffusers and grilles shall be rated for the specified air volume and shall be fitted to the ceilings installation with insulated flexible ducting connections. Colours shall be confirmed. Each diffuser shall be balanced and the air quantity fixed and recorded. Specified noise levels shall not be exceeded.
- 1.4.18 The return, supply and fresh air ducting to the court room AHPs shall be reused but shall be inspected, cleaned out, patched and the insulation repaired as required. Transformation pieces shall be measured up and the new AHP shall be connected to both the existing supply and return ducting
- 1.4.19 Each internal (and external) component of the AC installation shall be supported from the building structures; where these are inadequate additional supports shall be provided by the AC contractor after approval has been applied for and given by the structural engineer. All components shall be acoustically isolated to meet the specified noise levels. Cat ladders and walkways shall be provided as necessary to access all equipment for maintenance purposes. Use of the structure for support is to be approved by the structural engineer and architect.
- 1.4.20 Each AC DX and split unit shall incorporate a fixed wall mounted control switch wired to the unit (remotes will be accepted for split cassette units only, but at least 20% extra spares shall be provided). All units shall restart automatically on power failure.
- 1.4.21 All AC units shall be entirely corrosion proofed. To this end the following minimum standard shall apply:
- 1 no black steel components shall be allowed.
 - 2 all painted steel work shall be primed two coats / (red oxide)
 - 3 condensate trays shall be in insulated stainless steel/copper.
 - 4 all cooling coils shall be copper/aluminium and all support steel framework shall be galvanised treated and painted for corrosion protection with epoxy paint
 - 5 the unit casings and coil frames shall be in GMS throughout and enclosures shall be corrosion resistant and corrosion proofed throughout stainless steel, PVC or GMS casings shall be supplied. Evaporator and fan coil casings shall be corrosion proof and no black steel components shall be allowed, coil flashing steel work and condensate trays shall be in 304 grade stainless steel
- 1.4.22 All new HVAC plant alarm and fault conditions shall be interfaced and monitored on a proprietary unit alarm monitoring computer/display driven by the proprietary system ; to this end all plant conditions and alarms shall be indicated and stored monitoring purposes. All plant with starters shall be monitored for run and trip, fault and temperatures out of limits. The plant alarms shall be set out and fully annotated on a mimic drawing which shall be displayed on the provided front end
- 1.4.23 All HVAC plant shall be electrically suppressed, to SANS standards, so as not to provide any electronic interference with the court recording systems.
- 1.4.24 Each installation shall be fully tested, commissioned, maintained and guaranteed for 12 months.
- 1.4.22 All internal and external fans, canopies, ductwork and equipment shall be fully supported from the available steelwork building structure. All supplementary required brackets, framework, steelwork, fixing etc shall be provided under this contract shall be galvanised and entirely corrosion proofed. No black steel components shall be allowed. All fans shall be mounted on AV support systems.
- 1.4.23 All fixings to the building shall be into concrete at approved locations and shall be effected using hot dipped galvanized fixings, bolts, etc.

- 1.4.24 All electrical components shall be fully corrosion and weatherproof. All cables shall be supported on GMS cable trays or trunking. No loose wiring will be allowed.
- 1.4.25 All centrifugal and axial fans shall have GMS casings and shall be fully weather and corrosion proofed for the intended purpose. Motors shall be TEFC of aluminium or cast iron construction with SS316 shafts and corrosion proof impellers they shall be fully rated for the intended application. All fans shall be mounted four AV sprung assembly kits.
- 1.4.26 The entire HVAC installation shall be attenuated for noise in accordance with the requirements of SANS 10103. To this end AC units, fan coils, fans and attenuators shall be selected to provide not more than NC35 in all occupied areas, NC30 (measured at 1.8m height directly below the grilles) in the court room, lecture, meeting and conference rooms. NC 60 shall not be exceeded externally 1,0m away from the fan or duct discharge. Notwithstanding any selections and dimensions given on the drawing for tender purposes, the HVAC contractor shall be entirely responsible for achieving the correct selections and noise levels. Noisy plant shall not be positioned adjacent to office areas which are noise sensitive
- 1.4.29 All plant shall be positioned so that it is fully accessible for maintenance purposes. To this end access panels shall be provided in ceilings, walls, bulkheads etc. so that all components can be maintained. These to be shown on shop drawings
- 1.4.30 The entire Mechanical installation shall be tested, commissioned and cleaned before first delivery. All performance data shall be recorded and the installation balanced and set to meet the specified parameters. Once accepted it shall be fully guarantee and maintained for 12 months free of charge (see DSS spec clause 1.10)
- 1.4.31 Before first delivery can be taken 3 full sets of manuals and "as built" drawings shall be provided (see DSS spec clause 1.10)
- 1.4.32 The contractor will be required to make any necessary adjustments to the plant during the 12 month period in order to achieve the desired duties, functions temperatures, air volumes extraction volumes and noise results (see DSS spec clause 1.10) and also to rectify any faults and defects which may become apparent.

2. GENERAL

The supplementary specification is to be read as forming part of the Department of Public Works Standard Specification for Air-Conditioning and Ventilation Installations, Issue XI, 1998 (available on the department's Website at: www.publicworks.gov.za.)

The clauses referred to herein are clauses of the Standard Specification which are highlighted for ease of reference only. The entire DSS specification shall apply and relevant clauses not specifically mentioned shall also apply.

All equipment and installations shall comply with the requirements of the Occupational Health and Safety Act nr. 85 of 1993.

The Department of Public Works "Standard Specification for the Electrical Installation and Electrical Equipment Pertaining to Mechanical Services", Issue IXa December 1999 shall also apply to this contract.

Where reference is made in this specification and any drawings and documents mentioned therein to the Factories, Machinery and Building Work Act of 1941 and the Machinery and Occupational Safety Act No 6 of 1983, this will be deemed to be replaced by the Occupational Health and Safety Act No 85 of 1993.

Where conditions are at variance this supplementary specification shall have preference over both the Standard Specifications and the drawings.

Copies of the Standard Specifications are obtainable from the Director-General:
Public Works, Private Bag x 65, Pretoria, 0001.

3. **COMPREHENSIVE CONTRACTS**

Only specialist sub-contracts who have previously successfully completed mechanical installations of the extent and type specified (Dx inverter controlled heat pump systems) in this document will be considered.

NOTE: No changes in make, type or capacity of equipment specified in the schedule of particulars, shall be allowed after acceptance of the tender without the written approval of the Department.

4. **PROTECTION OF THE WORKS**

The contractor will be responsible for taking all necessary precautions for the protection of lives, equipment and materials, installations or structures in the vicinity of the works during installation and commissioning. Proof of sufficient and Appropriate insurance to be held by the Contractor

Any damage caused by the contractor, his agents or workmen to the building, structure or any other installation will be made good by the contractor at this own expense and to the entire satisfaction of the representative of this Department.

5. **SITE INSPECTION**

Tenderers are advised to visit the site to acquaint themselves with local conditions, accessibility, etc. No claims for compensation due to lack of knowledge of conditions will be accepted. A compulsory site inspection is to be carried out

3.5.2 AMENDMENTS TO THE STANDARD AND PARTICULAR SPECIFICATION:

C3.5.3 PARTICULAR SPECIFICATIONS:

C3.6 STANDARD MINIMUM REQUIREMENTS

In terms of section 5(2) of the Construction Industry Development Board Act, 2000 (Act no. 38 of 2000) (the Act), the Construction Industry Development Board is empowered to establish and promote best practice standards, Standard Requirements and Guidelines which includes the following but not limited to:

C3.6.1 cidb Best Practice: Green Building Certification, No. 34158 Government Gazette, 1 April 2011

C3.6.2 cidb Standard for Developing Skills through Infrastructure Contracts, No. 36760 Government Gazette, 23 August 2013

C3.6.3 cidb Standard for Indirect Targeting for Enterprise Development through Construction Works Contracts, No 36190 Government Gazette, 25 February 2013

- C3.6.4 Preferential Procurement Policy Framework Act, 2000: Preferential Procurement Regulations, 2017, No. 40553 Government Gazette, 20 January 2017
- C3.6.5 cidb Standard for Contract Participation Goals for Targeting Enterprises and Labour through Construction Works Contracts, No. 41237 Government Gazette, 10 November 2017
- C3.6.6 cidb Standard for Minimum Requirements for Engaging Contractors and Sub-Contractors on Construction Works Contracts, No. 41237 Government Gazette, 10 November 2017
- C3.6.7 cidb Standard for Minimum Requirements for Engaging Contractors and Sub- Contractors on Construction Works Contracts, No. 42021 Government Gazette, 9 November 2018
- C3.6.8 cidb Standard for Developing Skills through Infrastructure Contracts, No. 43495 Government Gazette, 3 July 2020

C3.7 CONTRACT PARTICIPATION GOALS AND CIDB BUILD PROGRAMME

The contractor shall achieve in the performance of the contract the following Contract Participation Goals (CPGs) as indicated below. Provision for pricing of compliance with the achieving the CPGs is made in the Contract Participation Goal Section of the Bills of Quantities and it is explicitly pointed out that all requirements in respect of the aforementioned are deemed to be priced thereunder and no additional claims in this regard shall be entertained:

C3.7.1 Minimum Thirty Percent (30%) Mandatory Sub-contracting Contract Participation Goal

MINIMUM THIRTY PERCENT (30%) MANDATORY SUBCONTRACTING TO SMMEs: IMPLEMENTATION OF PREFERENTIAL PROCUREMENT REGULATIONS 2017

30% Mandatory subcontracting is to this project.

It is the requirement of the employer that the contractor enhances the use of local Small, Micro and Medium Enterprises (SMME's) in executing this contract, irrespective whether the 30% Participation Goal is applicable or not.

The thirty percent (30%) mandatory Sub-contracting shall be achieved in the execution of the contract. in terms of in accordance with the Preferential Procurement Policy Framework Act, 2000: Preferential Procurement Regulations, 2017 as published in the Government Gazette Notice No. 40553 of 20 January 2017.

- (a) SMME's involvement of at least _____ of the tender amount at the time of tender to be sourced from within _____ km radius of the project site with the intention to maximize use of local SMMEs within **insert applicable Ward/s, Municipal District, Town, City, Province,**
- (b) SMME's involvement of at least **insert applicable percentage, both in words and figures** of the Tender Value to be sourced from within **insert applicable kilometers** km radius of the project site.

Bidders are cautioned not to under-price items earmarked to be executed by SMMEs as adjustment to too low rates will not be entertained by the Employer.

Bidders to sub-contract a minimum of thirty percent (30%) of the tender amount including VAT at the time of tender (All inclusive, Including VAT). to any one or more of the following categories:

- a. An EME or QSE
- b. An EME or QSE which is at least 51% owned by black people
- c. An EME or QSE which is at least 51% owned by black people who are youth
- d. An EME or QSE which is at least 51% owned by black people who are women
- e. An EME or QSE which is at least 51% owned by black people with disabilities

- f. An EME or QSE which is at least 51% owned by black people living in rural or underdeveloped areas or townships
- g. A co-operative which is at least 51% owned by black people
- h. An EME or QSE which is at least 51% owned by black people who are Military veterans
- i. More than one of the categories referred to in paragraphs (a) to (h).

Bidders to refer to the CSD for a list of prospective sub-contractors provided with the tender. The bidder to refer to the CSD website should the list provided be insufficient.

Bidders must ensure that the sub-contractors conform to the following:

- a. Possess relevant accreditation where applicable;
- b. Be registered with relevant bodies (CIDB, various Councils, etc.) where applicable;
- c. Possess necessary capabilities to deliver the sub-contracted work;
- d. Meet the requirements in terms of the stipulated designated groups; and
- e. Geographical located at the place where the project will be delivered. Geographical location must be determined using the following criteria:
 - Relevant Ward. If not available;
 - Relevant neighbouring Wards. If not available;
 - Relevant Local Municipality. If not available;
 - Relevant District Municipality. If not available;
 - Relevant Metro. If not available;
 - Relevant Province. If not available;
 - Relevant Neighbouring Province. And If not available;
 - Anywhere within the borders of South Africa .

It is the bidder's responsibility to source alternative SMMEs should the parties with whom agreements were entered into at the time of tendering either no longer exist or do not perform or render work of an acceptable standard, subject to the approval by the Employer. Failure to achieve the **minimum thirty percent (30%)** SMME participation based on the tender amount including VAT, will result in a **insert applicable percentage, both in words and figures** penalty on the amount of work on which there is no compliance (Excluding VAT), unless the contractor can prove to the Employer's satisfaction that the non-achievement was beyond his/her control.

The bidder shall submit monthly reports in terms of monthly achievement and accumulative targets achieved including audited supporting documentation to the Employer's Representative.

The bidder shall submit monthly reports in terms of monthly achievement and accumulative targets achieved including audited supporting documentation to the Employer's Representative.

C3.7.2 Minimum Targeted Local Material Manufacturer Contract Participation Goal

The Minimum Targeted Local Building Material Manufacturers CPG is *insert "applicable" or "not applicable"* to this project.

It is the requirement of the employer that the contractor enhances the use of local Small, Micro and Medium Enterprise Local Material Manufacturers (SMME's) in executing this contract, irrespective whether a minimum percentage Participation Goals is applicable or not.

The Minimum Targeted Local Manufacturers of Material Contract Participation Goal, in accordance with the cidb Standard for Contract Participation Goals for Targeting Enterprises and Labour through Construction Works Contracts as published in the Government Gazette Notice No. 41237 of 10 November 2017, as amended in cidb Best Practice Project Assessment Scheme Notice No. 43726 of 18 September 2020.

A Targeted Local Material Manufacturer is a targeted enterprise that operates or maintains a factory or establishment that produces on its premises materials or goods required by the principal contractor for the performance of the contract.

Note: Adapted from SANS 10845-7:2015, definition 2.13

Preference shall be given to the Targeted Local Material Manufacturer where feasible in **insert applicable Ward/s, Municipal District, Town, City, Province**, and provided that:

- (a) Such materials comply in all respects with the specific requirements of PW371 and SANS specifications,
- (b) The non-availability of such materials shall not adversely affect the desired progress of the specific works,
- (c) The use of such suppliers shall not constitute grounds for any claim for increased cost in respect thereof,
- (d) Materials of at least **insert applicable percentage, both in words and figures** of the total value of materials purchased excluding VAT to be sourced from within **insert applicable kilometerskm** radius of the project site,
- (e) Material of at least **insert applicable percentage, both in words and figures** of the total value of materials purchased excluding VAT to be sourced from within **insert applicable kilometerskm** radius of the project site.

Failure to achieve the minimum **insert applicable percentage, both in words and figures** Targeted Local Material Manufacturer participation expressed as a percentage of the original tender amount, excluding allowances and VAT, will result in a **insert applicable percentage, both in words and figures** penalty of the prorated targeted value of materials not complied with unless the contractor can prove to the Employer's satisfaction that the non-achievement was beyond his/her control.

The bidder shall submit monthly reports in terms of monthly achievement and accumulative targets achieved including audited supporting documentation to the Employer's Representative.

C3.7.3 Minimum Targeted-Local Building Material Suppliers Contract Participation Goal

The Minimum Targeted Local Building Material Suppliers CPG is *insert "applicable" or "not applicable"* to this project.

It is the requirement of the employer that the contractor enhances the use of local Small, Micro and Medium Enterprise Local Material Suppliers (SMME's) in executing this contract, irrespective whether a minimum percentage Participation Goals is applicable or not.

The Minimum Targeted Local Manufacturers of Material Contract Participation Goal shall be achieved in accordance with the cidb Standard for Contract Participation Goals for Targeting Enterprises and Labour through Construction Works Contracts as published in the Government Gazette Notice No. 41237 of 10 November 2017, as amended in cidb Best Practice Project Assessment Scheme Notice No. 43726 of 18 September 2020 – Condition of Contract.

A targeted supplier is a targeted enterprise that

- a) owns, operates or maintains a store, warehouse or other establishment in which goods are bought, kept in stock and regularly sold to wholesalers, retailers or the public in the usual course of business; and
- b) engages, as its principal business and in its own name, in the purchase and sale of goods.

Note: Adapted from SANS 10845-7:2015, definition 2.14

Preference shall be given to the local material suppliers where feasible in the **insert applicable Ward/s, Municipal District, Town, City, Province**, and provided that:

- (a) Such materials comply in all respects with the specific requirements of PW371 and SANS specifications,
- (b) The none availability of such materials shall not adversely affect the desired progress of the specific works,
- (c) The use of such suppliers shall not constitute grounds for any claim for increased cost in respect thereof,
- (d) Materials of at least **insert applicable percentage, both in words and figures** of the total value of materials purchased excluding VAT to be sourced from within **insert applicable kilometerskm** of the project site,

- (e) Material of at least **insert applicable percentage, both in words and figures** of the total value of materials purchased excluding VAT to be sourced from within **insert applicable kilometers** of the project site.

Failure to achieve the minimum **insert applicable percentage, both in words and figures** Targeted Local Material Manufacturer participation expressed as a percentage of the original tender amount, excluding allowances and VAT, will result in a **insert applicable percentage, both in words and figures** penalty of the prorated targeted value of materials not complied with, unless the contractor can prove to the Employer's satisfaction that the non-achievement was beyond his/her control.

The bidder shall submit monthly reports in terms of monthly achievement and accumulative targets achieved including audited supporting documentation to the Employer's Representative.

C3.7.4 Minimum Targeted Local Labour Skills Development Contract Participation Goal

The Minimum Targeted Local Labour Skills Development CPG is *insert "applicable" or "not applicable"* to this project.

It is the requirement of the employer that the contractor enhances the use of local labour in executing this contract. This is required to be done through the use of both traditional building techniques and labour-intensive construction techniques careful and considered construction planning and implemented in the project irrespective whether a minimum percentage Participation Goal is applicable or not.

