

**NHLS BLOCK 14 HVAC UPGRADE (MECHANICAL INSTALLATIONS)**  
**SUMMARY**

Bill No.	Description	Tender Amount
1.0	Preliminaries and General	R
2.0	Engineering Preliminaries and General	R
3.0	HVAC Chiller Plant Installations	R
4.0	HVAC Air Handling and Fan Coil Units Installations	R
5.0	5 Year repair and Maintenance of the Block 14 HVAC system	R
6.0	Allow R 650 000 ( Six Hundred and fifty Thousand Rands) for Contract Price Adjustment Provision CPAP	R 650 000.00
6.0	SUB-TOTAL 1	R
	Add Contingencies @ 10%	R
	Subtotal 2	R
7.0	Add : Value Added Tax (VAT) Calculated at a rate of 15%	R
	<b>Grant Total</b>	<b>R</b>

**NHLS BLOCK 14 HVAC UPGRADE (MECHANICAL INSTALLATIONS)**
**BILL 1 - PRELIMINARIES**

Item	Clause	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		<p><b>NOTES</b></p> <p>PRELIMINARIES</p> <p>i) The GCC 2015 in conjunction with the Contract Data is taken to be incorporated herein</p> <p>ii) The Tenderer is deemed to have taken cognizance of the above mentioned documents for the full intent and meaning of each clause. These clauses are referred to by clause number and heading only</p> <p>i) Where standard clauses or options are not applicable to this contract such modifications, corrections or supplements as are necessary, are given under each relevant clause</p> <p>ii) Where any items are not used for this specific contract such items are nevertheless listed but marked <b>not applicable</b> in the amount column</p> <p>iii) The amount or the items of the Preliminaries are adjusted to take account of the theoretical financial effect which changes in time or value (or both) have on this section. Such adjustments are based on adjustments in the following categories as recorded in the Bill of Quantities:</p> <p>a) An amount which is not varied, namely Fixed</p> <p>b) An amount which is varied in proportion to the construction period as compared to the initial construction period excluding revisions to the construction period for which the contractor is not entitled to adjustment in terms of the contract, namely Time Related</p> <p>iv) Items not priced in these preliminaries are deemed to be included elsewhere in this Bill of Quantities</p>				
		<b>Total carried forward</b>				

**NHLS BLOCK 14 HVAC UPGRADE (MECHANICAL INSTALLATIONS)**
**BILL 1 - PRELIMINARIES**

Item	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Total Brought forward				
1.0	<b>GCC 2015</b>				
	<b>SECTION A: CONDITIONS OF CONTRACT</b>				
	Fixed: ..... Value Related: ..... Time Related: .....	Item	1		
2.0	<b>SANS 1921-1</b>				
	<b>SANS 1921-1 : GENERAL ENGINEERING AND CONSTRUCTION WORKS READ IN CONJUNCTION WITH THE ASSOCIATED SPECIFICATION DATA IN THE SCOPE OF WORKS</b>				
	Fixed: ..... Value Related: ..... Time Related: .....	Item	1		
3.0	<b>THE CONTRACTOR'S MAIN RESPONSIBILITIES (A2)</b>				
	Clause 2.0				
	The contractor must provide and keep a copy of the GCC 2015 Contract : Priced contract with bill of quantities applicable to this contract and a copy of the Procurement Document on the site, to which the Project Manager and Supervisor have access at all times.	Item	1		
	Fixed:..... Value Related:..... Time Related:.....				
4.0	<b>Construction Services</b>				
	Services Connection Fee (electrical /water / telephone)				
	Fixed: ..... Value Related: ..... Time Related: .....	Item	1		
5.0	<b>Fixed Charges</b>				
01	Initial supply of all signs, barricades and delineators	Item	1		
02	Cost of Samples and Contractor's Preliminary and Site Control Testing	Item	1		
03	Notice Board As per specification	Item	1		
6.0	<b>Site Security</b>				
	Fixed: ..... Value Related: ..... Time Related: .....	Item	1		
7.0	<b>INDEMNITY, INSURANCE AND LIABILITY</b>				
	Fixed: ..... Value Related: ..... Time Related: .....	Item	1		
8.0	<b>Warranty &amp; Guarantees</b>				
	Provision of Warranties and garrantees of the installation as per contract	Item	1		
	<b>Total carried to Summary Page</b>				

**NHLS BLOCK 14 HVAC UPGRADE (MECHANICAL INSTALLATIONS)**  
**BILL 2 -ENGINEERING, PREAMBLES AND GENERAL (EPG)**

ITEM	DESCRIPTION	UNIT	Qty	RATE	AMOUNT
<b>1.0</b>	<b>View site</b>				
.01	Before submitting his tender the contractor shall visit the site and satisfy himself as to the nature and extent of the work to be done and the value of the materials contained in the buildings or portions of the buildings to be demolished. No claim for a compensation event in respect of the nature and extent of the work or of inferior or damaged materials will be entertained				
.02	Site Establishment	Sum	1		
<b>2.0</b>	<b>Explosive</b>				
.01	No explosives whatsoever may be used for demolition purposes unless otherwise stated				
<b>3.0</b>	<b>General</b>				
.01	The contractor must note that the project will be carried out in an occupied building and environment (live) and shall carry out the whole of the works with as minimum disturbance to NHLS operations and little mess and noise as possible and with a minimum of disturbance to adjoining premises and their tenants.				
.02	The contractor shall provide proper protection and provide, erect and remove when directed, any temporary tarpaulins that may be necessary during the progress of the works, all to the satisfaction of the project manager				
.03	Water supply pipes and other piping that may be encountered and found necessary to disconnect or cut, shall be effectually stopped off or grubbed up and removed, and any new connections that may be necessary shall be made with proper fittings, to the satisfaction of the project manager and engineer.				
	<b>Contractor must take above note into consideration in their pricing.</b>				
<b>4.0</b>	<b>Part C2: Pricing Data</b>				
.01	Existing equipment, fittings, frames, fixtures, doors, windows, etc. which are to be re-used shall be thoroughly overhauled before re-fixing and making good and easing, oiling, adjusting and repairing ironmongery as necessary, replacing any damaged in removal or subsequently and stopping up all nail and screw holes using appropriate methods and materials, unless otherwise described.				
.02	Rates for taking out of doors, windows, etc. shall include for removal of all beads, architraves, ironmongery, etc.				
.03	Rates for taking out and removing doors and frames shall include for removing door stops, cabin hooks, etc. and making good floor and wall finishes to match existing				
.04	With regard to building up of openings in existing walls, cement screeds and paving, granolithic, tops of walls, etc., shall be leveled and prepared for raising of brickwork				
.05	Making good of finishes shall include making good of the brick and concrete surfaces onto which the new finishes are applied, where necessary				
.06	The contractor will be required to take all dimensions affecting the existing buildings on the site and he will be held solely responsible for the accuracy of all such dimensions where used in the manufacture of new items (doors, windows, fittings, etc.)				
	<b>Total carried forward</b>				