The Minimum Targeted Local Skills Development Contract Participation Goal shall be achieved in accordance with the cidb Standard for Contract Participation Goals for Targeting Enterprises and Labour through Construction Works Contracts as published in the Government Gazette Notice No. 41237 of 10 November 2017, as amended in cidb Best Practice Project Assessment Scheme Notice No. 43726 of 18 September 2020 – Condition of Contract.

Targeted labour: individuals who:

- a) are employed by the principal contractor, sub-contractor or targeted enterprises in the performance of the contract;
- b) are defined as the target group in the targeting data; and
- c) permanently reside in the target area or who are recognized as being residents of the target area on the basis of identification and association with and recognition by the residents of the target area.

Adapted from SANS 10845-7:2015, definition 2.12

Targeting of labour by skills categories is only permissible within categories of semi-skilled and unskilled labour.

Contract participation goals for semi-skilled and unskilled labour shall be limited to on-the-job training to targeted labour to enable such labour to master the basic work techniques required to undertake the work in accordance with the requirements of the contract and in a manner that does not compromise worker health and safety. In the case of targeted labour, the certification of records shall be in accordance with SANS 10845-8.

Beneficiaries will be sourced from the **insert applicable Ward/s, Municipal District, Town, City, Province** for the full duration of the Construction Period, employed by either the principal contractor, sub-contractors or targeted enterprises. The total number of working days to complete the Works amount to **insert number of working days as determined by the Construction Period** working days. The minimum CPG participation for Targeted Local Labour Skills Development is **insert applicable percentage, both in words and figures**, expressed as a percentage of the total number of working days required to complete the Works. The contractor shall attain or exceed the CPG in the performance of the contract. Failure to achieve the minimum Targeted Local Labour Skills Development CPG will result in a payment reduction of **R5 000** (Excluding VAT), per working day which training has not been provided to the workforce in attendance, unless the contractor can prove to the Employer's satisfaction that the non-achievement was beyond his/her control.

The bidder shall submit monthly reports in terms of monthly achievement and accumulative targets achieved including audited supporting documentation to the Employer's Representative.

C3.7.5 CIDB BUILD PROGRAMME: Minimum Targeted Enterprise Development Contract Participation Goal

The Minimum Targeted Enterprise Development CPG is *insert "applicable" or "not applicable"* to this project.

The aim of this best practice standard for indirect targeting for enterprise development in accordance with the Standard for Indirect Targeting for Enterprise Development (published in Government Gazette 36190 of 25 February 2013), as amended in cidb Best Practice Project Assessment Scheme Notice No. 43726 of 18 September 2020 – Condition of Contract, is to promote enterprise development by providing for a minimum contract participation goal (CPG) of **five percent (5%)** of the contract amount as defined in the Standard (Tender amount, excluding allowances and VAT on selected contracts to be undertaken by joint-venture partners or to be sub-contracted to developing contractors that are also to be beneficiaries of enterprise development support from the main contractor.

The lead partner or main contractor shall dedicate a **minimum five percent (5%)** of the tender value at the time of award, excluding allowances and VAT, to provide developmental support to targeted subcontractor or joint venture partner applicable to contracts in Grades 7 to 9, General Building and Civil Engineering contracts. Preference will be given to insert type of enterprises, e.g. General Building, Electrical, Mechanical, Plumbing, etc. It could be either or any combination of all Enterprises.

The contractor shall attain or exceed the enterprise development goal in the performance of the contract. Failing to achieve the Participation Goal will result in A) a thirty percent (30%) penalty of the value not achieved, excluding VAT, unless the contractor can prove to the Employer's satisfaction that the non-achievement was beyond his/her control.

The bidder shall submit monthly reports in terms of monthly achievement and accumulative targets achieved including audited supporting documentation to the Employer's Representative.

C3.7.5.1 Criteria

The main or lead partner of the successful bidder shall:

- (a) There must be a needs analysis for indirect targeting and development or skill standard and should be development in at least any two developmental areas namely;
 - Administrative and cost control systems
 - construction management systems and plans
 - planning, tendering and programming
 - business; technical; procurement skills
 - legal compliance
 - credit rating/history; financial loan capacity/history
 - contractual knowledge
- (b) The above needs analysis shall be mutually agreed upon between contractor and targeted enterprise
- (c) The contractor shall appoint an enterprise development coordinator to:
 - perform needs analysis on the targeted enterprise to identify developmental goals
 - develop a project specific enterprise development plan to improve the targeted enterprise/s performance in the identified developmental areas
 - provide internal mentorship support to improve the targeted enterprise/s performance

- monitor and submit to the employer's representative a monthly enterprise development report thereby reporting on the progress of the agreed development areas with the targeted enterprise/s
- submit a project completion report to the Employer's representative for each targeted enterprise.

C3.7.5.2 Management

The contractor shall provide a competent person/s to provide internal mentorship to the Targeted Enterprise/s in the two agreed developmental areas.

C3.7.5.3 Competence Criteria for an Enterprise Development Co-ordinator

The enterprise development co-ordinator shall have the following competencies:

- Minimum experience of 5 years in the construction industry at Managerial level as a Site Agent, Contracts Manager, Site Manager, Construction Manager, Business Development Manager or Enterprise Development Manager.
- Minimum experience of 2 years in training and development in Building or Construction; and
- National Diploma or B Degree in the Built Environment or Business Management

C3.7.5.4 Format of Communications

The contractor shall submit to the Employer's Representative:

- *Project interim reports* in the specified format (**ED105P**) detailing interim values of the CPG that was achieved together with an assessment of the enterprise development support provided should be tabled and discussed at least monthly at progress meetings between employer's representative and the contractor;
- *Project completion report* in the specified format (**ED101P**) to the Employer's Representative for acceptance within 15 days of achieving practical completion. The report shall include the value of the CPG that was certified in accordance with the contract, cidb registration numbers of each and every targeted enterprise, and the value of the subcontracted works or of the joint venture entered into; and the participation parameter
- *Enterprise development declaration* (**ED104P**).

C3.7.5.5 The Key Personal

The contractor shall appoint an Enterprise Development Co-ordinator and a competent person/s to provide internal mentorship.

C3.7.5.6 Management Meetings

The contractor shall report to the Employer's Representative on the implementation and progress of the targeted enterprise development and CPG at monthly progress site meetings.

C3.7.5.7 Forms for contract administration

The contractor shall submit to the Employer's Representative the following proformas:

- Form ED 105P Project Interim Report
- Form ED 104P Enterprise Development Declaration
- Form ED 101P Project Completion Report

C3.7.5.8 Records

The contractor shall:

- keep records of the targeted enterprise development
- keep records of the payments made to the targeted enterprises in relation to the CPG.
- ensure all the documentation required in terms of the Standard is provided with each monthly progress payment certificate and according to a prescribed format where applicable.

C3.7.5.9 Payment Certificates

The contractor shall:

- achieve the measurable CPG and providing enterprise development support to the targeted enterprise/s as per the Standard.
- submit payment certificates to the Employer Representative at intervals determined in the Contract.

C3.7.5.10 Compliance requirements

Non-compliance with the Best Practice Project Assessment Scheme

The wording of regulation 27A of the cidb regulations makes provision for the Board to enforce the cidb code of conduct in the event of clients being found to be in breach of the best practice project assessment scheme.

- Not including the requirements of the cidb standards in the conditions of tender
- Not registering the award of contract on the cidb Register of Projects (RoP)
- Not reporting practical completion on the cidb Register of Projects (RoP)

3.7.6 **CIDB BUILD PROGRAMME: Minimum Targeted Contract Skills Development Goal (CSDG)**

The Minimum Targeted Contract Skills Development CPG is *insert "applicable" or "not applicable"* to this project.

The contractor shall achieve or exceed in the performance of the contract the Contract Skills Development Goal (CSDG) established in the Standard for Developing Skills through Infrastructure Contracts (published in Government Gazette No 43495 of 3 July 2020, as amended in cidb Best Practice Project Assessment Scheme Notice No. 43726 of 18 September 2020 – Condition of Contract.

Failing to achieve the targeted Contract Skills Development Goal will result in A) a **thirty percent (30%)** penalty of the value of the portion not achieved, excluding VAT, and B) the issuing of completion certificates only after the completion certificate of achieving the skills development goal, counter-signed by the relevant individuals has been submitted, unless the contractor can prove to the Employer's satisfaction that the non-achievement was beyond his/her control.

The contractor shall apportion the learners in the different construction activities based on the scope of work. The cost of accommodating learners will be determined by using Table 3 in the Standard and this cost will be used to determine the value in Rand and will be added to the provision for training as provided for in the Preliminary and General section in the Bill of Quantities/Pricing schedules/Activity schedule.

C3.7.6.1 Methodology

The contractor shall achieve the measurable contract skills development goal by providing opportunities to learners requiring structured workplace learning using one or a combination of any of the following in relation to work directly related to the contract or order:

Method 1: structured workplace learning opportunities for learners towards the attainment of a part or a full occupational qualification;

Method 2: structured workplace learning opportunities for apprentices or other artisan learners towards the attainment of a trade qualification leading to a listed trade (GG No. 35625, 31 August 2012) subject to at least sixty percent (60%) of the artisan learners being holders of public TVET college qualifications;

Method 3: work integrated learning opportunities for University of Technology or Comprehensive University students completing their national diplomas;

Method 4: structured workplace learning opportunities for candidates towards registration in a professional category by a statutory council listed in Table 1 above.

The contract skills participation goals, expressed in Rand, shall not be less than the contract amount multiplied by a percentage (%) factor given in Table 2 in the Standard for the applicable class of construction works.

Table 2: Contracting skills development goals for different classes of engineering and construction works contracts

Class of construction works as identified in terms of Regulation 25 (3) of the Construction Industry Regulations 2004		Construction skills development goal (CSDG) (%)
Designation	Description	
CE	Civil Engineering	0.25
CE and GB	Civil engineering and General Building	0.375
EE	Electrical Engineering works (buildings)	0.25
EP	Electrical Engineering works (infrastructure)	0.25
GB	General Building	0.5
ME	Mechanical Engineering works	0.25
SB	Specialist	0.25

The contractor shall apportion the learners in the different construction activities based on the scope of work. The cost of accommodating learners will be determined by using Table 3 in the Standard and this cost will be used to determine the value in Rand and will be added to the provision for training as provided for in the Preliminary and General section in the Bill of Quantities/Pricing schedules/Activity schedule.

Table 3: Notional Cost of Training per Headcount

Source: cidb Standard for Skills Development

Type of Training Opportunity	Provision for stipends (Unemployed learners only)	Provisions for mentorship	Provisions for additional costs*	Total costs	
				Unemployed learners	Employed learners
Method 1					
Occupational qualification	R7 000	R0	R9 000	R16 000	R9 000
Method 2					
TVET College graduates	R14 000	R0	R9 000	R23 000	N/A
Apprenticeship	R14 000	R0	R12 000	R26 000	R12 000
Method 3					
P1 and P2 learners	R24 000	R20 000	R4 500	R48 500	N/A
Method 4					
Candidates with a 3 year diploma	R37 000	R20 000	R4 500	R61 500	R20 000
Candidates with 4 year qualification	R47 000	R20 000	R4 500	R71 500	R20 000

Note: the required CPG will be recalculated based on the awarded tender amount and "Contract amount" once the beneficiaries have been appointed and actual costs are known. The notional cost of providing training opportunities will increase by CPI on an annual basis based on April CPI. Should the rates increase after bid award or during construction the rates will be adjusted as a remeasurable item.

- (a) (a) The successful contractor may employ part/full occupational qualification learners, trade qualification learners, work integrated learners or candidates (delete that which is not applicable) directly or through a Skills Development Agency (SDA), (A1 - List of cidb accredited SDAs).
- (b) The successful contractor must employ at least sixty percent (60%) of the learners from an FET / TVET college should the contractor select to have part/full occupational qualification learners and trade qualification learners contributing to the CSDG.
- (c) The successful contractor shall employ at least **insert applicable percentage, both in words and figures** from eligible part/full occupational qualification learners, trade qualification learners, work integrated learners or candidates (delete that which is not applicable) in the employment of the employer.
- (d) The successful contractor shall ensure that no single method shall contribute more than seventy five percent (75%) of the CSDG for the contract.
- (e) The successful contractor may only place thirty three percent (33%) employed employees or that of his subcontractors contributing to the CSDG.
- (f) The contractor shall employ at least sixty percent (60%) of the learners from a Public FET / TVET college should the contractor select to have trade qualification learners (Method 2) contributing to the CSDG.
- (g) One of the objectives of the project is to train **insert applicable number, both in words and figures** Occupational qualifications, trade qualification, work integrated learners – P1 and P2 learners, professional candidates. (Delete that which is not applicable)

C3.7.6.2 Management

- (a) The successful contractor must keep site records regarding the part/full occupational qualification learners', trade qualification learners', work integrated learners' or candidates' (delete that which is not applicable) progress, site attendance, hours worked and other relevant information as required by the Standard.
- (b) The successful contractor shall provide the required number of appropriately qualified mentors to the maximum number of part/full occupational qualification learners, trade qualification learners, work integrated learners in the proportion as specified in the Standard.

- (c) The successful contractor shall provide a supervisor to manage the training of the part/full occupational qualification learners, trade qualification learners, work integrated learners, candidates. ~~(delete that which is not applicable)~~
- (d) The successful contractor shall submit to the employer's representative a baseline training plan in the specified format (Pro-forma A2) for the part/full occupational qualification learners, trade qualification learners, work integrated learners, candidates ~~(delete that which is not applicable)~~ within 30 days of start of the contract.
- (e) The successful contractor shall submit to the employer's representative project interim report in the specified format (Pro-forma A3) on the progress of each of part/full occupational qualification learner, trade qualification learner, work integrated learner, candidate ~~(delete that which is not applicable)~~ every three months.
- (f) The successful contractor shall submit to the employer's representative the names and particulars in the specified format (Pro-forma A4) of the supervisor, mentors for the part/full occupational qualification learners, trade qualification learners, work integrated learners or candidates ~~(delete that which is not applicable)~~ within 30 days of start of the contract.
- (g) The successful contractor shall keep a daily record of all the part/full occupational qualification learners, trade qualification learners, work integrated learners, candidates on site and their daily activities and shall be made available to the employer's representative on request.
- (h) The successful contractor shall submit to the employer's representative the reports on the progress and status of the part/full occupational qualification learners, trade qualification learners, work integrated learners or candidates ~~(delete that which is not applicable)~~ with the monthly invoice for the payment certificate.
- (i) The successful contractor shall have health and safety inductions for all part/full occupational qualification learners, trade qualification learners, work integrated learners or candidates ~~(delete that which is not applicable)~~.
- (j) The successful contractor shall conduct entry and exit medical tests of all part/full occupational qualification learners, trade qualification learners, work integrated learners or candidates ~~(delete that which is not applicable)~~.
- (k) The successful contractor shall provide personal protective equipment (PPE) to all part/full occupational qualification learners, trade qualification learners, work integrated learners or candidates ~~(delete that which is not applicable)~~ at the start of their employment on site.
- (l) Based on the agreed skills methods the contractor may employ part/full Occupational Qualification Learners and /or Trade Qualification Learners and/or Work Integrated Learners and/or Candidates ~~(delete that which is not applicable)~~ directly or through a Skills Development Agency (SDA), training provider or skills development facilitator (Form A1 - List of cidb accredited SDAs). The contractor shall ensure that no more than one Method shall be applied to any individual concurrently in the calculation of the CSDG for the contract.

C3.7.7 NATIONAL YOUTH SERVICE TRAINING AND DEVELOPMENT PROGRAMME (NYS)

The National Youth Service Training and Development Programme is *insert "applicble" or "not applicable" to this project.*

The programme shall be implemented in terms of the Implementation of the National Youth Service Programme under the Expanded Public Works (EPWP) and shall be priced in the CPG section of the Bills of Quantities. Monthly reports are to be submitted to the Employer's Representative.

Failure by the contractors to achieve the specified number to be trained in the NYS section of the CPG section within the Bills of quantities will result in a payment reduction as per bill of quantities per

person, excluding VAT unless the contractor can prove to the Employer's satisfaction that the non-achievement was beyond his/her control.

C3.7.8 LABOUR-INTENSIVE WORKS

Labour Intensive Works is insert "applicable" or "not applicable" to this project.

Where labour intensive work is specified in the Bill of Qualities and indicated by "LI" the contractor must price for and include in rates. Contractors are expected to use their initiative to identify additional activities that can be done labour-intensively to comply with the set minimum labour intensity target. Allowance must be made for submitting monthly reports illustrating the value of the works executed under Labour Intensive Works.

Failure by the contractor to achieve the specified value of the Labour Intensive Participation Goal as stipulated within the Bills of quantities will result in a thirty percent (30%) penalty of the value of the works not done by means of labour intensive methods, excluding VAT, unless the contractor can prove to the Employer's satisfaction that the non-achievement was beyond his/her control.

Employer's objectives:

The employer's objectives are to deliver public infrastructure using labour-intensive methods in accordance with EPWP Guidelines.

Labour-intensive works:

Labour-intensive works shall be constructed/maintained using local workers who are temporarily employed in terms of the scope of work. A **thirty percent (30%)** penalty of the value of the works will be imposed on items where unauthorised use of plant was used to carry out work which was to be done labour-intensively.

Labour-intensive competencies of supervisory and management staff:

Contractors shall only engage supervisory and management staff in labour-intensive works that have completed the skills programme including Foremen/ Supervisors at NQF level 4 "National Certificate: Supervision of Civil Engineering Construction Processes" and Site Agent/ Manager at NQF level 5 "Manage Labour-Intensive Construction Processes" or equivalent QCTO qualifications (See Appendix C) at NQF outlined in Table 1

C3.7.8.1 GENERIC LABOUR-INTENSIVE SPECIFICATION

Should labour-intensive works be applicable to the contract the following Generic Labour-intensive Specification (informed by SANS 1921-5, Construction and management requirements for works contracts - Part 5: Earthworks) which covers activities which are to be performed by hand, should be inserted in the Scope of Works without amendment or modification as set out below. (Delete item in total if labour-intensive works are not applicable to the contract)

Contractors are referred to the Guidelines for the Implementation of Labour-intensive Infrastructure Projects under the Expanded Public Works Programme (EPWP) for the generic labour-intensive specification applicable to the contract.

This specification establishes general requirements for activities which are to be executed by hand involving the following:

- trenches having a depth of less than 1.5 metres
- stormwater drainage
- roads
- sidewalks and non-motorised transport infrastructure
- water and sanitation

Precedence

Where this specification is in conflict with any other standard or specification referred to in the Scope of Works to this Contract, the requirements of this specification shall prevail

Hand excavateable material

Hand excavateable material is:

a) granular materials:

- i) whose consistency when profiled may in terms of table 2 be classified as very loose, loose, medium dense, or dense; or
- ii) where the material is a gravel having a maximum particle size of 10mm and contains no cobbles or isolated boulders, no more than 15 blows of a dynamic cone penetrometer is required to penetrate 100mm;

b) cohesive materials:

- i) whose consistency when profiled may in terms of table 2 be classified as very soft, soft, firm, stiff and stiff / very stiff; or
- ii) where the material is a gravel having a maximum particle size of 10mm and contains no cobbles or isolated boulders, no more than 8 blows of a dynamic cone penetrometer is required to penetrate 100mm;

Note

- 1) A boulder is material with a particle size greater than 200mm, a cobble and gravel is material between 60 and 200mm.
- 2) A dynamic cone penetrometer is an instrument used to measure the in-situ shear resistance of a soil comprising a drop weight of approximately 10 kg which falls through a height of 400mm and drives a cone having a maximum diameter of 20mm (cone angle of 60° with respect to the horizontal) into the material being used.

Table 2: Consistency of materials when profiled			
GRANULAR MATERIALS		COHESIVE MATERIALS	
CONSISTENCY	DESCRIPTION	CONSISTENCY	DESCRIPTION
Very loose	Crumbles very easily when scraped with a geological pick.	Very soft	Geological pick head can easily be pushed in as far as the shaft of the handle.
Loose	Small resistance to penetration by sharp end of a geological pick.	Soft	Easily dented by thumb; sharp end of a geological pick can be pushed in 30-40 mm; can be moulded by fingers with some pressure.
Medium dense	Considerable resistance to penetration by sharp end of a geological pick.	Firm	Indented by thumb with effort; sharp end of geological pick can be pushed in up to 10 mm; very difficult to mould with fingers; can just be penetrated with an ordinary hand spade.
Dense	Very high resistance to penetration by the sharp end of a geological pick; requires many blows for excavation.	Stiff	Can be indented by thumb-nail; slight indentation produced by pushing geological pick point into soil; cannot be moulded by fingers.
Very dense	High resistance to repeated blows of a geological pick.	Very stiff	Indented by thumb-nail with difficulty; slight indentation produced by blow of a geological pick point.

Trench excavation

All hand excavateable material in trenches having a depth of less than 1,5 metres shall be excavated by hand.

Compaction of backfilling to trenches (areas not subject to traffic)



framework GRAP, which requires that PMTE disclose all its accruals as at the end of each reporting date.

C.3.9 Submission of Monthly Local Material Utilisation Report (Local Content)

The contractors shall be responsible for record keeping, documenting and submission of monthly local material utilization report with supporting documentation to the Employer's representative within 7 working days of the beginning of the successive month, in terms of DTI&C designated industry/sector/sub-sector schedule as per the PA36 and Annexures C attached to the tender document. The final percentage achievement to be reconciled upon completion of the project and form part of the final account.

Failure by the contractors to achieve the specified percentage of local content per designated industry/sector/sub-sector as listed will result in a thirty percent thirty percent (30%) penalty of the value not achieved, excluding VAT, unless the contractor can prove to the Employer's satisfaction that the non-achievement was beyond his/her control. Allowance must be made for submitting monthly reports illustrating the value of local material utilisation report.

Examples of calculating CPGs and related penalties

CPGs values are based on the Tender Amount at the time of the award. Determining the actual values is based either on the Tender Amount including allowances and Vat or the Tender Amount at the time of award excluding allowances and VAT, where Allowances include the following:

- Provisional amounts
- CPG allowances
- Nominated and/or selected subcontractors
- Contract price adjustment (Not provided for within the B of Q by NDPWI)
- Contingency amounts (Not provided for within the B of Q by NDPWI)

CPG values in the CPG Bill of Quantities Section will be recalculated based on the “Tender Amount” or the “Contract Amount” which ever applicable and the provisional amounts adjusted accordingly. Sanctions (penalties) are applicable to all CPGs where the contractor fails to achieve the minimum specified requirements, unless the contractor can prove to the Employer’s satisfaction that the non-achievement was beyond his/her control. No penalties will be applied should the CPG value, based on the original “Tender Amount” or the “Contract Amount”, has been achieved.

1.1. 30% SMME mandatory subcontracting CPG

When applicable, a minimum of 30% of the total tender amount at the time of award, including all allowances and VAT are to be subcontracted to SMMEs.

CPG calculation example:

“Tender Amount” = R150 mil

CPG 30% subcontracting value = R45 Mil

Calculation of penalty:

Percentage penalty applicable = 5% as specified in the Scope of Works (PG01.1)

CPG Achieved = R30 Mil (R15 Mil shortfall)

Penalty = R15 Mil x 5% = R750 000 Excl. VAT

1.2 Targeted Local Building Material Manufacturers CPG

When applicable, the CPG is expressed as a percentage of the “Contract Amount”, i.e. the Tender Amount at the time of award excluding allowances and VAT.

CPG calculation example:

“Tender Amount” = R150 Mil all inclusive of allowances and VAT

“Contract Amount” = R130 Mil (Tender Amount at the time of award excluding allowances and VAT)

CPG to be achieved = 5% as specified in the Scope of Works (PG01.1)

CPG target value = R130 Mil x 5% = R 6,5 Mil (Value of material to be purchased from local manufacturers, excluding VAT)

Calculation of penalty:

Percentage penalty applicable = 10% as specified in the Scope of Works (PG01.1)

CPG target value = R6,5 Mil excluding VAT

CPG Achieved = R5,5 Mil (R1 Mil shortfall) excluding VAT

Penalty = R1 Mil x 10% = R100 000 excluding VAT

1.3 Targeted Local Building Material Suppliers CPG

When applicable, the CPG is expressed as a percentage of the “Contract Amount”, i.e. the Tender Amount at the time of award excluding allowances and VAT.

CPG calculation example:

“Tender Amount” = R150 Mil all inclusive of allowances and VAT

“Contract Amount” = R130 Mil (Tender Amount at the time of award excluding allowances and VAT)

CPG to be achieved = 5% as specified in the Scope of Works (PG01.1)
CPG target value = R130 Mil x 5% = R 6,5 Mil (Value of material to be purchased from local suppliers, excluding VAT)

Calculation of penalty:

Percentage penalty applicable = 20% as specified in the Scope of Works (PG01.1)
CPG target value = R6,5 Mil excluding VAT
CPG Achieved = R5,5 Mil (R1 Mil shortfall) excluding VAT
Penalty = R1 Mil x 20% = R200 000 excluding VAT

1.4 Targeted Local Labour Skills Development CPG

When applicable, the CPG is expressed as a percentage of the total number working days required to complete the Works.

CPG calculation example:

"Tender Amount" = R150 Mil all inclusive of allowances and VAT
"Contract amount" = R130 Mil (Tender Amount at the time of award excluding allowances and VAT)
Number of working days required to complete the Works based on the construction period = 600 days
CPG percentage participation to be achieved = 30% as specified in the Scope of Works (PG01.1)
Required number of working days training to be provided = 180 days (600 x 30%)

Calculation of penalty:

Payment reduction = R 5 000 per day for not providing training as specified in the Scope of Works (PG01.1)
CPG = 600 working days x 30% = 180 working days training to be provided
CPG Achieved = 160 days (20 days shortfall where no training was provided)
Penalty = 20 days x R5 000 payment reduction per day= R100 000 excluding VAT

1.5 National Youth Service Programme (NYS) CPG

When applicable, a separate NYS Bill of Quantities will be included in the tender documentation will indicate the number of beneficiaries to be trained.

Calculation of penalty:

Payment reduction per person not trained as stipulated in the NYS Bill of Quantities = R 2 500 per person.
Total number of NYS Beneficiaries as stipulated in the NYS Bill of Quantities = 25
Total Number of NYS beneficiaries trained = 20 (shortfall of 5 beneficiaries)
Penalty = 5 x R2 500 = R12 500 Excl. VAT

1.6 Labour intensive Works CPG

When applicable, the work to be done by way of Labour intensive methods are specified in the Bills of Quantities with a "LI".

CPG calculation example:

"Tender Amount" = R150 Mil all inclusive of allowances and VAT
"Contract Amount" = R130 Mil (Tender Amount at the time of award excluding allowances and VAT)
CPG value = R10 Mil (Total value of labour-intensive works specified in the Bills of Quantities)

Calculation of penalty:

CPG value = R10 Mil
Percentage penalty applicable = 30% as specified in the PG01.1 Scope of Work
CPG Achieved = 9 Mil (R1 Mil shortfall)
Penalty = R1 Mil x 30% = R300 000 Excl. VAT

1.7 Cidb BUILD Programme: Enterprise Development

When applicable, the Enterprise Development CPG expressed as a percentage of the "Contract amount" = Tender amount at the time of award excluding allowances and VAT. Failure to achieve the minimum Targeted Local Labour Skills Development CPG will result in a payment reduction of an amount specified in the Scope of Works (PG01.1) per working day where training was not provided.

The monetary value of training to be provided is stipulated in the CPG BoQ section. The number of beneficiaries to be trained is dependent on the "Contract Amount" as well the number of beneficiaries appointed which will generally resort under the Grade 1 and 2 cidb categories. The provisional amount will therefore be adjusted in terms of the "contract Amount", the number of beneficiaries to be trained and the actual cost for providing the training.

Part 1: Calculation of 5% CPG example:

"Tender Amount" = R150 Mil all inclusive of allowances and VAT

"Contract Amount" = R130 Mil (Tender Amount at the time of award excluding allowances and VAT)

CPG percentage participation to be achieved = 5% as specified in the Scope of Works (PG01.1)

CPG value = R6,5 Mil (Value of work to be subcontracted to emerging enterprises)

Calculation of penalty

Percentage penalty applicable = 30% as specified in the Scope of Works (PG01.1)

CPG Minimum 5% = R6,5 Mil

Achieved = R5,5 Mil (Only subcontracted work to the value of R5,5 Mil, i.e. R1 Mil shortfall)

Penalty = R1 Mil x 30% = R300 000 Excl. VAT

Part 2: Calculations in terms of training to be done:

The number of enterprises to be developed is subject to the contract amount and the apportionment of the work as per Example 1 below.

Number of enterprises to be trained = 6 x 1 GB subcontractors

Total cost for training = R 1 660 000

Calculation of penalty

Total number of enterprises to be trained = 6

Total number trained = 4 (2 Shortfall)

Training cost per beneficiary = R1 660 000 / 6 = R 276 666,67 per beneficiary

Penalty = R 276 666,67 x 2 x 30% = R166 000 Excl. VAT

B of Q Item	Description	Unit	Rate	Quantity	Amount (R)
5	Enterprise Development				
5.1	Enterprise Development of Targeted Enterprise or JV partners				
5.1.1	Appointment of training co-ordinator	Per Quarter	45 000	8	360 000
5.1.2	Appointment of Mentor /Training Service provider	Per Quarter	135 000	8	1 080 000
5.1.3	Needs Analysis and Enterprise Development Plan per Targeted Enterprise	No.	5 000	6	30 000
5.1.4	Monitoring and training reporting per targeted enterprise	Per Quarter	20 000	8	160 000
5.1.5	Project Completion report per Targeted Enterprise	No.	5 000	6	30 000
	Provisional Sum to be carried over to CPG bill of quantities				1 660 000
	"Contract amount" Tender amount excl. allowances and VAT		130 000 000		
	CPG Monetary value (5%) to be subcontracted to beneficiaries for training		6 500 000		
	No of enterprises based on the CPG value	6	Grade 1 / 2 GB/CE,ETC.		
	Contract period (months)	24			
	Notes: Rates to be determined by PQS and adjusted to accepted quotation amounts				

1.8 Cidb BUILD Programme: Skills Development (Principal contractor including subcontractors and consultants)

When applicable, the contract skills development participation goals, expressed in Rand, shall be no less than the "contract amount" multiplied by a percentage (%) factor for the applicable class of construction works.

The monetary value of training to be provided is stipulated in the CPG BoQ section. The number of beneficiaries to be trained is dependent on the "Contract Amount" as well the number of beneficiaries appointed which will generally resort under the Grade 1 and 2 cidb categories. The provisional amount will therefore be adjusted in terms of the "Contract Amount", the number of beneficiaries to be trained from

which Method and the actual cost for providing the training.

CPG Calculation

Table 2: Contracting skills development goals for different classes of engineering and construction works contracts

Source: cidb Standard for Developing Skills through Infrastructure Contracts as published in the Government Gazette Notice No. 43495 of 3 July 2020 (Page 7)

Class of construction works as identified in terms of Regulation 25 (3) of the Construction Industry Regulations 2004		Construction skills development goal (CSDG) (%)
Designation	Description	
CE	Civil Engineering	0.25
CE and GB	Civil engineering and General Building	0.375
EE	Electrical Engineering works (buildings)	0.25
EP	Electrical Engineering works (infrastructure)	0.25
GB	General Building	0.5
ME	Mechanical Engineering works	0.25
SB	Specialist	0.25

"Contract amount" = Tender amount at the time of award excluding allowances and expenses, and VAT

Contractor CPG:

CPG calculation

"Contract amount" x factor from Table 3 above.

CPG calculation example:

"Tender Amount" = R150 Mil for GB, all inclusive of allowances and VAT

"Contract Amount" = R130 Mil (Tender Amount at the time of award excluding allowances and VAT)

Factor for GB = 0.5% (as per Table 2 above)

CPG in R value = R130 Mil x 0.5% = R650 000 i.e. total cost of training to amount to R650 000

Calculation of penalty:

Percentage penalty applicable = 30% as specified in the Scope of Works (PG01.1)

CPG value = R650 000

Achieved = R550 000 = R100 000 Shortfall

Penalty = R100 000 x 30% = R30 000 Excl. VAT

Calculations based on "Contract Amount" after bid award and after bid award and appointment of beneficiaries

Actual CPG training requirement value after award upon selecting method/s of training and appointment of beneficiaries = R676 000 (Table 4 below) and the provisional amount allowed for to be adjusted accordingly. The new monetary value of training required will then form the basis for determining penalties applicable. No penalties will be applied should the CPG value, based on the "Contract Amount" be achieved.

Table 4: Notional cost recalculation upon appointment of beneficiaries.

Source: cidb Standard for Developing Skills through Infrastructure Contracts as published in the Government Gazette Notice No. 43495 of 3 July 2020 (Page 17)

Skills Types	Number of learners	Notional Cost / Learner / Quarter	Notional cost / learner / year	Total Notional Cost over 12 months Contract
Method 2: Workplace learning opportunities, with unemployed TVET graduates	2	R23 000	R92 000	R184 000
Method 3: Candidacy for an unemployed learner with a 3-year qualification	2	R61 500	R246 000	R492 000
Total	4			R676 000

Note: the required CPG will be recalculated based on the awarded Tender amount and "Contract Amount" once the beneficiaries have been appointed and actual costs are known

Note: The notional cost of providing training opportunities will increase by CPI on an annual basis based on April CPI as published by Stats SA. The rates will be adjusted as an adjustment to the provisional amounts should the rates increase after bid award or during the construction period



**UPGRADING OF EXISTING NPO COURTS
KIMBERLEY
SUPPLY AND DELIVERY OF
DX INVERTER HEAT PUMP AIR CONDITIONING INSTALLATIONS**

**CLIENT:
DEPARTMENT OF PUBLIC WORKS
KIMBERLEY**

**CONSULTING ENGINEERS:
DHP INC
PO BOX 47270
PARKLANDS
2121**

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PART 1:**GENERAL CONDITIONS AND SPECIFICATION****1. SCOPE OF WORK**

Technical specification, drawings and Returnable Schedules for the HVAC Mechanical installations for the NPO building and courts Kimberley

Scope of work shall include for the design, supply, installation, commissioning, 12 month guarantee and maintenance of all the equipment and installations described herein shown on the contract drawings. To be supplied and installed in accordance the Department of Public Works Standard Specification for Air-Conditioning and Ventilation Installations, Issue XI, 1998 (available on the department's Website at: www.publicworks.gov.za.)