NHLS BLOCK 14 HVAC UPGRADE (MECHANICAL INSTALLATIONS)					
BILL 2 -ENGINEERING, PREAMBLES AND GENERAL (EPG)					
ITEM	DESCRIPTION	UNIT	Qty	RATE	AMOUNT
5.0	<b>Additional tests</b>				
.01	Total Brought forward Additional tests required by engineer	Psum	1	R 140 000.00	R 140 000.00
.02	Charges required by contractor on sub-item .01 above	%	R 140 000.00		
6.0	<b>Occupational Health and Safety</b>				
01	Compliance with OHS Act and Construction Regulation 153. Pricing must include Contractor's initial obligations in respect of the Occupational Health and Safety Act and Construction Regulations as well as Contractor's time related obligations in respect of the Occupational Health and Safety Act and Construction Regulations	Sum	1		
02	Preparation and Submission of the Health and Safety File	Sum	1		
03	Maintenance of a compliant Health and Safety File for the duration of the contract.	Sum	1		
7.0	<b>Operation and Maintenance manuals</b>				
.01	Preparation of O & M manuals and re-commissioning reports (x 3 Copies) as specified	Sum	1		
.02	Preparation of shop drawings samples etc.	Sum	1		
.03	Preparation of As Built Drawings	Sum	1		
0.4	<b>Preparation of maintenance plan for Block 14 HVAC System as per OEM requirements</b>	Sum	1		
8.0	<b>Testing and Commissioning</b>				
.01	Testing and Balancing <b>This should include all the necessary cost for materials, equipment hire,resources such as labour, water, electrical power etc necessary to carryout all the necessary tests.</b>	Sum	1		
.02	Complete commissioning test of all installed systems in Presence of Engineers <b>This should include all the necessary cost for materials, equipment hire,resources such as labour, water, electrical power etc necessary to carryout all the necessary tests.</b>	Sum	1		
.03	Provide certificate of compliance for wiring and DBs and MCC including allowance for testing electrical services.	Sum	1		
9.0	<b>Maintenance.</b>				
.01	Maintenance of the HVAC system prior to Practical completion The maintenance to commence from date of site handover to time of practical completion thereafter the warrant and guarantee period kicks off.	Sum	1		
10.0	<b>Crainage and Scaffolding</b>				
01	Provision of all necessary crainage and scaffolding for all the work assoicated with the project.  Crainage and rigging of all the above mentioned equipment between the Ground Floor and the 3rd floor level, (+/-20m height) and a required reach of 35m. Including road closure costs for both the decomissioning of old equipment and rigging in of new equipment  <b>Contractor to note that decomissioning and installation of equipment will be done in phases. The contractor's Pricing must take this into consideration.</b>	Sum	1		
11.0	<b>Other:</b>				
.01	Identification and relocation of services	Psum	1	R 220 000.00	R 220 000.00
	<b>Total carried forward</b>				

<b>NHLS BLOCK 14 HVAC UPGRADE (MECHANICAL INSTALLATIONS)</b> <b>BILL 2 -ENGINEERING, PREAMBLES AND GENERAL (EPG)</b>					
ITEM	DESCRIPTION	UNIT	Qty	RATE	AMOUNT
02	Total Brought forward Engineering, Submissions & Approvals	Item	1		
03	Structural Engineering Works for the new equipment	Psum	1	R 485 750.00	R 485 750.00
04	Replacement parts during maintenance period before practical completion is achieved	Psum	1	R 300 000.00	R 300 000.00
Total carried to Summary Page					

**NHLS BLOCK 14 HVAC UPGRADE (MECHANICAL INSTALLATIONS)**
**BILL 3.1- PART 1 (HVAC)**
**PHASE 01 CHILLER PLANT AND ASSOCIATED EQUIPMENT AND ACCESSORIES**

Item	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
1.0	<b>Decomissioning</b> <b>Dismantling and disposing/ Storing as directed by client of the following equipments:</b>				
1.1	Water Chiller Unit including associated pipe work and ancillaries: Make Hitachi, Model RCU150SY1. Chiller runs on R22 gas. Net Weight of unit 3300kg	No	2		
1.2	Evapco Open circuit cooling towers complete with Accessories: Make: Evapco, Model: ICT 4-59	No	2		
1.3	Motor control center pannel	No	1		
1.4	Water Treatment Equipment	No	2		
1.5	Provision for safety and hot work requirements during shutdown.	SUM	1		
2.0	<b>Water Cooled Chilled Water Plant complete with all necessary appurtenances As Follows:</b> Supply, Deliver to site, rig into position and installation of following.				
2.1	<b>Water Cooled Chilled Water Plant</b> <b>Water cooled Screw Chiller with fully factory charged refrigerant (R-134a) inclusive of LCD control panel,variable speed stater, star delta starter, power cables, control cables, connection to existing pipes with modifications as required as per specifications. Installed complete with all appurtenances for the safe and efficient operation of the chiller including connections to the existing pipework and electrical systems and all interlocks between chiller and pumping equipment to ensure the systems operate safely and efficiently. The chiller must come BMS ready with a Bacnet compatibility.</b>  Unit to incorporate factory mounted E-Link installed inside the Control Center to enable linking unit to the Building Management System  Unit to be charged with environmentally friendly refrigerant available today, with no Ozone Depletion Potential (ODP) and no phase out date per the Montreal Protocol.Preferably HFC-134a,  <b>Unit to meet the following conditions:</b> Cooling Capacity: 1600kW Chilled water entering : 12°C Chilled water leaving : 7°C Condensor water entering : 26°C Condensor Water Leaving : 31°C Chilled water flow 74l/s COP : 6 or better	No	2		
	<b>Total carried forward</b>				

**NHLS BLOCK 14 HVAC UPGRADE (MECHANICAL INSTALLATIONS)****BILL 3.1- PART 1 (HVAC)****PHASE 01 CHILLER PLANT AND ASSOCIATED EQUIPMENT AND ACCESSORIES**

Item	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Total Brought forward				
2.2	Chilled water circulation pumps and heat exchangers installed complete with isolation valves, non return valve, flexible coupling and base with vibration isolation. Including drip tray and drain to the nearest outlet and all uppertenances related. For the following Capacities:				
01	<b>77 l/s</b>	No	2		
<b>3.0</b>	<b>Supply and installation of the following complete with all necessary appurtenances</b>				
	<b>Cooling Towers</b>				
3.1	Forced Draft, Centrifugal Fan, counter flow, Open Circuit Cooling Towers with vertical air discharge, overall dimensions shall not exceed 3800mm long x 2500mm wide x 4100mm high. Installed complete with variable speed drives, universal controller, immersion temperature sensor, modulating capacity control dampers, discharge hood, control panel and all uppertenances related. All steel pannels and structural members shall be of corrosion resistant construction i.e. heavy gauge Z700 metric hot dipped galvanized steel with edges protected by a zinc rich compound protective coating.				
01	Capacity:1810Kw, Water flow 86.6 l/s Entering temperature 35°C, leaving temperature 26 °C, Wet Bulb at 20°C	No	2		
3.2	Condensor water circulation pumps installed complete with isolation valves, non return valve, flexible coupling and base with vibration isolation. Including drip tray and drain to the nearest outlet and all uppertenances related. For the following Capacities:				
01	<b>86.6 l/s</b>	No	2		
3.4	Refurbishment of existing condensor and chilled water pumps	No	4		
<b>4.0</b>	<b>Buffer Tanks</b>				
01	<b>Buffer Tanks</b> Supply,Deliver to site, Put in position, Installation, Testing & Commissioning of following: 5000L Chiller Buffer tank	No	2		
	Total carried forward				



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**BILL 3.1- PART 1 (HVAC)**
**PHASE 01 CHILLER PLANT AND ASSOCIATED EQUIPMENT AND ACCESSORIES**

Item	DESCRIPTION	UNIT	QTY		AMOUNT
	Total Brought forward				
<b>5.0</b>	<b>Variable speed drives</b>				
	Supply, Deliver to site, Put in position, Installation, Testing & Commissioning of following variable speed drive for above pumps VSD:				
01	SHWP 77 l/s - 45KW	No.	4		
02	SCHWP 86.6l/s - 45KW	No.	4		
<b>6.0</b>	<b>Measurement instrumentation and controls</b>				
	<b>Supply and installation of the following complete with accessories.</b>				
01	Pressure gauge installed complete with syphon tube and cock	No	30		
02	Temperature Gauge installed complete	No	30		
03	Flow switch installed complete	No	12		
04	Temperature sensors	No	10		
05	Pressure sensors	No	10		
06	Pressure controller	No	15		
<b>7.0</b>	<b>Pipping and piping supports</b>				
<b>7.1</b>	<b>Existing Chilled water piping</b>				
01	Repair and service of existing chilled water piping and condensor water piping as specified Dia 150mm	Sum	1		
<b>02</b>	Replacement of Demanged insullation on existing chilled water piping as specified	Sum	1		
<b>7.2</b>	<b>Replacement of beyond repair Sections of Chilled water piping</b>				
	<b>Supply and installation of the following.</b>				
	<b>Chilled Water pipework installed complete including insulation, vapour seal, supports and brackets.</b>				
01	250 dia	m	0		Rate only
02	200 dia	m	120		
03	150 dia	m	80		
04	125 dia	m	20		
05	100 dia	m	20		
06	80 dia	m	50		
07	50 dia	m	90		
08	65 dia	m	60		
09	32 dia	m	150		
10	25 dia	m	40		
<b>7.3</b>	<b>Chilled Water pipe fittings installed complete with insulation, insulation, vapour seal, flanges as required and all appurtenances</b>				
01	250 dia tee or reducing tee	No	0		Rate only
02	250dia bend	No	0		Rate only
03	200 dia tee or reducing tee	No	20		
04	200dia bend	No	20		
	Total carried forward				

**NHLS BLOCK 14 HVAC UPGRADE (MECHANICAL INSTALLATIONS)****BILL 3.1- PART 1 (HVAC)****PHASE 01 CHILLER PLANT AND ASSOCIATED EQUIPMENT AND ACCESSORIES**

Item	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Total Brought forward				
05	150 dia tee or reducing tee	No	30		
06	150 dia bend	No	32		
07	125 dia tee or reducing tee	No	10		
08	125 dia bend	No	10		
09	100 dia tee or reducing tee	No	30		
10	100 dia bend	No	30		
11	80 dia bend	No	0		Rate only
12	65 dia bend	No	46		
13	50 dia bend	No	40		
14	25 dia bend	No	24		
15	32 dia tee	No	24		
16	250 dia reducer	No	8		
17	200 dia reducer	No	0		Rate only
18	150 dia reducer	No	40		
19	125 dia reducer	No	0		Rate only
20	100 dia reducer	No	10		
21	80 dia reducer	No	0		Rate only
22	50 dia reducer	No	30		
7.4	Allowance for hangers , bolts and all suport accessories	Sum	1		
7.5	Allowance for Colour Coding and marking for direction of flow of all pipes and items of equipment, in strict accordance to specifications	Sum	1		
<b>8.0</b>	<b>Supply and installation of the following.</b>				
<b>8.1</b>	<b>Valves installed complete with flanges and all ancillaries as required.</b>				
<b>8.1.1</b>	<b>Butterfly Valve</b>				
<b>.02</b>	250 dia	No	0		Rate only
<b>.03</b>	200 dia	No	0		Rate only
<b>.04</b>	150 dia	No	20		
<b>.05</b>	125 dia	No	0		Rate only
<b>.06</b>	100 dia	No	4		
<b>.07</b>	80 dia	No	10		
<b>.08</b>	65 dia	No	8		
<b>.09</b>	50 dia	No	0		Rate only
<b>8.1.2</b>	<b>Ball Valve</b>				
01	25 dia	No	20		
02	32 dia	No	10		
03	50 dia	No	20		
04	65 dia	No	10		
<b>8.1.3</b>	<b>Non Return Valve</b>				
01	250 dia	No	0		Rate only
02	200 dia	No	0		Rate only
03	150 dia	No	18		
04	100 dia	No	4		
05	50 dia	No	10		
06	65 dia	No	0		Rate only
	Total carried forward				

**NHLS BLOCK 14 HVAC UPGRADE (MECHANICAL INSTALLATIONS)**
**BILL 3.1- PART 1 (HVAC)**

Item	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Total Brought forward				
<b>8.1.4</b>	<b>2 way Control Valve</b>				
01	50 dia	No	4		Rate only
02	65 dia	No	0		
03	150 dia	No	14		
<b>8.1.5</b>	<b>Gate Valves</b>				
01	25 dia	No	0		Rate only
02	32 dia	No	10		
03	50 dia	No	5		
04	65 dia	No	5		
05	150	No	10		
<b>8.1.6</b>	<b>Balancing valve</b>				
01	50 dia	No	4		Rate only
02	65 dia	No	0		
03	150 dia	No	8		
<b>8.1.7</b>	<b>Strainer</b>				
01	32 dia	No	0		Rate only
02	50 dia	No	5		
03	65 dia	No	0		Rate only
04	150 dia	No	10		
<b>8.1.8</b>	<b>Air vent</b>				
01	25 dia	No	10		
02	32 dia	No	10		
<b>8.1.9</b>	<b>Couplings</b>				
	Flexible double bellow pump coupling (Flanged)				
01	50 dia	No	10		Rate only
02	65 dia	No	0		
03	150 dia	No	30		
<b>9.0</b>	<b>Make up water tank</b>				
	Overhaul of Existing Make up water tank (2x20L tanks complete with valves and accessories	sum	2		
<b>10</b>	<b>Water treatment</b>				
	Supply and installation of water treatment system complete with all necessary accessories for a complete automatic operation	sum	1		
<b>11</b>	<b>New BMS system</b>				
	Design, supply , installation And commisioning of BMS system complete with linking and setting of all HVAC systems for complete monitoring and control of the HVAC system for individual locations and zones IN LINE WITH THE SPECIFICATION <b>NHLS 001</b>	Sum	1		
	Total carried forward				