- 1.1 The previous 30 year old chilled water cooled, packaged unit air conditioning installation serving 13 courts and the cash hall offices have been partially removed and are to be replaced with new, inverter DX split package heat pumps and cassette units under this contract: This contract is for the replacement of the entire water cooled system with low energy inverter, hear pump split package systems for each Court , these are to be installed with the vertical, split, DX evaporator/AHUs in the existing Court HVAC plant rooms and remote air cooled condensing unit in the respective court room block open air shafts/atria; the existing SA ducting is to be connected to the new DX AHP and reused but new supply air grilles are to be installed to serve the court rooms and fire dampers are to be introduced between the plant room and the adjacent court: the existing plant room DBs to be removed and new DBs installed to power the new Inverter Condensing Unit control panels located in the ground floor of the internal air shafts/atria. The work carried out is also to include for the following:
- 1.1.1 The children and Z court, and the cash hall offices to be served by ceiling mounted , split inverter cassette units with condensing units in the open courtyards ; allowance is made to introduce suspended ceilings to contain the dx piping and fresh air supply ducting in all areas where the cassette units are installed.
- 1.1.2 Existing water cooled condensing units and AHPs in the court plant rooms, together with their duct heater banks, are to be removed and are to be replaced, in the same plant rooms, with new vertical, indoor DX AHUs fitted with open primary filter banks (sealed plant room used as mixing chamber). The new AHU are to be connected to the existing supply ducting systems – which are to be reused (note: AHU plant rooms are sealed and return air and fresh air are drawn into the open plantroom and mixed- these are not hard connected to the AHU) .
- 1.1.3 The existing switchboard in each Court plant room is to be disconnected and removed and replaced with new switchboard (MCB) (to be connected to the same power supply). The new MCB shall provide power feeds for the new condensing unit and AHU. It shall also have a low voltage section for unit monitoring, dirty filter and fault indication which is to be interfaced with the central monitoring system (CMS) supplied for all the inverter units . A new remote room master sensor and plant on/off switch shall be installed in each court room and shall be connected to the respective AHU/condensing unit control panel and controller
- 1.1.4 Each Court indoor AHU is to be connected to its respective, outdoor inverter Condensing unit & control panel, located on the basement level in the respective Air Shafts. A cable tray to be run between the indoor AHU and outdoor

- condensing unit to support the refrigeration lines, power supplies and control cables.
- 1.1.5 Building work, casting of plinths for the condensing units, etc. is to be carried out by a specialist registered master builder employed under this contract
- 1.1.6 The existing supply and return air ductwork and fresh air arrangement for the existing court room units is in sound condition and is to be reused to supply the courts; the grilles and diffusers are to be renewed. Curtain type fusible link fire dampers are to be introduced into each SA and RA grille and the plant room FA intake to fire proof the plantrooms
- 1.1.7 The existing water cooled package units have been largely removed by the previous contractor; the existing, incomplete, chilled water piping between the roof (13th floor) and the respective court room plant rooms (ground, first and second floors) to be dismantled and removed under this contract. A credit to be provided for the salvage value of the heavy grade steel pipework – which is to be removed from site and sold. Associated building work: openings in shafts etc for piping are to be made good: closed-up, plaster and painted. All rigging and plant positioning cost are to be included in the contract value.
- 1.1.8 The new installations are designed, and shall be engineered/selected to maintain 22 deg C +/- 2 deg C in the courts in summer and winter at design at outdoor air temperatures of 35/22 deg C (summer) and 0 deg C (winter) respectively.
- 1.1.9 Concrete plinths shall be cast in the floor of the air shafts/atria to position the condensing units- which shall be centrally located top assist with ventilation
- 1.1.10 A proprietary “central monitoring system (CMS)” alarm and fault monitoring system for all the units is to include a proprietary LED display unit in the manager’s office and will provide information on the plant alarms and running condition, this system is to have internet capability will also be used by the contractor to remotely monitor the plant during the 12 month free maintenance and guaranteed period; wall boxes and conduits into the ceiling void to be provided for the local court room switches - which shall be simple devices for the magistrates and judges to control the HVAC from their positions in the courts : all controls and electrics are to be provided for under the HVAC contract as required by the plant and this specification for a complete operating system
- 1.1.11 Making safe, removal of any existing HVAC water cooled units and DX equipment from the floors; the removal of chilled and hot water piping; the sealing and making good of the openings and fire proofing where necessary , the cleaning, storage, repair and reinstallation of the same as required for the Contract.
- 1.1.12 DX piping shall be run in hard copper (refrigerant grade) suitable for R410a, insulated in fire and smoke retardant insulation and shall be to the engineers approval. Dx piping will be insulated using seamless, high density, “armaflex” with vapour proofing.
- 1.1.13 Only licensed and coded welders shall be employed on the job; a welding plan and proposal shall be presented or approval by the engineer before any welding commences on site; piping shall be kept sealed and cleaned at all times and shall run nitrogen during welding to prevent any internal oxidation. All dx lines shall be vacuum tested to 700 microns for 2 h without any movement before charging
- 1.1.14 DX inverter, heat pump type air conditioning installations shall be high efficiency R 410A systems for both cooling and heating and shall be fitted with head pressure controls and defrosting for low temperature applications. The units shall be able to run continually in heating mode at -0deg C (outside air)
- 1.1.15 Donn tee type suspended ceilings shall be installed by a ceiling specialist with acoustic tiles shall be installed in the cash hall and waiting area and shall house the chilled water cassette units proposed for these areas.

- 1.1.16 Complete electrical installations for all the systems installed: New plant romm DBs, proprietary AHU plant control panels; new power supply to the remote condensers fitted with local isolators ; all controls connected to a proprietary central monitoring system for alarm and operating system reporting.
- 1.1.17 Complete internet interfaced, proprietary, data based central monitoring system (CMS) connected to the HVAC plant via Cat 5E/cat 6 data cable for field bus system running Modbus, Lonworks, and Bacnet to operator display and field units. – All monitored points and plant conditions and alarms shall be displayed on the display panel mimic drawings; simple proprietary operating software shall be provided. . A blue tooth interface system to local PC shall be provided for internet interface and remote monitoring
- 1.2 All the work shall be carried out in full conformance with the Department's general technical specifications for HVAC installations. Workmanship and equipment shall be of the best quality and standard.
- 1.3 All the work shall be carried out to the agreed building programme and shall be arranged to complement the Clients requirements and coordination.
- 1.4 **In addition to the above the scope of work shall include, but not be limited to the work described herein:**
- 1.4.1 The design, selection, site measurement, production of dimensioned shop drawings, delivery, rigging and installation of the complete new HVAC systems their electrical and control installations; the removal of all redundant plant and making good of building work which has been disturbed, power, cable and water connections and piping
- 1.4.2 The coordination of the Mechanical works with all other trades and services in the area; the coordination of shop drawings with reflected ceiling and other services
- The complete electrical and controls installation to all mechanical plant. The contractor shall provide new feeds to all plant and equipment, or reuse existing power feeds as specified .
- All power supplies to all HVAC equipment shall be included in this contract also the connection to existing power supplies
- HVAC contractor to provide indoor and outdoor weather proof isolators and to wires in conduit or trunking for all internal equipment and armoured cabling for all outdoor equipment.
- The mechanical contractor will provide a local isolator/starter for all mechanical equipment: air handling plants, condensing units etc.
- The contractor will install recessed wall boxes and conduits for the air conditioning system thermostats and controls into the ceiling to the the contractors shop drawings which shall be fully dimensioned.
- The entire electrical installation shall comply with the DOPW electrical specification for mechanical installations (The Department of Public Works "Standard Specification for the Electrical Installation and Electrical Equipment Pertaining to Mechanical Services", Issue IXa December 1999 shall also apply to this contract) and to SANS 10142 and shall be fully weatherproof. No surface cable shall be allowed internally except in Plantrooms. Cables to wall mounted controls shall be run in recessed conduit and wall boxes (provided by the Contractor under this contract). At the end of the Contract the Mechanical contractor shall provide a COC for the electrical installations associated with his plant in accordance with the requirements of SANS 0142.

- 1.4.3 The production of builders work shop drawings showing all dimensioned plinths and penetrations required through the building structures and roof to be formed by the Builder under this contract
- 1.4.4 All penetrations of the building shall be fully weatherproofed. Wall penetrations shall be provided with pvc sleeves and shall be fully sealed caulked and waterproofed
- 1.4.5 The installation of inverter, split, cassette type AC units complete in all respects; all to be supplied with two sets of "remotes" switch/controllers, unistrut mounted external DX condensing units, insulated refrigerant piping to each unit; pvc condensate pipes fitted with tundish and running to falls collecting the condensate from all the DX and cassette units; connection of condensate riser to plumbing system. Flexible spiral steel reinforced hose connections between the drip pans and the drain piping fitted with compression fittings for easy removal and cleaning (no jubilee clips)
- Supply grilles and diffusers (and plenum boxes) shall be installed and fixed to plaster ceilings using proprietary powder coated "Tee" frames, with welded edges; ceiling mounted grilles and diffusers not supplied with frames shall be built into the plaster ceilings by the ceiling contractor- to the mechanical shop drawing detail and dimensions. Where suspended tile or tongue and groove timber ceilings are provided the HVAC contractor shall support all equipment from the slab (not from the ceiling), equipment shall be set out symmetrically in the ceilings and where more than one tile is to be cut to accept the HVAC equipment this shall be detailed on a ceiling shop drawing so that the ceiling contractor can provide the appropriate opening which shall be coordinated with the other trades, frames or flanges shall be used to neatly fix the diffusers Court room supply and return natural anodised air grilles are to be removed and replaced with new powder coated aluminium grilles.
- 1.4.6 All holes through the walls for piping and cabling shall be cored/drilled by the (not chopped) to suit ducting, piping and cabling installation. Work shall be neat and the holes shall be plastered and painted after installation of sleeves for pipes and cables.
- 1.4.7 Any DX refrigerant piping, control and power cabling and open armoured AC cables shall be run on and strapped to galvanised cable tray/ladder fixed on the roof trusses/slabs etc and additional supports (by AC Contractor) as required.
- 1.4.8 Any outdoor exposed cables and refrigeration pipes between the evaporator and condenser shall be protected from the weather and UV exposure and shall run in GMS trunking pop riveted closed and painted the colour of the walls.
- 1.4.9 The external condensing units shall be mounted on floor plinths or a unistrut framework well away from wall to prevent any obstruction of air flow. Internal evaporators shall be plinth mounted and positioned so that they are fully accessible for maintenance purposes.
- 1.4.10 Cable entries to equipment shall be glanded and weatherproof and entries into trunking shall be grommetted. Outdoor boards shall be fully weatherproofed and shall have double sealed doors, all entries shall be from the bottom and weatherproof ventilation openings shall be provided at high level
- 1.4.11 Condensate pipes, refrigeration pipes and cables shall be concealed above ceilings and in walls i.e. no pipes shall be visible below the ceiling (except in plant rooms) . Condensate pipes shall be PVC piping with access bends and tees supported at less than 800mm centres and run to falls to drain point

outside the building or to a SVP as provided by the plumber. Access fittings shall be provided as required for cleaning and clearing blockages as required.

- 1.4.12 All flexible connections to refrigeration piping shall be insulated in seamless "armaflex" insulation rated for the prevailing conditions (minimum 22mm thickness), suitably taped and vapour proofed and sealed at the ends. Where exposed to UV they shall be contained in GMS steel (0.55mm thick preformed sections banded and not screwed) cladding.
- 1.4.13 Dx piping shall be insulated and vapour proofed with seamless "armaflex" insulation rated for the prevailing conditions (minimum 22mm thickness), suitably taped and vapour proofed and sealed at the ends. Where exposed to UV they shall be contained in GMS steel (0.55mm thick preformed sections banded and not screwed) cladding.
- 1.4.14 Fire rating shall be acceptable to the Kimberley Fire Department. Vapour barrier to be provided and maintained at all times and no condensation allowed
- 1.4.15 AC ductwork shall be manufactured to SANS (low pressure); be externally insulated with 40mm FRK (18kg/m³) (, fitted with mez flanges and measured on site to fit between, other services, trusses; beams etc. spigots shall be cut and fitted at the factory. No loose insulation shall be allowed. External insulated to be glued to the duct and strapped/banded to present a continuous vapour barrier. Where internally insulated with sonic liner as above shall be used with pins and buttons. Return and supply air plenum boxes shall be internally lined with 25mm sonic liner for acoustic purposes. All outdoor ducting shall have all joints wrapped and waterproofed with waterproofing tape and then painted and sealed.
- 1.4.16 Diffusers and grilles shall be rated for the specified air volume and shall be fitted to the ceilings installation with insulated flexible ducting connections. Colours shall be confirmed. Each diffuser shall be balanced and the air quantity fixed and recorded. Specified noise levels shall not be exceeded.
- 1.4.17 The return, supply and fresh air ducting to the court room AHPs shall be reused but shall be inspected, cleaned out, patched and the insulation repaired as required. Transformation pieces shall be measured up and the new AHP shall be connected to the existing supply ducting
- 1.4.18 Each internal (and external) component of the AC installation shall be supported from the building structures; where these are inadequate additional supports shall be provided by the AC contractor after approval has been applied for and given by the structural engineer. All components shall be acoustically isolated to meet the specified noise levels. Cat ladders and walkways shall be provided as necessary to access all equipment for maintenance purposes. Use of the structure for support is to be approved by the structural engineer and architect.
- 1.4.19 Each AC DX and split unit shall incorporate a fixed wall mounted control switch wired to the unit (remotes will be accepted for cassette and MW units only. All units shall restart automatically on power failure.
- 1.4.20 All AC units shall be entirely corrosion proofed. To this end the following minimum standard shall apply:
- 1 no black steel components shall be allowed.
 - 2 all painted steel work shall be primed two coats / (red oxide)
 - 3 condensate trays shall be in insulated stainless steel/copper.

- 4 all cooling coils shall be copper/aluminium and all support steel framework shall be galvanised treated and painted for corrosion protection with epoxy paint
- 5 the unit casings and coil frames shall be in GMS throughout and enclosures shall be corrosion resistant and corrosion proofed throughout stainless steel, PVC or GMS casings shall be supplied. Evaporator and fan coil casings shall be corrosion proof and no black steel components shall be allowed, coil flashing steel work and condensate trays shall be in 304 grade stainless steel
- 1.4.21 All new electronic , data based, CMS shall be provided to centrally monitor plant alarm and fault conditions driven by the proprietary Inverter HVAC systems; to this end all plant conditions and alarms shall be indicated and for monitoring purposes. All plant shall be monitored for run and trip, fault , dirty filter and temperatures out of limits. The plant alarms shall be set out and fully annotated on a mimic drawing which shall be displayed on the provided proprietary front end
- 1.4.22 All HVAC plant shall be electrically suppressed, to SANS standards, so as not to provide any electronic interference with the court recording systems.
- 1.4.23 Each installation shall be fully tested, commissioned, maintained and guaranteed for 12 months.
- 1.4.24 All internal and external fans, canopies, ductwork and equipment shall be fully supported from the available steelwork building structure. All supplementary required brackets, framework, steelwork, fixing etc shall be provided under this contract shall be galvanised and entirely corrosion proofed. No black steel components shall be allowed. All fans shall be mounted on AV support systems.
- 1.4.25 All fixings to the building shall be into concrete at approved locations and shall be effected using hot dipped galvanized fixings, bolts, etc.
- 1.4.26 All electrical components shall be fully corrosion and weatherproof. All cables shall be supported on GMS cable trays or trunking. No loose wiring will be allowed.
- 1.4.27 All centrifugal and axial fans shall have GMS casings and shall be fully weather and corrosion proofed for the intended purpose. Motors shall be TEFC of aluminium or cast iron construction with SS316 shafts and corrosion proof impellers they shall be fully rated for the intended application. All fans shall be mounted four AV sprung assembly kits.
- 1.4.28 The entire HVAC installation shall be attenuated for noise in accordance with the requirements of SANS 10103. To this end AC units, fan coils, fans and attenuators shall be selected to provide not more than NC30 in all occupied areas, NC30 (measured at 1.8m height directly below the grilles) in the court rooms, lecture, meeting and conference rooms. Externally, NC 60 shall not be exceeded 1,0m away from a condensing unit, fan or duct discharge. Notwithstanding any selections and dimensions given on the drawing for tender purposes, the HVAC contractor shall be entirely responsible for achieving the correct selections and noise levels. Noisy plant shall not be positioned adjacent to office areas which are noise sensitive
- 1.4.29 All plant shall be positioned so that it is fully accessible for maintenance purposes. To this end access panels shall be provided in ceilings, walls,

bulkheads etc. so that all components can be maintained. These to be shown on shop drawings

- 1.4.30 The entire Mechanical installation shall be tested, commissioned and cleaned before first delivery. All performance data shall be recorded and the installation balanced and set to meet the specified parameters. Once accepted it shall be fully guarantee and maintained for 12 months free of charge . Quarterly HVAC maintenance visits to be included.
- 1.4.31 Before first delivery can be taken 3 full sets of manuals and "as built" drawings shall be provided (see DSS spec clause 1.10)
- 1.4.32 The contractor will be required to make any necessary adjustments to the plant during the 12 month period in order to achieve the desired duties, functions temperatures, air volumes extraction volumes and noise results and also to rectify any faults and defects which may become apparent.

2. GENERAL

The supplementary specification is to be read as forming part of the Department of Public Works Standard Specification for Air-Conditioning and Ventilation Installations, Issue XI, 1998 (available on the department's Website at: www.publicworks.gov.za.)

The clauses referred to herein are clauses of the Standard Specification which are highlighted for ease of reference only. The entire DSS specification shall apply and relevant clauses not specifically mentioned shall also apply.

All equipment and installations shall comply with the requirements of the Occupational Health and Safety Act nr. 85 of 1993.

The Department of Public Works "Standard Specification for the Electrical Installation and Electrical Equipment Pertaining to Mechanical Services", Issue IXa December 1999 shall also apply to this contract.

Where reference is made in this specification and any drawings and documents mentioned therein to the Factories, Machinery and Building Work Act of 1941 and the Machinery and Occupational Safety Act No 6 of 1983, this will be deemed to be replaced by the Occupational Health and Safety Act No 85 of 1993.

Where conditions are at variance this supplementary specification shall have preference over both the Standard Specifications and the drawings.

Copies of the Standard Specifications are obtainable from the Director-General: Public Works, Private Bag x 65, Pretoria, 0001.

3. COMPREHENSIVE CONTRACTS

Only specialist sub-contracts who have previously successfully completed mechanical installations of the extent and type specified (Dx inverter controlled heat pump systems) in this document will be considered.

NOTE: No changes in make, type or capacity of equipment specified in the schedule of particulars, shall be allowed after acceptance of the tender without the written approval of the Department.

4. **PROTECTION OF THE WORKS**

The contractor will be responsible for taking all necessary precautions for the protection of lives, equipment and materials, installations or structures in the vicinity of the works during installation and commissioning. Proof of sufficient and Appropriate insurance to be held by the Contractor

Any damage caused by the contractor, his agents or workmen to the building, structure or any other installation will be made good by the contractor at this own expense and to the entire satisfaction of the representative of this Department.