**NHLS BLOCK 14 HVAC UPGRADE (MECHANICAL INSTALLATIONS)**  
**BILL 3.1- PART 1 (HVAC)**

Item	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Total Brought forward				
<b>12</b>	<b>Chemical Flushing for Chilled Water System</b>				
	Chemical Cleaning of the existing chilled water piping as specified	Sum	1		
<b>13.0</b>	<b>Others</b>				
<b>13.1</b>	<b>Bird proofing of plant rooms as follows</b>				
01	Central Wing	Sum	1		
02	East Wing	Sum	1		
04	South Wing	Sum	1		
05	North Wing	Sum	1		
<b>13.2</b>	<b>Cleaning and sanitisation of plant rooms as follows</b>				
01	Central Wing	Sum	1		
02	East Wing	Sum	1		
04	South Wing	Sum	1		
05	North Wing	Sum	1		
<b>14.0</b>	<b>Making Good</b>				
01	Making good to all plantrooms	sum	1		
	Painting of Plant room floors with durable epoxy or polyurethane coating designed for industrial environments as per specification	sum	2		
<b>15.0</b>	<b>Provisional amounts</b>				
01	Supply, installation and commisoing of new MCC Panel	PC sum	1	R 1 850 000.00	R 1 850 000.00
02	Electrical Work Related	PC sum	1	R 550 000.00	R 550 000.00
<b>16.0</b>	<b>Commissioning</b>				
01	Pressure testing of system and remedial actions	sum	1		
02	Setting, testing and balancing of system	sum	1		
03	Commissioning of parts of the sytem as per equipment supplier's recommendation by Equipment supplier	Sum	1		
04	Testing and commisoing of the Entire system	Sum	1		
	<b>Total carried to Summary Page</b>				

**NHLS BLOCK 14 HVAC UPGRADE (MECHANICAL INSTALLATIONS)****BILL 3.2 - PART 1 (HVAC)****PHASE 02 AIR HANDLING UNITS AND FANS COILS AND ASSOCIATED EQUIPMENT AND ACCESSORIES**

Item	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
1.0	<b>Decomissioning</b>				
1.1	<b>Dismantling and disposing/ Storing as directed by client of the following equipments:</b>				
01	Air handling unit and associated ducting including lagging and cladding; Make Carrier, Model: 39ED+17L D/skin complete with all accessories	No	14		
02	Fan Coil Units	No	35		
03	Provision for safety and hot work requirements during shutdown.	Sum	1		
	<b>NB: Decomissioning will take place in phases in line with agreed program between user client and the contractor</b>				
2.0	<b>Air Handling Units</b>				
	<b>Supply and installation of the following. complete with all necessary appurtenances</b>				
2.1	<b>Central Wing</b>				
2.1.1	<b>Production</b>				
01	Double skin Air Handling units installed complete with, 3 level filtration system(Primary Secondary and Hepa), Magnehelic gauges across filter bank, 1.5D Eurolon infill, Return air fans, vibration isolation, supports, , variable speed drive, Plenum lights in each chamber with light switch per light, Damper motors on mixing box dampers and bypass dampers, Intake Weather louvres on plenum boxes or fresh air units and all appurtenances related.	No	1		
	Unit must come complete with chilled water coil for cooling and a steam coil for heating				
	Unit must have built in condensate drainage pumping system, Enthalpy control Dampers to enable free cooling				
	With variable speed drive control				
	Air quantity: 5000L/s @ 650 Pa				
	Coil Face velocity: 2.5m/s				
	Coling duty: 150kW				
	Water Heating coil: 72 Kw				
02	Site Assembly of the New Air Handling unit due to space constraints	Item	1		
	<b>Total carried forward</b>				

**NHLS BLOCK 14 HVAC UPGRADE (MECHANICAL INSTALLATIONS)****BILL 3.2 - PART 1 (HVAC)****PHASE 02 AIR HANDLING UNITS AND FANS COILS AND ASSOCIATED EQUIPMENT AND ACCESSORIES**

Item	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Total Brought forward				
<b>2.1.2</b>	<b>Central Offices</b>				
01	Double skin Air Handling units installed complete with, 3 level filtration system(Primary Secondary and Hepa), Magnehelic gauges across filter bank, 1.5D Eurolon infill, Return air fans, vibration isolation, supports, , variable speed drive, Plenum lights in each chamber with light switch per light, Damper motors on mixing box dampers and bypass dampers, Intake Weather louvres on plenum boxes or fresh air units and all appurtenances related.	item	1		
02	Unit must come complete with chilled water coil for cooling and a steam coil for heating Unit must have built in condensate drainage pumping system, Enthalpy control Dampers to enable free cooling With variable speed drive control Air quantity: 950L/s @ 650 Pa Coil Face velocity: 2.5m/s Coling duty: 15kW Site Assembly of the New Air Handling unit due to space constraints	Item	1		
<b>2.2</b>	<b>East Wing</b>				
<b>2.2.1</b>	<b>AHU01- AHU 12</b>				
01	Double skin Air Handling units installed complete with, 3 level filtration system(Primary Secondary and Hepa), Magnehelic gauges across filter bank, 1.5D Eurolon infill, Return air fans, vibration isolation, supports, , variable speed drive, Plenum lights in each chamber with light switch per light, Damper motors on mixing box dampers and bypass dampers, Intake Weather louvres on plenum boxes or fresh air units and all appurtenances related.	No	10		
02	Unit must come complete with chilled water coil for cooling and a steam coil for heating Unit must have built in condensate drainage pumping system, Enthalpy control Dampers to enable free cooling With variable speed drive control Air quantity: 2500L/s Coil Face velocity: 2.5m/s Coling duty: 65kW Site Assembly of the New Air Handling unit due to space constraints	Item	10		
	<b>Total carried forward</b>				

**NHLS BLOCK 14 HVAC UPGRADE (MECHANICAL INSTALLATIONS)****BILL 3.2 - PART 1 (HVAC)****PHASE 02 AIR HANDLING UNITS AND FANS COILS AND ASSOCIATED EQUIPMENT AND ACCESSORIES**

Item	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Total Brought forward				
<b>2.2.2</b>	<b>AHU 9 EAST QC Roof</b>				
01	Chilled water& Hotwater double skin Air Handling units installed complete with, 3 level filtration system(Primary Secondary and Hepa), Magnehelic gauges across filter bank, 1.5D Eurolon infill, Return air fans, vibration isolation, supports, , variable speed drive, Plenum lights in each chamber with light switch per light, Damper motors on mixing box dampers and bypass dampers, Intake Weather louvres on plenum boxes or fresh air units and all appurtenances related.	No	1		
02	Unit must have built in condensate drainage pumping system, Enthalpy control Dampers to enable free cooling With variable speed drive control Air quantity: 950L/s @ 650 Pa Coil Face velocity: 2.5m/s Coling duty: 15kW Site Assembly of the New Air Handling unit due to space constraints	Item	1		
<b>2.3</b>	<b>South Wing</b>				
<b>2.3.1</b>	<b>Parastology</b>				
01	Double skin Air Handling units installed complete with, 3 level filtration system(Primary Secondary and Hepa), Magnehelic gauges across filter bank, 1.5D Eurolon infill, Return air fans, vibration isolation, supports, , variable speed drive, Plenum lights in each chamber with light switch per light, Damper motors on mixing box dampers and bypass dampers, Intake Weather louvres on plenum boxes or fresh air units and all appurtenances related.	No	1		
02	Unit must come complete with chilled water coil for cooling and a steam coil for heating Unit must have built in condensate drainage pumping system, Enthalpy control Dampers to enable free cooling With variable speed drive control Air quantity: 5000L/s Coil Face velocity: 2.5m/s Coling duty:150kW Site Assembly of the New Air Handling unit due to space constraints	Item	1		
	Total carried forward				