5. **SITE INSPECTION**

Tenderers are advised to visit the site to acquaint themselves with local conditions, accessibility, etc. No claims for compensation due to lack of knowledge of conditions will be accepted. A compulsory site inspection is to be carried out

6. **ALTERNATIVE OFFERS**

The tenderer is advised to offer the installation strictly in accordance with this specification if he so desires, he can submit alternatives under a separate cover.

Tenderers are to note that for tenders to qualify for acceptance, the properties of the equipment offered must comply to the requirements described in the technical specifications and/or standard specifications etc. pertaining to this tender. The suitability of any equipment offered in a tender offer will be judged solely on its quality and performance as specified. Tenderers must, therefore furnish sufficient information to be able to determine the effectiveness, efficiency, durability and other qualities in terms of the specified qualities. Unless qualified all offered equipment shall be deemed to be in full compliance with the Specification.

This tender is based on a system designed for the purpose stated in the scope of contract to perform to criteria under specific conditions and to conform to parameters which relates to the effectiveness, efficiency, durability etc. This is to be the final basis of consideration of tenders for acceptability.

Alternative offers must be accompanied by full details, such as drawings and pamphlets and also a separate Schedule of Prices.

7. **TECHNICAL INFORMATION**

The tenderer shall complete the returnable schedules which shall provide sufficient information at adjudication stage to assess the merits and compliance of the plant offered. This may be corroborated by selection and proprietary technical information and pamphlets.

8. **MANUFACTURER'S RATINGS**

All equipment shall be able to work within the rated capacity, as determined by the manufacturer. Any equipment offered for use out of these limits will not be considered. Contractors shall hand in the rated capacities of all equipments as well as descriptive literature with the tender documents.

See clause 1.8.0

9. **MATERIAL AND WORKMANSHIP**

All materials and equipment used shall be new, free from rust, defects, undamaged and suitable for the purpose for which it will be used. Material shall comply with the latest issue of the relevant SABS or BS specification where applicable.

If any material or workmanship is not to the satisfaction of the Department, it shall be rectified and/or replaced at the contractor's cost and all rejected material shall immediately be removed from the site. The contractor is responsible for the correct and complete erection of the installation and inspections executed by the Department do not exempt the contractor of this obligation.

See Clause 1.3.0

10. **DRAWINGS**

The drawings are schematic and do not show the exact dimensions or positions of the equipment. Tenderers must satisfy themselves that the equipment offered by them will fit in the available space and can be positioned so that access for maintenance, repair or removal is not encumbered. To this end detailed, dimensioned shop drawings of all the installations to be executed under this contract shall be submitted for approval before site work commences.

NOTE: Final dimensions must be taken on site before any equipment or material is either purchased or manufactured.

See clause 1.4.0.

11. **BUILDING WORK**

The builder's work will generally be done by the Building Contractor. All builder's work necessary for this contract required for the HVAC installation is to be dimensioned and detailed on shop drawings by the HVAC contractor.

All equipment support work shall be included in this contract.

12. **SHOP DRAWINGS**

Within 30 days of being awarded the contract the contractor will produce complete layouts in the form of general shop drawing with all selected equipment detailed and dimensioned and the required service connections detailed and dimensioned. These to be submitted for approval before equipment is ordered and the work proceeds. All other "for construction" shop drawings required to effect the installation shall be produced as required and submitted for approval within the next 30 days. At the end of the contract, three full sets of "as built" drawings and manuals shall be provided for this contract.

SANS STANDARDS

The following SANS standards shall be applicable to this installation

- SANS 460 - Copper tube manufacturing code of practice
- SANS 10400 - The applications of building regulations
- SANS 10103 - The measurement and rating of environmental noise with respect to speech communication
- SANS 10139 - The prevention, automatic detection and extinguishing of fire buildings
- SABS 0140 - Identification colour marketing
- SANS 10142 - Code of practice for the wiring of premises
- SANS 10147 - Refrigerating systems, including plants associated with air-
SABS stems
- SANS 10173 - Installation, testing and balancing of duct work
- SANS 630 - Decorative high-gloss enamel paint for interior and exterior
- SANS 1238 - HVAC duct construction standards
- SANS 10287 - Automatic Sprinkler and Hydrant installations
- Act 103 - National Building Regulations and Building Standard Act,

(Act No 103 of 1977) as amended

ASIB 11TH
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RULES

ASIB 11 TH EDITION

PART 2:**TECHNICAL SPECIFICATION AND DETAILS (SECTION 4 DSS)****1 INVERTER DX CASSETTE AND SPLIT PACKAGE HEAT PUMP UNITS FOR COMFORT COOLING AND HEATING****1.1 GENERAL INVERTER DX CASSETTE HEAT PUMP UNITS**

Each unit shall consist of an internal dx fan evaporator/coil unit and a separate externally located inverter controlled condensing unit

Each internal fan coil unit shall be complete with a return and fresh air insulated plenum box fitted with a hinged return air grille and filter assembly two speed re-circulation fan; cooling/heating coil fitted into an appropriate insulated cabinet. (No condensation shall occur on the evaporator unit casing); insulated condensate tray piped to lifting pump and piped to waste; fan discharge connection plenum ducting with adjustable air supply diffuser and flexible connection. Coils/fins shall be cu/al; the air plenum needs to have knock out ducts for supply air and fresh air intake ports

Each unit shall be fitted with interconnecting dx refrigerant and condensate water piping, electrical cabling between internal and external components, insulation and a proprietary power and control panel. Suction and liquid lines shall be insulated. The contractor shall provide a power supply to the AC units as required and make off to a local weatherproof isolator and to the wall mounted field controller.

DX suction and liquid lines shall be run in refrigerant grade HARD copper suitable for R410a gas systems and pressures

Each unit shall meet the specified nominal capacities which have been derated for 22°C and 50% RH room conditions and a 1250 masl altitude

Units with insufficient capacities will **not** be accepted.

All units will be proprietary factory manufactured and will be of the cooling/heating type with automatic restart on power failure; they shall cool from 10 deg C to 40deg C outside air temperature (head pressure control provided) and heat from -2deg C to 20deg C outside air temperature

The internal units shall be fully supported from the building structure - no services or supports shall be visible around them. Access panels shall be provided to all units if ceilings are not removable.

Condensate piping in PVC shall be run from each unit to the nearest drain point. Pipes shall run to falls and shall **not** be visible inside the building. All condensate drains shall be connected to waste and trapped or run to ground outside the building. Drains shall be insulated to prevent condensation.

2. **CONTROL**

Units shall be individually controlled. Each controller assembly shall consist of an on/off switch, three fan speed control switch, thermostat/controller, timer, manual heat/cool operation.

Each controller shall be hard wired and installed against the wall in the position indicated. A recessed conduit box and conduit into the ceiling shall be provided. The electrical wiring between the remote controller and the units shall be carried out under this contract and surface conduits or cabling shall not be allowed. Units shall be complete with all safety controls including low and high voltage and overload protection.

3. **ACOUSTIC ISOLATION (to SANS 10103)**

Internal and external unit shall be acoustically isolated from the building structure and support work via proprietary AV mounts to prevent noise transmission. External equipment and units shall not exceed NC 60 (measured 1,0m away from the unit discharge). And shall comply with local municipal requirements

NOTE: The units must be quiet in operation and the internal noise level must not exceed 30 NC in court rooms boardrooms and conference areas and 35NC in office areas when measured 2m away from the units or their grilles and diffuser. If it is found that the noise level is too high the contractor will at his own expense supply a certificate by an approved authority of the measurements taken on site.

No payment will be made if an approved certificate is not supplied by the contractor. If the minimum sound level is not met the units shall be replaced at the contractors cost.

4. **ELECTRICAL EQUIPMENT AND WIRING**

The supply voltage is 231 volts, Single phase or 400V 3 phase.

Tenderers must allow for the complete electrical installation and wiring in accordance with the "Standard Specification for the Electrical Installation and Electrical Equipment Pertaining to Mechanical Services", Issue IXa December 1999 shall also apply to this contract.

All wiring between power points, control panels and the air conditioning equipment shall form part of this contract and must be included in the tendered price. Wall boxes and conduits into the ceiling will be provided by the Electrical contractor. Visible electrical and control wiring inside the building shall not be allowed.

Unit shall restart automatically on power failure.

5. **INVERTER DX SPLIT AND PACKAGE UNIT AC COOLING UNIT DUTIES**

DX units shall be of the heat pump type and shall comply with the requirements of the specification for hedonic units above; they shall be entirely automatic and piped and wired to their respective external condensers. The **minimum nominal capacities** of the AC units shall be as shown in Schedule 2 at a sensible Heat Ratio (SHR) of 0,86. For lower SHR, a larger AC unit shall be selected to achieve the sensible load specified.

(NB Units shall operate at 40°C (some mixing allowed) air on condenser (summer) and 0°C outside air (winter) AND 1250m ASL. Internal RA temperatures of 22°C, 50% RH).

SCHEDULE 1				
SPLIT DX AC INVERTER UNITS WITH LOW AMBIENT CONTROL				
ITEM	DETAILS AND TYPE OF UNIT, VRV OU NO OFF AND SIZE KW (R)TOTAL	COOLING/HEATING CAPACITY KW FOR THE IU	AVE FRIDGE PIPE LENGTHS (m to condenser H+L)	NO OFF IU indoor units
NEW DX SPLIT HEAT PUMP UNITS				
DX1	cassette 1	3.5	4+26	2
DX2	cassette 2	5.3	4+26	4
DX3	cassette 3	7.0	4+26	4

6 **DX INVERTER COURT ROOM SPLIT PACKAGE UNIT HEAT PUMP SYSTEMS**

6.1 **GENERAL.**

Each unit shall be complete in all respects and shall only need to be connected to the supply air ducting, external power, controls and condensing unit; all fixings and fittings shall be included. The units shall be introduced to the floors via the goods lift and shall fit through a 900mm plant-room door, shafts and Colours and appearance shall be approved by the Engineer: to this end the renderers shall allow for the supply and fixing of a complete sample unit for approval before the balance of the systems are installed; a suspended ceiling is to be installed in the cash hall and offices, both to contain the services and to accommodate the cassette units with all services concealed.

Each system shall be complete in all respects with proprietary controls and controllers to cycle compressors via the inverters and provide highly efficient operation and design and intermediate operation achieving a COP of at least 3.7 (heating and cooling)

All equipment shall be installed to be fully accessible for servicing and cleaning.

AHPs shall be fitted with washable, 100mm deep primary filters with high dust holding capacity as specified

The new inverter DX, heat pump, AHUs and condensing unit system shall be supplied complete with a proprietary switchboard, field sensors, switches and control panel, complete with local main isolator(AHPs), and shall be connected by the contractor to the existing power supply. All electrics, motor starters and automatic controls transformers shall safe and stable operation at 400V/50Hz/3phase power.

6.2 DX INDOOR AIR HANDLING UNITS: AHUS

AHU cooling /heating coil support plates and steel frames shall be of GMS and all coil flashing plates shall be of 304SS. Condensate trays shall prevent air short circuiting, they shall extend on both sides of the coil and shall incorporate adequate drainage which shall be trapped. Condensate trays shall be of insulated 304 SS. No carry over shall be allowed. Fans shall be GMS dual width, dual inlet centrifugal fans with belt driven motor assembly. The fans shall be mounted on a rigid fan deck which shall be fully AV sprung and vibration isolated. Ball bearings shall be of the self aligning type and the entire fan shall be statically and dynamically balanced. Fan motors shall be TEFC with soft/star delta start > 7,5 kW. Motor size shall be non-stall and at least 20% oversized at the duty point. The fan shall be connected to the existing ducting system through flexible connections and transformation duct piece supplied under this contract.

All cold surfaces shall be insulated internally and externally to prevent condensation. Unit panels shall be constructed of 40mm insulated chromadeck panels or similar All penetrations shall be vapour proofed and sealed and external units shall be entirely weatherproof

Units shall be supplied on a heavy duty galvanised steel/aluminium framed skid base which shall be positioned on existing sprung and floating plinths. All Plant and filters shall be readily accessible for maintenance and repair - suitable SS clips and frame work shall be provided. Contractor shall ensure that the AHUs are fabricated to fit into the plant room and to connect to the existing ducting and services. An existing minimum plant room fresh air OBD is provided to balance the required fresh air volume drawn into the room for the required mix. Existing return air OBDs shall be used for balancing

AHU construction shall be of corrosion proof materials throughout. Panels and doors shall be double skinned fully insulated and suitable for the intended application (Chromadeck sandwich construction with hard internal and external skins or similar approved). Panel insulation thickness shall be at least 40mm. All components shall be readily accessible for maintenance and repair: to this end latched access doors shall be provided to access all components of the AHU and to get to the controls and electrics and to all the internal mechanical components requiring attention.

GMS drains shall be run from the condensate pans to the nearest drain point. Before the new AHP is installed the room shall be thoroughly cleaned and painted; all new electrics shall be supplied with the exception of the main incomer which shall be connected to the new plant room DB (supplied in this contract).

Field installations from the new DB, the court room wired sensor/ controller at the judges bench, the cabling between out door and indoor units, shall be carried out under this contract by a specialist qualified electrician who shall also be employed to carry out the site wiring and commissioning of the systems.

Noise levels shall be contained and the new system shall be attenuated to keep the noise level in the courts to NC 30 measured 1.0m away from the supply and

RA grilles. Fans shall be selected for low speed to achieve the court room NC 30 level. Once the fans have been selected the contractor shall provide noise level calculations to show that NC 30 will be maintained and shall provide the necessary attenuation equipment as required

Washable panel filters shall be provided for each unit (G3 class). They shall be easily accessible for cleaning purposes. Filter panels shall be fixed and gasketed to prevent any bypass of the filter.

CONDENSING UNITS shall be complete with DC inverter controlled scroll compressor, air-cooled condenser cu/al coils (max 12 fin/inch) and condenser fan fitted into a fully corrosion proofed galvanised steel/epoxy coated cabinet. Each condensing unit shall be rated for operation at 40 deg.C. air on in summer and 0.0deg C in winter. They shall be supplied with proprietary control panel and a local isolator

Each unit shall be fitted with interconnecting proprietary refrigerant piping sized for the duties and distances specified and shown on the drawings, electrical cabling between internal and external components, insulation and a proprietary power and control panel. All cabling and piping shall be supported on gms cable ladders and enclosed trunking where exposed to the elements. Suction and liquid lines shall be insulated.

Refrigerant piping shall be run in hard, Class 2, refrigerant grade hard copper piping suitable for R 410 A operating pressures . Each set of refrigeration piping shall be vacuumed to an absolute pressure of 700micron and held for 2h without leaks (witnessed and signed –off) before charging with gas

Units shall be individually controlled from their controller/ scheduler with remote room/RA temperature sensor. Each unit shall be supplied complete with proprietary control panel and shall be complete with all safety controls including HP,LP, OP, compressor low and high voltage and overload protection. Units shall restart automatically on power failure.

A central Plant monitoring (on/off/ trip/fire/fault/filter dirty for each unit) "proprietary monitoring system (CMS)" for status alarm and fault monitoring of the 13 court room package units system is proposed which will be linked to a display module in the maintenance manager's office and will provide information on the plant alarms and running, this system (if internet based) will also be used by the contractor to remotely monitor the plant during the 12 month free maintenance and guaranteed period

Refrigerant piping shall be run in hard, Class 2, refrigerant grade copper piping . Each set of refrigeration piping shall be vacuumed to an absolute pressure of 700micron and held for 2h (witnessed and signed –off by the engineer) before charging with gas.

SCHEDULE 2

**VERTICAL, R 410 SPLIT DX INVERTER HEAT PUMP PACKAGE UNITS; WITH FRAME AND FILTERS FOR 100mm (deep) WASHABLE PANELS
EQUIPPED WITH: EXTERNAL CONDENSING UNITS WITH SILENT ROTARY COMPRESSORS.**

1. General Conditions

- 1.1 Volumes and pressures :1250masl
- 1.2 Select at 40°C air on condenser (summer)
- 1.3 Select at °C air on evaporator (winter)
- 1.4 AHUs are all constant volume, variable temperature units. Inverter controlled, electronic eev, automatic proportional cooling and heating.
- 1.5 AHUs are all vertical indoor units on plinths; must be sized to fit into existing unit space with connections to SA ducting
- 1.6 AHUs shall be mounted on a self supporting, heavy duty, AL/GMS sectional steel skid base suitable for supporting on a plinth.
- 1.7 Site measurements to be verified before units are manufactured: units to fit through 2.1m h x 0.9m w doors
- 1.8 AHUs shall incorporate a supply air transform piece, SA mating flexible and mez flange duct connections
- 1.9 All AHU shall be complete in all respects with head pressure control, and proprietary control systems for automatic heating and cooling operation; remote sensors and control switch
- Interface with data based electronic monitoring system with central remote LED display and monitoring panel; Auxiliary switching for remote central control to be provided
- 1.10 All AHU to be fitted with attenuators if required to achieve NC 30 in court rooms and NC 60 outdoors to SABS 10103 (low speed BCC fans to be selected)
- 1.11 All condensate trays and coil flashings to be 304 ss/pvc/ and insulated, all condensate drains to be class 12 PVC pipe
- 1.12 SA duct connections to AHP to be through flexible connection (insulated).
- 1.13 All AHP to incorporate washable filters: AHP : 100mm G3 primary - type 1 EN779 and EN1822, complete with filter box, filters 2.5m/s face velocity
- 1.14 AHP/condensers fitted with (max 12fins/inch) Cu/Al cooling / heating coils, fans sized for the required air flows and pressures including filters and system loss.