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Item	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Total Brought forward				
<b>2.4</b>	<b>North Wing</b>				
<b>2.4.1</b>	<b>AHU North 02</b>				
01	Double skin Air Handling units installed complete with, 3 level filtration system(Primary Secondary and Hepa), Magnehelic gauges across filter bank, 1.5D Eurolon infill, Return air fans, vibration isolation, supports, , variable speed drive, Plenum lights in each chamber with light switch per light, Damper motors on mixing box dampers and bypass dampers, Intake Weather louvres on plenum boxes or fresh air units and all appurtenances related.	No	1		
02	Unit must come complete with chilled water coil for cooling and a steam coil for heating Unit must have built in condensate drainage pumping system, Enthalpy control Dampers to enable free cooling With variable speed drive control Air quantity: 5000L/s Coil Face velocity: 2.5m/s Coling duty: 125kW Site Assembly of the New Air Handling unit due to space constraints	Item	1		
<b>2.5</b>	<b>Electrical work Associated with the Air Handling Units</b>				
01	All Electrical work associated with the above installation the rate must include all work and material, ancillaries and uppurfinancies for a complete installation to provide power to AHU and all associated control instrumentations. 3800V/ 50Hz / 3 phase.	Sum	14		
<b>2.6</b>	<b>Switch Boards</b>				
01	Supply and installation of individual switch boards for each air handling units complete with all ancillaries and accessories for a complete automatic operation that ensures control of the AHUs inline with operation strategy of the system. Each switch board to conatin the following.  1. IP21 Switchboard encloser including switchgear for the fan. 2. Temperature controller 3. Outside air temperature sensor x 1 4. On-coil temperature sensor x 1 5. Off-coil temperature sensor x 1 6. Room temperature sensors x 2 7. Chilled water 3 way valve and actuator	Sum	14		
	<b>Total carried forward</b>				



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Item	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Total Brought forward				
	8. Hot water 3 way valve and actuator 9. 2 x Cold water temperature sensors 10. 2 x Hot water temperature sensors 11. Static pressure sensor 12. Dirty filter switch 13. HMI panel.				
<b>3.0</b>	<b>Ducting</b>				
<b>3.1</b>	<b>Duct Cleaning and sanitisation</b>				
<b>3.1.1</b>	<b>Central Wing</b>				
	<b>Production and Central Offices</b>				
	Deep Cleaning and sanitisation of the entire supply and return air duct network Duct as below				
<b>01</b>	<b>Supply air system Ducting</b>	Sum	2		
	Main ducting is Approximately 850x650. With various sized branch networks. The ducting system network is between 20 m to 25m in length				
<b>02</b>	<b>Return Air system</b>	Sum	2		
	Main ducting is Approximately 850x650. With various sized branch networks. The ducting system network is between 20 m to 25m in length				
<b>3.1.2</b>	<b>East Wing</b>				
	Deep Cleaning and sanitisation of the entire supply and return air duct network Duct as below				
<b>01</b>	<b>Supply air system Ducting</b>	Sum	10		
	Main ducting is Approximately 850x650. With various sized branch networks. The ducting system network is between 19 m to 15m in length				
<b>3.1.3</b>	<b>North Wing</b>				
	Deep Cleaning and sanitisation of the entire supply and return air duct network Duct as below				
<b>01</b>	<b>Supply air system Ducting</b>	Sum	1		
	Main ducting is Approximately 850x650. With various sized branch networks. The ducting system network is between 20 m to 30m in length				
	Total carried forward				

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Item	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Total Brought forward				
02	<b>Return Air system</b>  Main ducting is Approximately 850x650. With various sized branch networks. The ducting system network is between 20 m to 30m in length	Sum	1		
3.1.4	<b>South Wing</b>  Deep Cleaning and sanitisation of the entire supply and return air duct network Duct as below				
01	<b>Supply air system Ducting</b>  Main ducting is Approximately 850x650. With various sized branch networks. The ducting system network is between 20 m to 30m in length	Sum	1		
02	<b>Return Air system</b>  Main ducting is Approximately 850x650. With various sized branch networks. The ducting system network is between 20 m to 30m in length	Sum	1		
3.2	<b>Replacement of Sections of ducting</b>  Supply and installation of galvanised ducting, Externally insulated installed complete with accessories, fixing hangers and all necessary appurtenances As Follows:				
3.2.1	<b>Central Wing</b>				
01	Category 1 - Ducting with a width or height < 750mm and semi-perimeter < 1150mm	m2	40		
02	Category 2 - Ducting with a width or height < 750mm and semi-perimeter > 1150mm	m2	20		
03	Category 3 - Ducting with longest side between 751mm and 1350mm	m2	20		
04	Category 4 - Ducting with longest side between 1351mm and 2000mm	m2	0		
	Category 6 - Re-inforced Spiral Ducting				
05	Dia 150mm	m2	20		
3.2.2	<b>East Wing</b>				
01	Category 1 - Ducting with a width or height < 750mm and semi-perimeter < 1150mm	m2	300		
02	Category 2 - Ducting with a width or height < 750mm and semi-perimeter > 1150mm	m2	145		
03	Category 3 - Ducting with longest side between 751mm and 1350mm	m2	155		
	<b>Total carried forward</b>				

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Item	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Total Brought forward				
04	Category 4 - Ducting with longest side between 1351mm and 2000mm	m2			
	Category 6 - Re-inforced Spiral Ducting				
05	Dia 150mm	m2	90		
<b>3.2.3</b>	<b>South Wing</b>				
01	Category 1 - Ducting with a width or height < 750mm and semi-perimeter < 1150mm	m2	20		
02	Category 2 - Ducting with a width or height < 750mm and semi-perimeter > 1150mm	m2	20		
03	Category 3 - Ducting with longest side between 751mm and 1350mm	m2	35		
04	Category 4 - Ducting with longest side between 1351mm and 2000mm	m2			
	Category 6 - Re-inforced Spiral Ducting				
05	Dia 150mm	m2	50		
<b>3.2.4</b>	<b>North Wing</b>				
01	Category 1 - Ducting with a width or height < 750mm and semi-perimeter < 1150mm	m2	20		
02	Category 2 - Ducting with a width or height < 750mm and semi-perimeter > 1150mm	m2	20		
03	Category 3 - Ducting with longest side between 751mm and 1350mm	m2	35		
04	Category 4 - Ducting with longest side between 1351mm and 2000mm	m2	0		Rate only
	Category 6 - Re-inforced Spiral Ducting				
05	Dia 150mm	m2	50		
<b>3.3</b>	<b>Replacement of Duct Insulation</b>				
	<b>Supply and installation of duct insulation complete with all accessories and appurtenances for a complete installation insulation must be Glasswool thermal insulation blanket 50mm thickness with an R-Value Of at least 1.32m2.K/W with reinforced foil facing.</b>				
01	Central Wing	m2	160		
02	East Wing	m2	950		
03	South Wing	m2	90		
04	North Wing	m2	90		
<b>3.4</b>	Replacement of fittings and accessories	Psum	1	R 420 000.00	R 420 000.00
	Total carried forward				