<u>AHP</u>	<u>SERVICE</u>	<u>SUPPLY AIR VOL.</u> <u>m³/s</u> (low speed)	<u>MIN FRESH AIR</u> <u>30%</u>	<u>ON COIL MIX</u> <u>db/wb</u> <u>°C/°C</u>	<u>OFF COIL</u> <u>db/wb</u> <u>°C/°C</u>	<u>EFSP (INC. filters)</u> <u>Pa</u>	<u>TOTAL COOLING</u> <u>DUTY kW</u>	<u>SENSIBLE COOLING</u> <u>DUTY kW</u> (SHF 0.81)	<u>HEATING DUTY (at 0deg C OA)</u> <u>DUTY kW</u>	<u>FILTER TYPE</u>	<u>No off</u>
1	AHU1-13 Court units	1.40	0.42	26.6db/17.3wb	11.0db/10.5wb	430Pa	27.33	22.14	19.83	1	13

7. **DIFFUSERS GRILLES, DISC VALVES PRIMARY FILTERS FIRE DAMPERS AND WEATHER LOUVERS**
- 7.1 Constant volume grilles shall be vaned, non vision, aluminium powder coated to the Architects requirement.
- 7.2 SA grilles shall be aluminium powder coated AH type with horizontal blow and fixed horizontal blade, grilles fitted to existing plenum boxes and installed in the same space as the existing grille is presently installed. Plenum box, internally insulated, to be provided for each grille. Colours shall be standard to match the existing and as directed by the Architect. Insulated plenum boxes shall be provided for all supply air grilles where condensation may occur
- 7.3 Nominal diffusers and grilles duties shall be in accordance with Schedule 4 actual duties and sizes shall be as per the shop drawings and shall be set so on site. Noise levels and air throws shall be suitably selected to meet specified requirements.
- 7.4 Fire dampers to be 2 hr rated FD to SANS 193 shall be of the in duct fusible link, curtain/shutter type.
- 7.5 Fire dampers shall be built into walls (vertical) and be fully fire stopped, they shall be fitted to a steel frame in the ductwork to provide a composite sealed unit providing the dividing wall with the required fire rating
- 7.6 Fire damper mechanisms shall be fully accessible for testing, resetting and repairing. Access panels for internal inspection shall be provided at each damper.
- 7.7 Spare fusible links shall be provided as each damper shall be tested during commissioning..

SCHEDULE 3

TYPE	NO. OFF	AIR VOL UME m ³ /s	NECK SIZE MM	NOTES
SAG1	78	0.233	400x250 (measure on site to match existing)	400x250 grille and plenum box wall fix; grille throw 6.0m, noise level NC 30, pressure drop < 20Pa
DVK	10	0.08	200 dia	Supply air disc valve steel for fresh air supply to offices and cassette court rooms
WL	1	0.248	300x300	WL plus wall box for duct connection
WL	1	0.32	400x300	WL plus ceiling box for duct connection
FD1 (SA)	78	0.233	400x250 (measure on site to match existing sleeve)	Fit into duct before supply air grille
FD2 (RA)	13	1.3	650x650 (measure on site to match existing sleeve)	Fit into RA duct before OBD
FD3 (FA)	13	.42	400x400 (Fit into FA duct before OBD

TYPE	NO. OFF	AIR VOL UME m ³ /s	NECK SIZE MM	NOTES
			measure on site to match existing sleeve)	

8 **VENTILATION FANS**
(AC unit fans not included in this schedule)

Air volumes are given at 21°C, 50% RH 825m bar (1250masl).
Resultant internal and external noise levels shall not exceed the specified levels whether attenuators are specified or not. Noise levels shall be achieved through fan and attenuator selection.

SCHEDULE 4: FANS, ATTENUATORS

FAN TYPE	ATTEN-AUTOR S (2x D) long	SERVIC E	NO OFF	DUTY m ³ /s	DUTY FSP PA	NOTES
A1 axial in line	yes	Fresh air supply	1	0.248	120	250 dia Ducted fresh air supply to the Z courts
A2, axial in line	yes	Fresh air supply	1	0.32	120	300 dia Ducted fresh air supply to the cash hall
Expel Air window	NA	supply	1	0,10	FA	100 Ø window cut out mount with light switch start and local isolator

Notes:

All fan static pressures are indicative and are to be recalculated for actual system resistances.

All fan static pressures and volumes shall be rated at sea level.

All prop fans shall include GMS duct enclosure (where required), access panel, diagram plate, safety guard and discharge wall cowl complete with all fixings. Low speeds (max 900 rpm) shall be selected.

All external fan casings shall be hot dipped galvanised. Axial fan casings shall be full length.

Axial fan selections shall be made at efficiencies not less than 70% Centrifugal fan selections shall be made of efficiencies not less than 80%.

Fans shall include all suspension and support assemblies, flexible connections, mating flanges and in all cases AV mounts. External AV mounts shall be

weatherproof. All external flexible connections shall be weather proofed and shaded by sheet metal enclosure/covers.

Fans shall be matched with attenuators to provide the specified noise levels, Given attenuator lengths are only indicative and box attenuators and may be used in lieu of pod attenuators. Final fan and attenuator selections shall be by the fan supplier and shall be approved by the supervisor before purchase.

All fan impellers, shafts and hubs shall be constructed of non corrosive materials. No black steel components and fixings will be allowed.

All exposed attenuators and their flexible connections shall be GMS and fully weatherproof and shaded (not to collect water).

Fan motors shall be TEFC. Motor sizes shall be non overloading for the selected blade angle speed. Motor sizes shall be as required for the selected duty plus 30% spare power.

Fan filter units shall incorporate 100mm G3 primary filters (80% efficiency at Ashrae 52/76).

9

ELECTRICAL EQUIPMENT AND GENERAL

CFS units may not be used as main isolators to reduce fault levels. Circuit breakers with motor starting characteristics (curve 1) shall be used to feed and protect all motors.

All motors over 7,5kW shall be star delta started and shall incorporate an ammeter on one phase and a voltmeter (100 x 100) with selector switch. All motors shall be 400V/3 ϕ . 230V motor shall only be used for small proprietary Plant or where specified.

Switchboard drawings and equipment details shall be submitted for approval before switchboards are manufactured.

All switchboards shall be inspected at the manufacturer's before delivery to site. They shall be designed and manufactured by an approved specialist motor control switchboard manufacturer with proven track record in this field. A separate low voltage control compartment shall be provided in each switchboard

All switchboards, controls and electrics shall comply with the DPW General Technical Specification

All indication shall be by long life LEDs 24/12V. Spare lamps shall be supplied. Colours shall be green (run), red (trip, fire, safety) amber (circuit clear, step energised).

Due to the poor power supply, all electrical motors and equipment shall incorporate low voltage, O/L and single phasing protection. also, all shall restart automatically and sequentially (large motors > 7,5 kW) after a power failure or voltage dip.

All electronics and PC boards shall be coated and enclosed and protected against ingress of dust and water etc.

All equipment and all field and switchboard terminals and wire shall be tagged and labelled. The drawings shall reflect the same.

Only licensed wiremen shall work on the electrical installations and a certificate of compliance shall be provided for the works. Switch board shall be manufactured by an experienced establish motor control manufacturer, who shall prepare shop drawings for approval and shall test and commission the systems and the panels and issue the necessary COC for the installations.

All external electrical equipment shall be fully weatherproof IP 65 rated. Plastic Sprague flexible will not be allowed: plasticised steel copex with glanded connections to be used..

Armoured cabling shall be used for power supplies to all field equipment. Cables shall be EPEC PVC /SWA/PVC to SABS and rated 600/1000V. Indoor cables shall be low smoke low toxicity cables to SABS & B S standards (white stripe). Cables shall be run spaced by one cable diameter on heavy duty galvanised cable ladder for widths of 300mm and over and PT38 38mm lip galvanised cable tray for widths less than 300mm. Cables shall be

secured to trays or ladders by proprietary cable clamps to the approval of the Engineer at spacing's to manufacturers recommendations.

10 **AUTOMATIC CONTROLS AND ELECTRICS**

10.1 **POWER SUPPLIES**

The HVAC contractor shall run cabled power supplies to all the new air conditioning equipment's local starter isolators (SI), local isolators (LI) and motor control boards (MCB) required for the air conditioning installations.

To this end the power supplies to the new cassettes shall be taken from the existing DB feeds in the same areas, and fresh air fans from the light fittings. In the 13 court plantrooms plant rooms the existing MCB shall be removed and the feeds shall be connected to the new DB supplied herewith.

The air conditioning subcontractor shall confirm all electrical requirements for all AC plant in the form of comprehensive electrical schedule with equipment specifications, motor power and accompanying control diagrams within 14 days of approval of the respective AC plant selections and within the first month of the contract

Comprehensive switchboard power and control layouts and controller logic and layout drawings shall be provided . All cable termination terminal shall be numbered as shall be the connecting cables and wires. All cabling shall be included and carried out under this contract

All electrics and controls associated with the plant shall be by the AC subcontractors.

Power supplies (Including earth and neutral):

Local isolators (Li) at the following plant fed from existing circuits and lights

- a) 5A, 1ø, Xpel air ceiling/ wall, fresh air fans (3 off)
- b) 30A , 1ø for split AC units (10 off)

10.2 Motor control and power boards ACB (<50A = 15kA fault levels; >50A = 25kA fault levels) by AC contractor at the following plant:

Board	1 <u>Main Isolator</u>	2 <u>Locaton</u>	3 <u>Plant Feeds</u>
ACB 1-13 AHP (13 off)	30A/3ø	AHU plant rooms	Incoming : existing cable connection made off to each new ACB isolator by contractor ; out feeds to condensing unit control panel and all field controllers and to the CMS (monitoring system)

NB: Power supplies to the field equipment shall be run from the respective AHU ACB by the AC Contractor. Also power supplies from the socket outlets and local isolators.

All AC plant (and each AHU) shall either be supplied complete with proprietary electrical control and protection panels or shall be started and controlled from purpose made MCB panels incorporating specifically arranged electrics and controls. Proprietary panels shall conform to the requirements of this specification, electrical components shall all be freely available locally and the installations shall comply fully with local codes, relevant IEC and DIN codes and SANS 1042. All electrical and control plant shall be approved by the Engineer. Fault level ratings specified shall be observed in the construction of the MCB's and SI's. If not billed separately the power and automatic control requirements and control panel shall be allowed with the price of the actual plant, pump etc being controlled.

10.3 AC PLANT CONTROL GENERAL DESCRIPTION AND REQUIREMENTS

Plant listed above and connected to an (LI) shall be controlled as follows:

- a) Cassette split a/c units shall be controlled hand held remote, switch/controller. Power to be supplied to the external condensing unit fitted with weather proof isolator
- b) Wall and ceiling extract Fans to be manually switched from a local switch immediately below the respective fan and connected to the room light switch as specified.
- c) In line fresh air ventilation fans to be interlocked with the respective room lighting circuits.

10.4 ACBs (1-13) GENERAL ARRANGEMENT

Each ACB shall incorporate a main isolator and circuit breaker protected feeds to the respective plant and LV control circuit transformer, controllers and controls if required; proprietary field equipment alarm indication and motor run and trip indication shall be

provided with interface for the remote CMS mimic display and alarm indication. All to be carried out and wired under this contract. All AHP controllers shall be stand alone, incorporate adjustable set points and time controllers for automatic operation of the plant. All AHPs and fans shall be interlocked with respective fire shut down relays (low voltage low 5Aamps contacts, not for direct switching of plant) provided by others adjacent to the respective ACB or fan isolator (where stand alone equipment is provided).

10.5 Condensing unit Proprietary ACBs shall incorporate the AHP power and Digital Controller based controls which shall consist of the following:

1. Local isolator
2. AHP auto/off/manual switch on programmable 7 day timer or on CMS
3. AHP supply air fan starter system and trip indication
4. MCB protected control circuit and 24 VAV transformer feed to AHP controllers
5. MCB feed and starter for each fan motor.
6. MCB feed and starter for each compressor inverter system.
7. Programmable, AHP controllers with field cabling to inverters, sensors, reverse heat pump actuators, temperature sensors as require or the operation of the system
8. Fire shut down relay and interface hard wired via a terminal strip to external fire system relay (low voltage relay switching only).
9. Motor starters shall protect motors against OL/single phasing and under voltage.
10. AHP operating parameters shall be controlled locally via their respective controllers and sensors.
11. MCB and contactor safety and run down timer interlocks.
12. Filter pressure sensors for dirty filter indication.
13. Running time and after hour extensions for all the plants shall be switched on the court room wall mounted controller which shall also be used to set the court room temperature. This shall be located within easy reach of the magistrate. A central controller shall override the extension operation at a set time

1. Variable Temperature AHP 1-13 control

- 1.1 Digital Controller based plant control with central time clock control with local court room override switch: Constant speed fan
- 1.2 Off coil temperature shall be controlled by room sensor to maintain the room set point through modulating of the inverter controlled compressor speed to provide a constant suction temperature. Reverse cycle for heating. A 2 deg C dead zone shall be provided between the cooling and heating modes. The heating mode shall be switched manually from the field controller and shall then control automatically. Defrost cycle shall be automatic and shall reset and return to normal operation through the controller action.
- 1.3 Running time and after hour extensions for all the plants shall be programmed on the control system with an overriding plant switch on the magistrates wall controller.

11 PIPING AND FITTINGS

Piping to each of the systems will be fabricated on site to suit the application and shall be carried out by specialist pipe fitters and welders with valid welding certificates to the required SANS standard; samples of all welds shall be prepared for approval together with a method statement; random samples shall be cut out of the works for testing purposes as the installation proceeds and welds shall be marked with the welders identity. The piping systems shall be as follows:

22.1 Refrigerant piping systems shall be in hard class 2 refrigerant grade copper with capillary fittings installed and welded with nitrogen passivating gas, silver brazing/solder used and shall be flushed out with solvent before the piping system is subjected to and held at a vacuum of 700microns (absolute)for 2h. Compression fittings to be provided at all plant where required by the manufacturer. The refrigeration piping shall be sized by the unit supplier and a shop drawing showing the required installation shall be provided for approval before the installation commences. Oil traps and oil return shall considered for all pipe risers and pipes shall be run to falls to prevent oil traps and dead legs; allowance to be made for pipe expansion and contraction.

Seamless "armaflex" (no generics allowed) insulation (>22mm thickness) shall be provided as a continuous vapour barrier with all joints suitably taped with the apposite "armaflex" tape ; all surfaces which may condense shall be insulated. Vapour barriers shall be continuous and consistent over all insulated piping, valves and cold surfaces to prevent any condensation what so ever. All insulating materials shall be acceptable to the fire consultant and local municipal Fire Chief; exposed insulation shall be run in trunking and protected from UV . Where exposed to UV the insulation shall be clad in galvanised cladding.

All pipe penetrations through walls shall be sealed with a flexible fire proof intumescent plaster which shall allow movement of the pipes and pipe joints; the fire rating of the seal shall match the wall rating.

12. DUCTING AND PENETRATIONS

The existing AHP shall be disconnected from the court room supply air field ducting. The new AHP shall be positioned and measured up and externally insulated ducting transformation pieces made up to reconnect the new units to the existing supply air ducting; fresh air supply systems and in line fans shall be ducted to the cash hall and to the court Z with un insulated mezz flanged ducting

12.1 Ducting shall be manufactured to SANS 01238 low and medium pressure standards: the following shall apply:

12.1.1 Air conditioning ducts and supports to SANS 01238, all leading edges to be protected, all insulation to be glued and mechanically fixed, all to comply with DPW standards and specification.

12.1.2 Air conditioning supply and return ductwork and plenum boxes: low pressure, mezz flanges, internally lined with 25mm, 26kg/m³ sonic liner, gms leading and leaving edges required, ducts to be stiffened and braced to SABS 1238 and as required to provide a strong robust installation. AC unit Supply duct transformation pieces at AHPs shall be as above but externally insulated with 40mm FRK (18kg/m³) glued and banded

12.1.3 Spigots and flexible: externally insulated with 40mm FRK.

12.1.4 Fresh air Ventilation ducting at low pressure can in special cases use sn-drive for low profile flat installation, this to be approved by the engineer.

12.1.5 Sheet metal thickness shall be to SABS for the relevant duct size.

13 COMMISSIONING OF HVAC AND MECHANICAL PLANT

13.1 TESTING AND BALANCING

All HVAC and Mechanical plant installed under the Contract shall be tested and balanced generally in accordance with the requirements of the Specification and Clause 7 of SABS 0173-1980 and the recommendations of SARACCA.

13.2 INSTRUMENTS

All instruments used for measurements shall be provided by the Contractor and shall be accurately calibrated and maintained in good working order during the course of the commissioning process to the satisfaction of the Engineer. All tests shall be carried out by the Contractor to the Engineers satisfaction.

13.3 SPECIALIST CONTRACTOR

Testing, measurement and balancing of all plant parameters shall be carried out by the specialist contractor as part of the plant start-up and commissioning process. Having set up the plant to operate to the Specified requirements the Contractor shall measure and record all required operating parameters as per the schedule below. The contractor shall make whatever adjustments are required to achieve the specified duties and plant operating parameters.

13.4 TEST RESULT

Once the Contractor is satisfied that he has achieved the requirements of the Specification he shall present the Consulting Engineer with the typed and printed operating data. The Engineer shall then "sample" the data and carry out random tests to verify the recorded plant performance parameters under different conditions. Should the Engineer find that any of the measured parameters are inaccurate or false he shall instruct the Contractor to re-commission/repair /replace the plant and to take new measurements. After the Engineer has concluded his tests he shall he present the commissioning data to the Client who may then request further tests and measurements to ratify the presented data; Client sampling shall be limited to not more than 10% of the values recorded or as agreed with the Engineer. The Client may not request or carry out new or different tests other than those listed for this Project in the Schedule hereunder. Only after the above process has been reasonably concluded and the Engineer is satisfied that the tests are accurate and representative and that they have been successfully demonstrated to the Client shall the plant be deemed to be practically complete.