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Item	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Total Brought forward				
<b>4</b>	<b>Supply and Return Air Grilles</b> Supply and installation of				
<b>4.1</b>	<b>Supply air grills</b> <b>300 x 300 Aluminium anodised supply air grill</b> <b>Complete flexible, plenum box, butterfly damper</b> <b>and mounted controllers and all appurtenances</b> <b>related.</b>				
01	Central Wing	Item	20		
02	East Wing	Item	30		
03	South Wing	Item	25		
04	North Wing	Item	30		
<b>4.2</b>	<b>Return air grills</b> <b>600 x 300 Aluminium anodised supply air grill</b> <b>Complete flexible, plenum box, butterfly damper</b> <b>and mounted controllers and all appurtenances</b> <b>related.</b>				
01	Central Wing	Item	10		
03	South Wing	Item	15		
04	North Wing	Item	15		
<b>4.3</b>	<b>Extraction air grills</b>				
01	Central Wing	Item	15		
02	East Wing	Item	20		
<b>4.4</b>	<b>Hepa Filters</b> Replacment of The GW compact finedust / HEPA filter for high airflow Model GWC-1466-D00D with new	Item	70		
<b>5.0</b>	<b>Fan Coil Units</b>  Supply, Deliver to site and instal complete multi row sanko type Fan coils or equally approved, unit to come complete with all controls, fan section with forward curved centrifugal 3 speed (L,M,H) fan, drive motor, canvas, supports, vibration isolators, drain pan with pump complete with all ancillaries and uppurtinancies for a complete installation as per specifications. Units must come <b>with sound</b> <b>utturnuators to ensure a quite operation of NC 30.</b>				
	Total carried forward				

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Item	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Total Brought forward				
5.1	<p>The Fan Coil must come complete with all Appurtenances for a complete installation as detailed in the typical detail s of the schematic drawing No MA2407-SCH-101 Ensure rate covers all accessories as per the typical schematic drawing. Unit controller to have BACNET interphase</p> <p>Capacities to be supplied are as follows:</p> <p><b>Central Wing</b></p>				
01	<p>Supply Air Quantity : 315L/sec</p> <p>Percentage Fresh Air : 20%</p> <p>Cooling Capacity : 2.8 kW</p> <p>Heating capacity :5.4Kw</p> <p>water flow rate : 0.22l/s</p>	No	3		
02	<p>Supply Air Quantity : 315L/sec</p> <p>Percentage Fresh Air : 20%</p> <p>Cooling Capacity : 3 kW</p> <p>Heating capacity :5.4Kw</p> <p>water flow rate : 0.28l/s</p>	No	3		
03	<p>Supply Air Quantity : 315L/sec</p> <p>Percentage Fresh Air : 20%</p> <p>Cooling Capacity : 3.8 kW</p> <p>Heating capacity :5.4Kw</p> <p>water flow rate : 0.35l/s</p>	No	3		
04	<p>Supply Air Quantity : 385L/sec</p> <p>Percentage Fresh Air : 20%</p> <p>Cooling Capacity : 4.6 kW</p> <p>Heating capacity :9.8Kw</p> <p>water flow rate : 0.35l/s</p>	No	2		
05	<p>Supply Air Quantity : 385L/sec</p> <p>Percentage Fresh Air : 20%</p> <p>Cooling Capacity : 5 kW</p> <p>Heating capacity :10.4Kw</p> <p>water flow rate : 0.39l/s</p>	No	1		
06	<p>Supply Air Quantity : 385L/sec</p> <p>Percentage Fresh Air : 20%</p> <p>Cooling Capacity : 5.6 kW</p> <p>Heating capacity :10.4Kw</p> <p>water flow rate : 0.39l/s</p>	No	1		
	Total carried forward				

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Item	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Total Brought forward				
07	Supply Air Quantity : 395L/sec Percentage Fresh Air : 20% Cooling Capacity : 6.5 kW Heating capacity :11.4Kw water flow rate : 0.42l/s	No	1		
08	Supply Air Quantity : 395L/sec Percentage Fresh Air : 20% Cooling Capacity : 7.2 kW Heating capacity :14.4Kw water flow rate : 0.45l/s	No	1		
09	Supply Air Quantity : 485L/sec Percentage Fresh Air : 20% Cooling Capacity : 10.3 kW Heating capacity :11.4Kw water flow rate : 0.49l/s	No	1		
<b>5.2</b>	<b>East Wing</b>				
01	Supply Air Quantity : 265L/sec Percentage Fresh Air : 20% Cooling Capacity : 1.8 kW Heating capacity :3.84Kw water flow rate : 0.18l/s	No	5		
02	Supply Air Quantity : 315L/sec Percentage Fresh Air : 20% Cooling Capacity : 2.8 kW Heating capacity :5.4Kw water flow rate : 0.22l/s	No	12		
03	Supply Air Quantity : 315L/sec Percentage Fresh Air : 20% Cooling Capacity : 3 kW Heating capacity :5.4Kw water flow rate : 0.28l/s	No	4		
04	Supply Air Quantity : 365L/sec Percentage Fresh Air : 20% Cooling Capacity : 4 kW Heating capacity :5.4Kw water flow rate : 0.395l/s	No	3		
	<b>Total carried forward</b>				

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**PHASE 02 AIR HANDLING UNITS AND FANS COILS AND ASSOCIATED EQUIPMENT AND ACCESSORIES**

Item	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Total Brought forward				
05	Supply Air Quantity : 385L/sec Percentage Fresh Air : 20% Cooling Capacity : 5 kW Heating capacity :10.4Kw water flow rate : 0.39l/s	No	2		
06	Supply Air Quantity : 385L/sec Percentage Fresh Air : 20% Cooling Capacity : 5.8 kW Heating capacity :10.4Kw water flow rate : 0.39l/s	No	4		
07	Supply Air Quantity : 395L/sec Percentage Fresh Air : 20% Cooling Capacity : 6kW Heating capacity :10.4Kw water flow rate : 0.42l/s	No	5		
08	Supply Air Quantity : 375L/sec Percentage Fresh Air : 20% Cooling Capacity : 6.5 kW Heating capacity :11.4Kw water flow rate : 0.42l/s	No	1		
09	Supply Air Quantity : 420% Cooling Capacity : 7.6 kW Heating capacity :16.4Kw water flow rate : 0.485l/s	No	1		
10	Supply Air Quantity : 525L/sec Percentage Fresh Air : 20% Cooling Capacity : 11.5 kW Heating capacity :18.4Kw water flow rate : 0.575l/s	No	2		
<b>5.3</b>	<b>North Wing</b>				
01	Supply Air Quantity : 265L/sec Percentage Fresh Air : 20% Cooling Capacity : 1.8 kW Heating capacity :3.84Kw water flow rate : 0.18l/s	No	5		
02	Supply Air Quantity : 315L/sec Percentage Fresh Air : 20% Cooling Capacity : 2.8 kW Heating capacity :5.4Kw water flow rate : 0.22l/s	No	12		
	Total carried forward				

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Item	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Total Brought forward				
03	Supply Air Quantity : 315L/sec Percentage Fresh Air : 20% Cooling Capacity : 3 kW Heating capacity :5.4Kw water flow rate : 0.28l/s	No	4		
04	Supply Air Quantity : 365L/sec Percentage Fresh Air : 20% Cooling Capacity : 4 kW Heating capacity :5.4Kw water flow rate : 0.395l/s	No	3		
05	Supply Air Quantity : 385L/sec Percentage Fresh Air : 20% Cooling Capacity : 5 kW Heating capacity :10.4Kw water flow rate : 0.39l/s	No	2		
06	Supply Air Quantity : 385L/sec Percentage Fresh Air : 20% Cooling Capacity : 5.8 kW Heating capacity :10.4Kw water flow rate : 0.39l/s	No	4		
07	Supply Air Quantity : 395L/sec Percentage Fresh Air : 20% Cooling Capacity : 6kW Heating capacity :10.4Kw water flow rate : 0.42l/s	No	5		
08	Supply Air Quantity : 395L/sec Percentage Fresh Air : 20% Cooling Capacity : 6.5 kW Heating capacity :11.4Kw water flow rate : 0.42l/s	No	1		
09	Supply Air Quantity : 420% Cooling Capacity : 7.6 kW Heating capacity :16.4Kw water flow rate : 0.485l/s	No	1		
10	Supply Air Quantity : 525L/sec Percentage Fresh Air : 20% Cooling Capacity : 11.5 kW Heating capacity :18.4Kw water flow rate : 0.575l/s	No	2		
	Total carried forward				



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**PHASE 02 AIR HANDLING UNITS AND FANS COILS AND ASSOCIATED EQUIPMENT AND ACCESSORIES**

Item	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Total Brought forward				
<b>5.4</b>	<b>South Wing</b>				
01	Supply Air Quantity : 285L/sec Percentage Fresh Air : 20% Cooling Capacity : 2 kW Heating capacity :3.95Kw water flow rate : 0.2l/s	No	2		
02	Supply Air Quantity : 315L/sec Percentage Fresh Air : 20% Cooling Capacity : 2.8 kW Heating capacity :5.4Kw water flow rate : 0.22l/s	No	1		
03	Supply Air Quantity : 315L/sec Percentage Fresh Air : 20% Cooling Capacity : 3 kW Heating capacity :5.4Kw water flow rate : 0.28l/s	No	9		
04	Supply Air Quantity : 365L/sec Percentage Fresh Air : 20% Cooling Capacity : 4 kW Heating capacity :5.4Kw water flow rate : 0.395l/s	No	3		
05	Supply Air Quantity : 395L/sec Percentage Fresh Air : 20% Cooling Capacity : 6kW Heating capacity :10.4Kw water flow rate : 0.42l/s	No	4		
06	Supply Air Quantity :525L/sec Percentage Fresh Air : 20% Cooling Capacity : 9.5 kW Heating capacity :11.4Kw water flow rate : 0.545l/s	No	2		
07	Supply Air Quantity : 565L/sec Percentage Fresh Air : 20% Cooling Capacity : 13.5 kW Heating capacity :25.4Kw water flow rate : 0.595l/s	No	1		
	Total carried forward				

**PHASE 02 AIR HANDLING UNITS AND FANS COILS AND ASSOCIATED EQUIPMENT AND ACCESSORIES**

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Item	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Total Brought forward				
<b>6.1.3 North Wing</b>					
	Deep Cleaning and sanitisation of the entire supply and return air duct network Duct as below				
<b>01 Supply air system Ducting</b>		Sum	16		
	Main fan coil ducting is Approximately 295x295. With various sized branch networks. The ducting system network for each fan coil is between 3.5m to 5m in length				
<b>6.1.4 South Wing</b>					
	Deep Cleaning and sanitisation of the entire supply and return air duct network Duct as below				
<b>01 Supply air system Ducting</b>		Sum	9		
	Main fan coil ducting is Approximately 295x295. With various sized branch networks. The ducting system network for each fan coil is between 3.5m to 5m in length				
<b>6.2 New Ducting</b>					
	Supply and installation of galvanised ducting, Externally insulated installed complete with accessories, fixing hangers and all necessary appurtenances As Follows:				
01 Central Wing		m2	55		
02 East Wing		m2	125		
03 South Wing		m2	75		
04 North Wing		m2	125		
<b>6.3 Replacement of Duct Insulation</b>					
	<b>Supply and installation of duct insulation complete with all accessories and appurtenances for a complete installation insulation must be Glasswool thermal insulation blanket 50mm thickness with an R-Value Of at least 1.32m2.K/W with reinforced foil facing.</b>				
01 Central Wing		m2	55		
02 East Wing		m2	125		
	Total carried forward				

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Item	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Total Brought forward				
03	South Wing	m2	75		
04	North Wing	m2	125		
<b>6.4</b>	Replacement of fittings and accessories	Psum	1	R 248 500.00	R 248 500.00
<b>7.0</b>	<b>Supply and Return Air Grilles</b>				
	Supply and installation of				
<b>7.1</b>	<b>Supply air Diffusers</b>				
	<b>600 x 600 supply air constant volume diffuser Complete flexible, plenum box, butterfly damper and mounted controllers and all appurtenances related.</b>				
01	Central Wing	Item	38		
02	East Wing	Item	40		
03	South Wing	Item	41		
04	North Wing	Item	56		
<b>7.2</b>	<b>Supply air grills</b>				
	<b>300 x 300 Aluminium anodised supply air grill Complete flexible, plenum box, butterfly damper and mounted controllers and all appurtenances related.</b>				
01	Central Wing	Item	38		
02	East Wing	Item	40		
03	South Wing	Item	41		
04	North Wing	Item	56		
<b>7.3</b>	<b>Return air grills</b>				
	<b>1200x600 Aluminium anodised supply air grill Complete flexible, plenum box, butterfly damper and mounted controllers and all appurtenances related.</b>				
01	Central Wing	Item	19		
02	East Wing	Item	20		
03	South Wing	Item	30		
04	North Wing	Item	46		
	Total carried forward				