13.5 SCHEDULE OF MECHANICAL PLANT PARAMETERS TO BE TESTED, BALANCED AND SET

Schedule of mechanical plant parameters is as follows:

	Item/plant	parameter	Units of measurement	Extent of testing	% deviation allowed from design values
1	Water pumps operating point on pump curves	Pressure and volume to be plotted	kPa; liters/s	All pumps	5.0%
2	Fans	Air volume and noise levels- if objectionable, Pa operating pressure	m ³ /s; 125Hz-4kHz octave band SWL dB	All fans	5.0%, stable curve operating point
3	Air grilles, nozzles and diffusers	Air volume and noise levels- if objectionable	m ³ /s; 125Hz-4kHz octave band SWL dB	All grilles and diffusers	5.0% of required volume; NC35
4	Split AC units	Refrigeration line vacuum absolute pressure	Microns of mercury	All refrigeration lines	Must hold < 700 microns for 2 hours
5	Split AC units	Evap. and condensing pressure, amps drawn cooling and heating; HP, LP settings; outside air	kPa; °C; A	All compressors and outside air and air on-off conditions; all units	Manufacturer's recommendations ± 5.0%.

SCHEDULE OF MECHANICAL PLANT PARAMETERS TO BE TESTED, BALANCED AND SET (CONTINUED)

	Item/plant	parameter	Units of measurement	Extent of testing	% deviation allowed from design values
6	AHPs	Air temperature and volume, heating duty and noise levels if objectionable ; refrigerant quantities; kPa operating fridge and oil pressures	°C; m ³ /s; A; 125Hz-4kHz octave band SWL dB; kPa; l/s	All unit grilles and diffusers; all fans, filters, dampers, FA quantities and duct pressures; controls	5.0%
7	Filters	Face velocity and pressure drop	m/s; Pa	All individual filter units	5.0%
8	Electric Heaters	Amps	A	All heaters in steps; safety cut outs	5.0%
9	Room	Air temperature	°C	All controlled	5.0% (or

	temperatures	with associated outdoor condition		air conditioned environments: air temperatures in rooms at occupant level; 24h recordings in close control areas	specified limits)
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13.6 TEST REPORTS

Two copies of the final complete test reports with all pertinent data shall be included in the Maintenance and Operating Manuals for the project.

All parameters which may require adjustment and in particular those with seasonal variances shall be measured and proven, as required by the engineer, at any time during the 12 month free maintenance and guarantee period at no additional cost to the Contract

REGIONAL OFFICE: KIMBERLEY

PROJECT NAME:

**KIMBERLEY DPW : NPO: ADDITIONS TO AIR
CONDITIONER SYSTEM**

Date:

Health and Safety Specification

Compiled by:

NATIONAL DEPARTMENT OF PUBLIC WORKS

OCCUPATIONAL HEALTH

AND

SAFETY ACT

AND

REGULATIONS

PRE-CONSTRUCTION HEALTH AND SAFETY SPECIFICATION

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1. INTRODUCTION AND BACKGROUND

1.1 Background to the Pre-Construction Health and Safety Specification

- 1) The Construction Regulations of February 2014 in terms of Regulation 5(1)(b) places the onus on the Client to prepare a Pre-Construction Health and Safety Specification, highlighting all risks not successfully eliminated during design. Section 37.2 of the Act, Act 85 of 1993 requires the Department of Works as an Employer to enter into a written agreement with the Contractor (Mandatory) as far as arrangements and procedures are concerned to ensure that the Contractor complies with the requirements of the Act, Act 85 of 1993 and all its Regulations.
- 2) This document serves to address all the abovementioned requirements and by submission of his/her tender the Contractor undertakes to abide with the conditions as stipulated by the Department of Works hereinafter referred to as the Client throughout this document.
- 3) This documentation will give the Client or its duly appointed representative the required information to be able to evaluate the Contractors competency and resources as is required by Regulation 5(1)(h) of the Construction Regulations of February 2014 and to determine his/her suitability to perform such work in a safe and healthy manner.
- 4) When submitting his/her tender the Contractor must supply the Client with the following:
 - A detailed Site Safety Plan indicating how the contractor will manage all Safety, Health and Environmental aspects whilst working on the Clients premises or on premises under his/her control, which must be based on the contents of this document as is required by Regulation 7(1)(a) of the Construction Regulations of February 2014.
 - A Cost breakdown of funds being allocated to make adequate provisions for Safety, Health and Environmental requirements as is required by Regulation 5 (1)(g) of the Construction Regulations of February 2014.
- 5) No approval or acceptance of any document required by this specification shall be construed by the Contractor as an absolution of the Contractor from achieving the required level of performance and compliance with legal requirements whatsoever.
- 6) The Contractor is an employer in his/her own right and therefore must assume all the responsibilities as required from any legal obligation imposed on him or her.

1.2 Purpose of the Pre-Construction Health and Safety Specification

To assist in achieving compliance with the Occupational Health and Safety Act 85/1993 and the now promulgated Construction Regulations of February 2014 in order to reduce incidents and injuries.

The Pre-Construction Safety, Health and Environmental Specification sets out the requirements to be followed by the Principal Contractor and other Contractors so that the Health and Safety of all persons potentially at risk and the potential risk to the environment may receive the same priority as other facets of the project such as Scope, Time, Cost and Quality.

1.3 Implementation of the Pre-Construction Health and Safety Specification

This specification forms an integral part of the contract, and the Contractor is required to use it at pre-tender phase when drawing up his/her project-specific Construction Phase Health and Safety Plan as indicated above. The Principal Contractor shall forward a copy of this specification to all Sub-Contractors at their bidding stage so that they can in turn prepare Health and Safety Plans relating to their operations.

2. PRE-CONSTRUCTION HEALTH AND SAFETY SPECIFICATION

2.1 SCOPE

This Specification covers the requirements for eliminating and mitigating incidents and injuries on the particular project.

The scope also addresses legal compliance, hazard identification and risk assessment, risk control, and promoting a Health and Safety culture amongst those working on the project. The specification also makes provision for the protection of those persons other than employees.

2.2 Contractual Issues

- 1) Due to fact that this document is based on legislative requirements the Client requires that all Contractors comply with the requirements of this document and all other relevant legislative requirements not covered by this document.
- 2) The Client or its duly appointed representative reserves the right to stop any contractor from working whenever Safety, Health or Environmental requirements are being violated. Any resultant costs of such work stoppages will be for the Contractors account.

- 3) The requirements as specified by the Client in this document must not be deemed to be exhaustive and the Client reserves the right to make changes as and if the Client deems fit.
- 4) The Client will not entertain any claim of any nature whatsoever which has come about as result of costs incurred or delays being experienced due to the Contractor not complying with the requirements of this document or any other applicable legislative requirements imposed on the Contractor.

2.3 Safety, Health and Environmental Standards and Procedures

- 1) The Contractor will ensure that all work performed by him/her is executed in accordance with work procedures which comply with accepted safety practices and applicable safety, health and Environmental legislation.
- 2) Procedures as indicated above may be the Contractors own procedures on condition that they comply with the conditions as stipulated above.
- 3) Where procedures have been specified by this Client in the contents of this document such procedures must be adhered to unless otherwise agreed to with the Client or it's duly appointed representative.

2.4 Interpretations

2.4.1 APPLICATION

This specification is a compliance document drawn up in terms of South African legislation and is therefore binding. It must be read in conjunction with relevant legislation as noted previously.

2.4.2 DEFINITIONS

- 1) The definitions as listed in the Occupational Health and Safety Act 85/1993 and Construction Regulations of February 2014 shall apply unless otherwise stipulated.
- 2) Any reference to "The Contractor" includes – the Principal and Sub - Contractor unless otherwise stipulated.

2.5 Minimum Administrative Requirements

2.5.1 Notification of Intention to Commence Construction Work

- 1) The Contractor shall notify the Provincial Director of the Department of Labour in writing before construction work commences if required in the format of Annexure 2. A copy of this notification must be forwarded to the Client prior to the commencement of Construction work.

- 2) Copies of such notification can be obtained from any Department of Labour Office.

2.5.2 Assignment of Contractor's Responsible Persons to Supervise Health and Safety on Site.

- 1) The Contractor shall submit in the format of Annexure B, proof of all supervisory as well as any other relevant appointments as is required by the OHS Act and the Construction Regulations.
- 2) It is acknowledged that the Contractor may need to allocate more than one appointment to certain staff members. This practice may only take place if Safety, Health and Environmental Standards would not be negatively affected.
- 3) Should the Client or its representative deem such practice as having a negative affect on Safety, Health and Environmental Standards, then alternative arrangements will have to be made.
- 4) ***It is a specific requirement for this project that a competent Health and Safety Officer be appointed for the project on a full time basis for the duration of the Project.***

2.5.3 Competency of Contractor's Appointed Competent Persons

- 1) Contractors' competent persons for the various risk management portfolios shall fulfill the criteria as stipulated under the definition of "Competent Person" in accordance with the Construction Regulations of February 2014 and the Occupational Health and Safety Act, Act 85 of 1993.
- 2) The Client reserves the right to require levels of Competency, which exceeds the requirements as stipulated by the Act and or Construction Regulations.
- 3) In the event of the Client requiring additional levels of Competency, alternative arrangements will have to be made.

2.5.4 Compensation of Occupational Injuries and Diseases Act, Act 130 of 1993 (COID ACT)

- 1) The Contractor warrants that his and all his workmen are fully covered in terms of the COID, Act 130 of 1993 and that such cover shall remain in force for the duration of his contractual relationship with the Client or whilst working on the Clients' premises or premises under the Clients control.
- 2) The Contractor will supply proof of such insurance cover to the Client with his/her tender submission.
- 3) The Contractor undertakes to ensure that all Sub-Contractors appointed by him/her will be fully covered in terms of the COID Act, Act 130 of 1993 and that such cover shall remain in force

for the duration of their contractual relationship with the Contractor

- 4) The Contractor must also ensure that he has additional insurance cover that will adequately make provisions for any losses and/or his employee's acts and/or omissions whilst working on the Clients premises or on premises under the client's control.

2.5.5 Occupational Health and Safety Policy

- 1) The Contractor shall submit a Health and Safety Policy signed by the Chief Executive Officer.
- 2) The Policy must outline objectives and how they will be achieved and implemented by the Company / Contractor.
- 3) A copy of such policy must be included in the Site Safety Plan and the Site Safety File.

2.5.6 Health and Safety Organogram

- 1) The Contractor shall submit an Organogram, outlining the Health and Safety Site Management Structure including the relevant appointments / competent persons.
- 2) In cases where appointments have not been made, the organogram shall reflect the intended persons to be appointed to such positions.
- 3) The organogram shall be updated when there are any changes in the Site Management Structure.

2.5.7 Preliminary Hazard Identification and Risk Analysis and Progress Hazard Identification and Risk Analysis

- 1) A Preliminary Hazard Identification and Risk Analysis was conducted and can be found in the format of Annexure D. This Hazard Identification and Risk Analysis was performed to make the Contractor aware of potential Hazards, which could be present on the site and may not be comprehensive.
- 2) The Contractor shall cause a Hazard Identification and Risk Analysis exercise to be performed by a Competent Person before commencement of construction work, and the assessed risks shall form part of the Construction phase Health and Safety Plan submitted for approval by the Client. The Risk Assessment must include:
 - a) A list of hazards identified as well as potentially hazardous tasks;
 - b) A documented risk assessment based on the list of hazards and tasks;
 - c) A set of safe working procedures to eliminate, reduce and/or control the risks assessed;

- d) A monitoring and review procedure of the risks assessment as the risks change.
- 3) The Principal Contractor shall ensure that all Contractors are informed, instructed and trained by a Competent Person/s regarding hazards, risks and related safe work procedures before any work commences and thereafter at regular intervals as the risks change and as new risks develop.
- 4) The Contractor shall be responsible for ensuring that all persons who could be negatively affected by its operations are informed and trained according to the hazards and risks and are conversant with the Safe Work Procedures, control measures and other related rules (tool box talk strategy to be implemented and so on).
- 5) Should the Client or its duly appointed Representative identify alternative hazardous activities performed by the Contractor or its Sub-Contractors on site for which a Risk Assessment was not performed then the contractor will be required to perform such an exercise before continuing such work.

2.5.8 Health and Safety Representative(s)

- 1) The Contractors shall ensure that Health and Safety Representative(s) are appointed under consultation and trained to carry out their functions.
- 2) The appointments must be in writing and the Health and Safety Representative shall carry out regular inspections, keep records and report all findings to the Responsible Person forthwith and at Health and Safety meetings.

2.5.9 Health and Safety Committees

The Principal Contractor shall ensure that project Health, Safety and Environmental meetings are held monthly or as deemed necessary by the project requirements.

- 1) Minutes must be kept on record and filled in the Site Health and Safety File.
- 2) Meetings must be organized and chaired by the Principal Contractors' Responsible Person.

2.5.10 Health and Safety Training

2.5.10.1 Induction

- 1) The Principal Contractor shall ensure that all site personnel undergo a site-specific Health and Safety Induction Training Session before starting work. A record of attendance shall be kept in the Health and

Safety file. **A suitable venue must be supplied to provide this training.**

- 2) All visitors to the site must also be subjected to site-specific induction training highlighting items such as steps to follow in the event of an emergency, restricted areas and so on.

2.5.10.2 **Awareness**

The Principal Contractor shall ensure that, on site, periodic toolbox talks take place daily. These talks should deal with risks relevant to the construction work at hand. A record of attendance shall be kept in the Health and Safety File. All Contractors have to comply with these minimum requirements.

2.5.10.3 **Competency**

- 1) All competent persons shall have the knowledge, experience, training, and qualifications specific to the work they have been appointed to supervise, control, and carry out.
- 2) The abovementioned competency requirements will be assessed on a regular basis by the Client, by means of Audits, Progress Meetings, and any other means deemed fit by the Client.
- 3) The Principal Contractor is responsible to ensure that competent Contractors are appointed to carry out construction work and records should be kept of criteria used to determine competency.
- 4) The Client reserves the right to require competencies which may exceed the Contractors standards in which case alternative arrangements will have to be made to meet the Clients requirements.

2.5.11 General Record Keeping

- 1) The Contractors shall keep and maintain Health and Safety records to demonstrate compliance with this Specification, with the OHS Act 85/1993; and with the Construction Regulations of February 2014.
- 2) The Contractor shall ensure that all records of incidents/accidents, training, inspections, audits, and so on are kept in a Health and Safety file held in the Site Office.
- 3) The Principal Contractor must ensure that every Contractor opens his/her own Health and Safety file, maintains the file and makes it available on request by any duly authorized person.

2.5.12 Health and Safety Audits, Monitoring and Reporting

- 1) The Client shall conduct monthly Health and Safety audits of the work operations including a full audit of physical site activities as well as an audit of the administration of Health and Safety.
- 2) The Principal contractor is obligated to conduct similar audits on all Contractors appointed by him/her.
- 3) Detailed reports of the audit findings and resultant corrective measures shall be reported on at all levels of project management meetings/forums.
- 4) Copies of the Clients audit reports will be forwarded to the Contractor and must be kept in the Site Health and Safety File.
- 5) The Principal Contractor must audit the activities and administration of all appointed Sub-Contractors, forward a copy to the Client or its representative within seven days of completion of the audit and file a copy on the Site Safety File.

2.5.13 Emergency Procedures/Plans

- 1) The Principal Contractor shall submit a detailed Emergency Procedure/Plan for approval by the Client prior to commencement of work on site. The procedure shall detail the response plan/s including the following key elements:
 - List of key competent personnel;
 - Details of emergency services;
 - Actions or steps to be taken in the event of the specific types of emergencies;
 - Information on hazardous material/situations.
- 2) Emergency Procedures/Plans shall include, but shall not be limited to, fire, spills, use of hazardous substances, bomb threats, major incidents/accidents major and minor and any other anticipated emergencies.
- 3) The Principal Contractor shall advise the Client in writing forthwith, of any emergencies, together with a record of action taken. A contact list of all service providers (Fire Department, Ambulance, Police, Medical and Hospital, etc) must be maintained and be available to site personnel.
- 4) Emergency procedures/Plans must be developed by a competent person such as a Safety, Health and Environmental Officer or in the absence of a Safety, Health and Environmental Officer by the Construction Work Supervisor.
- 5) Emergency Procedures/Plans must form part of the Agenda of monthly safety meetings as the Procedures/Plans would have to be revisited on a continuous basis due to the changing environment on construction sites.

2.5.14 First Aid Boxes and First Aid Equipment

- 1) All Contractors shall appoint in writing First Aider(s) in terms of legislative requirements.
- 2) The appointed First Aider(s) must be sent for accredited first aid training should they not have received such training prior to commencement of work on site.
- 3) Valid certificates to be kept on site in the Site Safety File.
- 4) The Principal Contractor shall provide an on-site First Aid Station with first aid facilities, where required, including first aid boxes adequately stocked at all times.
- 5) All Contractors with more than 5 employees shall supply their own first aid box
- 6) In the event of hazards chemical substances being present on site, first aiders must be trained to address any incidents of accidental exposure and their first aid kits stocked accordingly

2.5.15 Accident / Incident Reporting and Investigation

- 1) Injuries are to be categorized into the following categories:
 - 1) first aid;
 - 2) medical;
 - 3) disabling; and
 - 4) fatal injuries.
- 2) All Contractors have to report on the 4 categories of injuries to the Principal Contractor as soon as is reasonably practicable.
- 3) The Principal Contractor must stipulate in his/her construction phase Health and Safety plan how he/she will handle each of these categories.
- 4) When reporting injuries to the Client, these categories shall be used.
- 5) All injuries will be investigated by the Principal Contractors or his/her Competent Person, with a report being forwarded to the Client forthwith.
- 6) The Principal Contractor must report all injuries to the Client in the form of a detailed injury report at least monthly.

- 7) All incidents taking place in terms of Section 24 of the Act must be reported in the prescribed period and manner to the Department of Labour.
- 8) Copies of Section 24 reports, including WCL 1 & 2 forms must be forwarded to the Client immediately after completion.

2.5.16 Hazards and Potential Situations

- 1) The Principal Contractor shall immediately notify other Contractors as well as the Client of any hazardous or potentially hazardous situations that may arise during performance of construction activities.
- 2) Should a hazardous situation require work stoppages the work must be stopped and corrective steps taken such as Written Safe Work Procedures and issuing of Personal Protective Equipment.

2.5.17 Personal Protective Equipment (PPE) and Clothing

- 1) The Contractor shall ensure that all workers are issued and wear Hard Hats, Safety Boots/Shoes and Overalls.
- 2) The Contractor and all Contractors shall make provision and keep adequate quantities of SABS approved PPE on site at all times.
- 3) The Contractor shall clearly outline procedures to be taken when PPE or Clothing is:
 - Lost or stolen;
 - Worn out or damaged.
- 4) The above procedure applies to Contractors and their Sub-Contractors.
- 5) The Contractor must ensure that no person enters the Site without the required Personal Protective Equipment.
- 6) Visitors to the Site must be provided with the required PPE such as Hard Hats, Earmuffs and Eye Protection.
- 7) Records of all PPE issued to staff must be kept on site in the Site Safety File.
- 8) Employees are to be made conversant with the purpose of PPE and where and when it is required to be used by the employee.
- 9) Safety belts are not to be allowed on site due to its associated potential of injury to the user; only double lanyard safety harnesses are permitted.

- 11) Suitable eye protection must at all times be worn by the worker when performing grinding, chipping, chasing and other associated activities.
- 12) In the event that onlookers may be struck by flying objects as a result of work being performed, suitable screens must be erected.
- 13) Any person performing welding or brazing work will wear suitable eye protection, gloves, aprons, and spats. Suitable screens are to be provided to protect onlookers from the harmful rays associated with such activities.
- 14) Where employees are required to work with corrosive liquids, suitable eye protection, gloves and acid resistant overalls must be provided.
- 15) Ear protection must be worn in designated noise zone (in excess of 85dB)
- 16) Suitable respirators must be provided to all employees and visitors required working in or entering areas where toxic vapors could be present.
- 17) All staff working in an elevated position (2m or higher) or where the potential exists that such person may fall must be provided with a suitably secured safety harness.
- 18) Any person refusing to wear personal Protective Equipment must be instructed to wear such equipment and in the event of such person refusing to wear such equipment he/she must be removed from the premises.

2.5.18 Occupational Health and Safety OHS Signage

- 1) The Contractor shall provide adequate on-site OHS signage including but not limited to: "no unauthorized entry", "report to site office", "site office", "beware of overhead work", "hard hat area".
- 2) Signage shall be posted up at all entrances to the site as well as on site in strategic locations e.g. access routes, stairways, entrances to structures and buildings, scaffolding, and other potential risk areas/operations.
- 3) In the event where work is being performed on a premises displaying signage such as no-parking, speed limits and so on, the Contractor will abide by the requirements of such signage except if otherwise instructed.

2.5.19 Permits

- 1) The Contractor shall draft and implement where required permits which may include the following:

- Use of Explosives and Blasting;
 - Work for which a fall prevention plan is required;
 - Use of cradles, and
 - Electrical work
 - Hot works
- 2) The Contractor will ensure that where permits are required that it is used and adhered to.

2.6 Physical Requirements

2.6.1 Demolition Work

- 1) Prior to any demolition work being carried out, the Principal Contractor shall submit a safe working procedure and a detailed engineering survey for approval by the Client.
- 2) Such Safe Work Procedures' must where possible be submitted with the Site SHE Plan
- 3) Acceptance will then be issued to the Principal Contractor to proceed with the demolition work.
- 4) The Principal Contractor shall ensure that demolition work complies with the Construction Regulations of February 2014.
- 5) In the event where a structure identified for demolition includes substances such as lead or asbestos it must be performed within the requirements of the applicable legislative.

2.6.2 Excavations, Shoring, Dewatering or Drainage

- 1) All excavation work must be performed under the supervision of a Competent Person as specified in Annexure B of this document and the Construction Regulations of July 2003.
- 2) Adequate Shoring and Bracing must be provided where required to ensure that the health and safety of the employees working in such excavations are not put at risk.
- 3) Adequate provisions must be made to ensure that water is drained from excavations which may enter such excavations as a result of seepage or rain.
- 4) All excavation made by the Contractor must be clearly demarcated and protected to prevent accidental access.
- 5) Barricading tape may only be used to make solid barricading more visible and may not be used as a means of barricading.
- 6) In addition to the abovementioned the requirements of Regulation 11 of the Construction Regulations of July 2003 must be adhered to.

2.6.3 Edge Protection .

- 1) All open edges posing the risk of resulting in injuries or damage to equipment must be adequately guarded fenced or barricaded or other similar suitable means used to prevent injuries or damage to equipment.
- 2) Barricading tape is not deemed to be suitable and may only be used in addition to other suitable means as indicated above.

2.6.4 Explosives and Blasting

- 1) All explosives must be transported or stored according to the requirements of SANS 0228.
- 2) Written approval must be obtained from the Chief Inspector Occupational, Health and Safety prior to any blasting activities taking place.
- 3) A copy of such permission from the Chief Inspector Occupational, Health and Safety must be supplied to the client prior to Blasting.
- 4) Prior to blasting a siren must be sounded, warning flags posted and guards placed at strategic locations points to prevent accidental entry to the blasting area.

2.6.5 Stacking of Materials

- 1) Stacking and storage of materials must be performed under the Supervision of a Competent Person whom has been appointed in writing as required by Annexure B.
- 2) Storage areas must be designated, kept neat and under control. In addition to the abovementioned the requirements of General Safety Regulations as promulgated by Government Notice No R1031 dated 30 May 1986 as amended must be complied with.
- 3) In the event that unauthorized persons may enter an area where materials are stacked such area must be barricaded off to prevent access to such area.

2.6.6 Speed Restrictions and Protections

- 1) Unless otherwise stipulated the speed limit on site to be adhered to is 10 Km/h.
- 2) Vehicle movement routes on site must be clearly indicated where applicable.
- 3) Signage to ensure the safe movement of vehicles on site as well as to ensure the health and safety of all employees and visitors on site must be displayed in strategic locations.

2.6.7 Hazardous Chemical Substances (HCS)

- 1) All employees required to use Hazardous Chemical Substances or products containing Hazardous Chemical Substances must be adequately and comprehensively trained with regard to the requirements of the Hazardous Chemical Substances Regulations as amended in Government Gazette No 25130 of June 2003, the potential sources of exposure and the potential risks to their health caused by exposure.
- 2) In addition to the abovementioned, Material Safety Data Sheets must be kept on site for all materials, which may contain hazardous chemical substances.

2.6.8 Asbestos

- 1) Asbestos work may only be performed subject to prior notification of the Provincial Director, Occupational Health and Safety, Department of Labour, in writing.
- 2) Proof of such notification must be supplied to the Client prior to work proceeding.
- 3) All asbestos work shall be carried out as per the Asbestos Regulations by an approved Asbestos Contractor.
- 4) All employees must be informed and receive training on aspects such as the contents and scope of the Asbestos Regulations as published in Government Gazette 23108 of February 2002, the potential risks of exposure to asbestos, precautionary measures employees have to take and all other requirements deemed necessary to provide a safe and healthy environment for all employees as specified by the Asbestos Regulations as indicated above.
- 5) All asbestos will be removed from site by an approved asbestos contractor to an approved asbestos dump site.

2.7 Plant and Machinery

2.7.1 Construction Plant

- 1) All Construction Plant must comply with and be used in conjunction with the requirements of Section 23 of the Construction Regulations and in specific that all records of inspections rendering such plant safe must be kept on site.
- 2) Operators will be competent and trained and copies of training certificates shall be placed on the health and safety file on site.
- 3) Operators shall be in possession of medical certificate declaring that they are physically and psychologically fit to operate such construction vehicle and plant and copy of medical certificate shall be on the file.

- 4) Original operating and medical certificates shall be kept by the operators and shall be on site in-possession of the operators at all times.

2.7.2 Vessels under Pressure (VUP)

The Principal Contractor and all relevant Contractors shall comply with the Vessels under Pressure Regulations, including:

- Providing competency and awareness training to the operators;
- Providing PPE or clothing;
- Inspecting equipment regularly and keeping records of inspections;
- Providing appropriate fire fighting equipment.

2.7.3 Fire Extinguishers and Fire Fighting Equipment

- 1) The Principal Contractor and Sub Contractors shall provide or ensure adequate provision of regularly serviced fire fighting equipment located at strategic points on site, specific to the classes of fire likely to occur.
- 2) The appropriate notices and signs must be posted up as required.
- 3) Contractors may not utilize fire protection equipment belonging to the client without prior consent.

2.7.4 Hired Plant and Machinery

- 1) The Contractor shall ensure that any hired plant and machinery used on site is safe for use.
- 2) The requirements as stipulated by the OHS Act 85/1993 and Construction Regulations of February 2014 shall apply.
- 3) The Principal Contractor shall ensure that operators hired with machinery are competent and that certificates are kept on site in the Site Health and Safety File. All relevant Contractors must ensure the same.

2.7.5 Scaffolding / Working at Heights

- 1) Working at heights includes any work that takes place in an elevated position in excess of 2m.
- 2) The Contractor must submit a risk-specific fall prevention plan and include a rescue plan in accordance with the Construction Regulations of February 2014 before this work is undertaken.
- 3) The fall prevention plan must be approved by the Client before work may commence.

2.7.6 Formwork and Support Work for Structures

- 1) The Principal Contractor shall ensure that the provisions of Section 10 of the Construction Regulations of February 2014 are adhered to.
- 2) These provisions must include but not be limited to ensuring that all equipment used is examined for suitability before use; that all Formwork and Support Work is inspected by a competent person immediately before, during and after placement of concrete or any other imposed load and thereafter on a daily basis until the Formwork and Support Work has been removed.
- 3) Records of all inspections must be kept in a register on site.

2.7.7 Lifting Machines and Tackle

- 1) The Contractor shall ensure that lifting machinery and tackle is inspected before use and thereafter in accordance with the Driven Machinery Regulations and the Construction Regulations (Section 20).
- 2) There must be a competent appointed lifting Machinery and Tackle Inspector on site who must inspect the equipment daily or before use, taking into account that:
 - All lifting machinery and tackle has a safe working load clearly indicated;
 - Regular inspection and servicing is carried out;
 - Records are kept of inspections and of service certificates;
 - There is proper supervision in terms of guiding the loads that includes a trained banksman to direct lifting operations and check lifting tackle;
 - The tower crane bases have been approved by an engineer;
 - The operators are competent as well as physically and psychologically fit to work and be in possession of a medical certificate of fitness which must be available on site.

2.7.8 Ladders and Ladder Work

- 1) The Contractor shall ensure that all ladders are inspected at least monthly, are in a good safe working order, are the correct height for the task, extend at least 1m above the landing, fastened and secured, and at a safe angle.
- 2) Records of inspections must be kept in a register on site.

2.7.9 General Machinery

The Contractor shall ensure compliance with the Driven Machinery Regulations, which include inspecting machinery regularly, appointing a competent person to inspect and ensure

maintenance, issuing PPE or clothing, and training those who use machinery.

2.7.10 Portable Electrical Tools and Explosive Powered Tools

- 1) The Contractor shall ensure that use and storage of all explosive powered tools and portable electrical tools are in compliance with relevant legislation.
- 2) The Contractor shall ensure that all electrical tools, electrical distribution boards, extension leads, and plugs are kept in a safe working order.
- 3) The Contractor shall apply the following:
 - A competent person undertakes routine inspections and records are kept.
 - Only authorized trained persons use the tools.
 - The safe working procedures apply.
 - Awareness training is carried out and compliance is enforced at all times.
 - PPE and clothing is provided and maintained.
 - A register indicating the issue and return of all explosive rounds is implemented and maintained, and
 - That signs are posted up in the areas where explosive powered tools are being used.

2.7.11 High Voltage Electrical Equipment

- 1) All contractors must be made aware of the presence and location of High Voltage Equipment such as underground cables and overhead lines, and that the necessary precautionary steps are taken where work has to be executed in the vicinity of such equipment.
- 2) Precautionary measures such as Isolation and Lock-Out of electrical systems or the use of electrically isolated tools must be used.

2.7.12 Public and Site Visitor Health and Safety

- 1) The Contractor shall ensure that every person working on or visiting the site, as well as the public in general, shall be made aware of the dangers likely to arise from site activities, including the precautions to be taken to avoid or minimize those dangers.
- 2) Appropriate Health and Safety Notices and signs shall be posted up, but shall not be the only measure taken.

2.7.13 Night Work

The Contractors must ensure that adequate lighting is provided to allow for work to be carried out safely.

2.7.14 Transportation of Workers

- 1) The Contractor and shall not:
 - Transport persons together with goods or tools unless there is an appropriate area or section to store such goods.
 - Transport persons on the back of trucks except if a proper canopy (properly covering the sides and top) has been provided with suitable seating areas.
 - Permit workers to stand or sit on the edge of the transporting vehicle.
 - Transport workers in LDV's unless they are closed/covered and have the correct number of seats for the passengers.
- 2) No driver will transport more than six people on the back of a 1 Ton LDV and more than four passengers on the back of a ½ Ton LDV.
- 3) The driver of any LDV will not permit more than 2 passengers to occupy the cab of any single cab LDV and 4 passengers of any double cab LDV.
- 4) All vehicles operated on the site will in all aspects comply with the requirements of the Road Traffic Ordinance Act
- 5) Drivers of such vehicles will have a valid license for the code of vehicle being driven by them.
- 6) No servicing of vehicles will be permitted on a Construction Site, which is occupied by staff working for the Client.
- 7) Servicing or repairs of vehicles on site may only take place if such activities are performed with the necessary procedures in place to prevent any harmful effects to the environment.
- 8) All waste generated from servicing vehicles must be disposed off in accordance with relevant Environmental legislation.
- 9) In the event where Earth Moving Equipment is present on site the following must be adhered to:
 - Drivers of vehicles must be instructed to avoid parking behind earth moving vehicles to ensure that their vehicles are visible to the operator of earth moving vehicles.
 - Right of way must be afforded to earth moving machinery at all times.
 - Vehicles must only be permitted to park where possible in designated areas

2.8 Occupational Health and Environmental Management.

2.8.1 Occupational Hygiene

- 1) Exposure of workers to occupational health hazards and risks is very common in any work environment, especially in construction.
- 2) Occupational exposure is a major problem and all Contractors must ensure that proper health and hygiene measures are put in place to prevent exposure to these hazards.
- 3) Contractors must prevent inhalation, ingestion, absorption, and noise induction.
- 4) Site-specific health risks are tabled in Annexure D such as cement -dust, wood-dust, noise and so on but is not limited to these items.
- 5) Water to be utilized for drinking purposes may only be drawn from taps designated for drinking water purposes. Fire hydrants and fire hose reels may not be utilized for drinking water purposes.
- 6) In the event where staff is required to be away from home due to the work they have to perform on behalf of the Contractor, the Contractor will provide suitable clean dry and hygienic accommodation, the cost thereof shall be borne by the Contractor.

2.8.2 Environmental Management

- 1) The Contractor shall take all precautionary steps to prevent any pollution of the Environment.
- 2) Any material, which may pose a harmful effect when disposed of by normal means, must be disposed of in an appropriate manner to eliminate its harmful effect on the environment after disposal.
- 3) The Contractor will ensure that adequate procedures are implemented and maintained to ensure that all waste generated including asbestos waste is placed in suitable receptacles and removed from the site promptly.
- 4) Plans to deal with spillages must be in place and maintained.
- 5) No waste materials liquid or solid may be disposed of in drains.
- 6) No burning of waste material may take place where such material being burned may result in pollution of the air or give off toxic vapors which could be harmful to the health of employees or any other person present on site.

2.8.3 Welfare Facilities

- 1) Contractors will supply sufficient toilets (1 toilet per 30 workers). Toilets will be so positioned that it is in close proximity of the

workers. If more toilets are required contractors must make provision for this.

- 2) Showers (1 for every 15 workers).
- 3) Changing facilities.
- 4) Hand washing facilities, soap, toilet paper, and hand drying materials.
- 5) Waste bins must be strategically placed and emptied regularly.
- 6) Safe, clean storage areas must be provided for workers to store personal belongings and personal protective equipment.
- 7) Workers must not be exposed to hazardous materials/substances while eating and must be provided with sheltered eating areas.

2.8.4 Alcohol and other Drugs

- 1) No alcohol and other drugs will be allowed on site without the express permission of the Principal Contractor.
- 2) No person may be under the influence of alcohol or any other drugs while on the construction site.
- 3) Any person on prescription drugs must inform his/her Employer, who shall in turn report this to the Principal Contractor forthwith.
- 4) Any person suffering from any illness/condition that may have a negative effect on his/her safety performance must report this to his/her Employer, who in turn must report this to the Principal Contractor forthwith.
- 5) Any person suspected of being under the influence of alcohol or other drugs must be sent home immediately, to report back the next day for a preliminary inquiry. A full disciplinary procedure must be followed by the Contractor concerned and a copy of the disciplinary action must be forwarded to the Principal Contractor for his records.

2.9 Electrical fencing.

- 1) Contractor must comply with sect 12, 13 and 14 of the Electrical Machinery Regulations.

ANNEUXRE A

The Contractor must submit proof of compliance with Annexure A with the construction phase H&S plan where applicable.

HSS Item No.	Requirement	OHSA Requirement	Submission Date
2.3.1	Notification of Intention to Commence Construction/Building Work	Complete Annexure 2 (Construction Regulations)	Before commencement on site
2.3.2	Assignment of Responsible Persons	All relevant appointments as per OHS Act, Con Regs and Annexure B	Together with SHE Plan
2.3.3	Competence of Responsible Persons	Client Requirement & OHS Act	Together with SHE Plan
2.3.4	Compensation of Occupational Injuries and Diseases Act (COIDA) 130 of 1993	Construction Reg and Client Requirement	Together with SHE Plan
2.3.5	Occupational Health and Safety Policy	OHS Act	Together with SHE Plan
2.3.6	Health and Safety Organogram	Client Requirement	Together with SHE Plan
2.3.7	Initial Hazard Identification and Risk Assessment	Construction Regs.	Together with SHE Plan