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Item	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Total Brought forward				
<b>8.0</b>	<b>Measurement instrumentation and controls</b> Supply and installation of the following complete with accessories.				
<b>8.1</b>	<b>FCU PICV valves with insulation as per specifications</b>				
01	15 mm dia	No	78		
02	20 mm dia	No	62		
03	25 mm dia	No	35		
<b>8.2</b>	<b>AHU PICV valves with insulation as per specifications</b>				
01	FAU01 CHW Ø50	No	8		
02	FAU01 HW Ø25	No	6		
<b>8.3</b>	<b>Accessories</b>				
01	Pressure gauge installed complete with syphon tube and cock	No	28		
02	Temperature Gauge installed complete	No	28		
03	Flow switch installed complete	No	14		
04	Temperature sensors	No	28		
05	Pressure sensors	No	28		
06	Pressure controller	No	14		
<b>9.0</b>	<b>Pipping and piping supports</b>				
<b>9.1</b>	<b>Connection of AHU to Piping network and all associated accessories and appurtenances for a complete installation.</b>				
01	Central Wing	Sum	2		
02	East Wing	Sum	10		
04	South Wing	Sum	1		
05	North Wing	Sum	1		
<b>9.2</b>	<b>Connection Of Fan Coil Units to Pipping network</b>  Connection of Fan coil unit to Piping network and all associated accessories and appurtenances for a complete installation.				
01	Central Wing	Sum	16		
02	East Wing	Sum	12		
04	South Wing	Sum	22		
05	North Wing	Sum	39		
	Total carried forward				

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Item	DESCRIPTION	UNIT	QTY	RATE		AMOUNT	
	Total Brought forward						
<b>10.0</b>	<b>Electrical Supply</b>						
	Supply and installation						
<b>10.1</b>	<b>Air Handling Units</b>						
	All Electrical work associated with the above installation the rate must include all work and material to provide MCC for each Air handling unit and all associated control instrumentations. 380V/ 60 Hz/ 3 phase	Sum	14				
<b>10.2</b>	<b>Fan coil units</b>						
	All Electrical work associated with the above installation the rate must include all work and material to provide power to fan coils and all associated control instrumentations. 220V/ 50Hz / single phase	Sum	175				
<b>11.0</b>	<b>Others</b>						
,01	Crainage and rigging to include all rigging associated with the entire scope of work	Sum	1				
	Crainage and rigging of all the above mentioned equipment between the Ground Floor and the roof floor level, (+/-10m height). Including road closure costs for both the decommissioning of old equipment and rigging in of new equipment						
<b>12.0</b>	<b>Commissioning</b>						
,01	Commissioning of parts of the sytem as per equipment supplier's recommendation by Equipment supplier	Sum	189				
,02	Testing and commisioing of the Entire system	Sum	1				
<b>12</b>	<b>Pastology Extraction system</b>						
	Specialist Major Overhauling and servicing of the camfil Air Cleaner Air Handling unit. Model CF-1x1-SAFESCAN-M-SS. The overhaul must include all necessary parts replacement and the validation required for the installataion in line with NHLS procedure.	Sum	1				
<b>13.0</b>	<b>Provisional amounts</b>						
13.1	Refurbishment of existing Extraction Fans and Fresh Air Fans	PC Sum	1	R	450 000.00	R	450 000.00
13.2	Builder's work associated with the installation	PC sum	1	R	350 000.00	R	350 000.00
	Total carried forward						

**PHASE 02 AIR HANDLING UNITS AND FANS COILS AND ASSOCIATED EQUIPMENT AND ACCESSORIES**

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NHLS BLOCK 14 HVAC UPGRADE (MECHANICAL INSTALLATIONS) BILL 4 -MAINTENANCE OF THE UPGRADED SYSTEM														
Ref	ITEM	DESCRIPTION	UNIT	Qty	YEAR 01		YEAR 02		YEAR 03		YEAR 04		YEAR 05	
					RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
	1.0	<p><b>Maintenance of Block 14 HVAC equipment as specified</b></p> <p>The maintenance will include Provision of Spares and maintenance (Preventative &amp; corrective, removal, installation, and repairs), continuous and monitoring of all Heating, Ventilation, and Air conditioning (HVAC) systems (including filter maintenance and pressurizing fans) at NHLS Block 14 for a period of five (5) years.</p> <p>The contractor is to provides qualified and competent personnel to perform preventative maintenance (PM), on the Ventilation, and Air conditioning (HVAC) systems at NHLS Block 14.</p> <p>In addition, the contractor will provide a standby service after hours with weekends and holidays included.</p> <p>The Block 14 related HVAC systems the contract shall cover under this scope of work includes all:</p> <p>a) BMS (Building Management System) and HVAC related Controls</p> <p>f) 2x Water cooled Chillers with all pumps &amp; motors including all other related auxiliaries which form part of the system.</p> <p>a) 2xCooling Towers &amp; Water Treatment Stations</p> <p>b) Fire Detection System interface</p> <p>c) Dx units (Direct Expansion)</p> <p>d) (AHU) Air Handling units</p> <p>e) Fresh Air Fans</p> <p>f) Extraction Fans</p> <p>g) All chilled water and condesor water piping and ancillaries and valves</p> <p>h) Hot water calorifiers for the heating system</p> <p>i) Motor control centres for the HVAC systems</p> <p>j) Electrical Installations for the HVAC systems</p> <p>k) And all HVAC related plantrooms.</p>												
		<b>Total carried forward</b>				R -		R -		R -		R -		R -
NHLS BLOCK 14 HVAC UPGRADE (MECHANICAL INSTALLATIONS)														

NHLS BLOCK 14 HVAC UPGRADE (MECHANICAL INSTALLATIONS)



**BILL 4 -MAINTENANCE OF THE UPGRADED SYSTEM**

				YEAR 01		YEAR 02		YEAR 03		YEAR 04		YEAR 05	
Item	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT
	Total Brought forward												
<b>SA.01</b>	<b>1.1 Service and Maintenance for the installation:</b>												
	.01 Monthly maintenance actions	Month	7										
	.02 3 - Monthly maintenance actions	3Months	4										
	.03 Annual maintenance actions	Annual	1										
	<b>2.0 Payment reduction:</b>												
<b>SA.05</b>	.01 Payment reduction due to exceeding of maximum allowable down-time during emergency breakdown.	days		-2500		-2850		-3500		-3850.00		-4500	
<b>SA.06</b>	.02 Payment reduction due to exceeding of maximum allowable down-time during ordinary breakdown.	days		-1500		-1650.00		-2350		-2800		-3500	
<b>SA.07</b>	.03 Payment reduction due to exceeding of maximum allowable down-time during malicious damage breakdown.	days		-1500		-1650.00		-2350		-2800		-3500	
	<b>3.0 Provisional Amounts</b>												
<b>01</b>	Replacement of out of warranty Parts	Psum	1		R 385 000.00		R 560 000.00		R 750 000.00		R 885 000.00		R 995 000.00
	<b>4.0 Additional tests</b>												
	.01 Additional tests required by engineer	Psum	1	R 10 000.00	R 10 000.00	R 10 000.00	R 10 000.00	R 10 000.00	R 10 000.00	R 10 000.00	R 10 000.00	R 10 000.00	R 10 000.00
	.02 Charges required by contractor on sub-item .01 above	%	R 10 000.00										
	<b>5.0 Occupational Health and Safety</b>												
	.01 Compliance with OHS Act and Construction Regulation 153	Sum	1										
	Sub Total												
Total carried to Summary Page Sum Year 01 to Year 05(G+I+K+M+O)													