

**SPECIFICATION FOR PROVISION OF BLOCK 14 HVAC
SYSTEM FULL MAINTENANCE FOR A PERIOD OF 5
YEARS**

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1. Introduction

This portion of the contract is for the Provision of Spares and maintenance (Preventative, corrective and repairs) 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.

The contractor is to provide qualified and competent personnel to perform preventative maintenance (PM), corrective maintenance (CM) of all block 14 Heating, Ventilation, and Air conditioning (HVAC) systems and associated plant rooms.

The contractor shall provide a standby service after hours with weekends and holidays included.

The contractor shall ensure that the number of personnel provided is sufficient and able to manage all works on-site to the employer's satisfaction.

This will include adequate management and supervision, along with suitable qualified technicians, artisans and lower task level employees for work such as filter cleaning and plant room cleaning.

2. Scope Of Work

2.1.1 Work To Be Performed by the Contractor for The Works

The Provision of Spares and maintenance (Preventative & corrective, and repairs) 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.

The HVAC systems covered under this scope of work includes all:

- a) BMS (Building Management System) and HVAC related Controls
- b) Fire Detection System interface
- c) Dx units (Direct Expansion)
- d) (AHU) Air Handling units
- e) Cooling Towers & Water Treatment Stations
- f) Chiller plants (Water and air cooled) with all pumps & motors including all other related auxiliaries which form part of the system.
- g) Fresh Air Fans
- h) Extraction Fans
- i) Air filtration systems
- j) And all other HVAC related plants systems.

- k) The electrical switchgear for HVAC system

2.1.2 Scope Breakdown

Soon after completion of Phase two of the project, phase three will be implemented which entails the maintenance of the newly refurbished and upgraded HVAC system for Block 14. In general, the plant comprises of items as indicated in 2.1.1 and the contractor shall perform the below scope at minimum:

- a) Services and repairs to a variety of mechanical equipment, mechanical parts and electrical parts utilized in the HVAC System
- b) Repairs and maintenance on chiller plant, condensers, compressors, centrifugal pumps and pump bearings.
- c) Repairs and maintenance on air handling Units and distribution network.
- d) Develops implements and maintain an effective program of equipment and outage maintenance work; performs equipment inspections to ensure that the equipment is safely maintained and operable; performs related testing and repair as needed.
- e) Tests and maintains heating, ventilating and air conditioning such as compressors, condensers, pumps, control systems, fans humidifiers, chillers and heat exchangers.
- f) Supervises a program of preventive maintenance of the electrical and/or mechanical equipment, makes regular inspections and tests of facilities to determine the overall condition of the plant.
- g) Ensures availability of parts and supplies, by assessing jobs and determining parts that are needed for the job.
- h) Performing all maintenance, repairs activities related to these systems.
- i) Provide training to NHLS service staff during the maintenance phase of the project..
- j) Fixing of leaks during running conditions

The plant includes NHLS Block 14 and its extended buildings.

The information below is a comprehensive data of the employer's plant and equipment for the contractor's information so that the extent of the scope of work is well understood.

Block 14 Schedule of Equipment to be maintained in Phase 3

LOCATION	Equipment Description	QTY	Note
NICD & SAVP (BLOCK 14 CENTRAL)	Water cooled Chiller-Make TBA	2	New equipment replaced in phase 01 of the project
	Cooling towers – Make TBA	2	New equipment replaced in phase 01 of the project
	Chilled water pumps	6	New equipment replaced in phase 01 of the project
	Condenser water Pumps	6	Half New equipment replaced in phase 01 of the project half repaired and refurbished
	Water treatment equipment	1	New equipment replaced in phase 01 of the project
	Chilled water and return water reticulation network and associated piping accessories, valves and ancillaries	Sum	Piping repaired and refurbished, all valves New replaced in phase 01 of the project
NICD & SAVP (BLOCK 14 CENTRAL UPPER)	AHU's	2	New equipment replaced in phase 02 of the project
	FC Hide Away Units	12	New equipment replaced in phase 02 of the project
NICD-CDRM BLOCK 14 NORTH UPPER & LOWER	AHU's	1	New equipment replaced in phase 02 of the project
	FC Hide Away Units	29	New equipment replaced in phase 02 of the project
NICD-ADMIN (BLOCK 14 CENTRAL)	AHU's	1	New equipment replaced in phase 02 of the project
	FC Hide Away Units	16	New equipment replaced in phase 02 of the project
NICD- PARASITOLOGY (BLOCK 14 SOUTH UPPER)	FC Hide Away Units	6	New equipment replaced in phase 02 of the project
SBPRL BSL3 (BLOCK 14 SOUTH UPPER)	AHU's	1	New equipment replaced in phase 02 of the project
NICD-VECTOR CONTROL (BLOCK 14 CENTRAL)	Humidifiers	1	New equipment replaced in phase 02 of the project
	FC Hide Away Units	10	New equipment replaced in phase 02 of the project
SMALL ANIMAL AND PRODUCTION (BLOCK 14 CENTRAL & EAST)	Extractor Fans	5	Refurbished in phase 02
	AHU's	20	New equipment replaced in phase 02 of the project

Detailed list of HVAC system/Equipment at NHLS Block 14.

NOTE:

When new or unidentified installations occur, the contractor provides full service to all HVAC plants or systems which the employer requires to be maintained.

2.1.2 Resource Requirements

Item No.:	Description	Experience Required
2.1	Site Manager	Electrical/Mechanical N. Diploma (Not site bound)
2.2	1 X Site Supervisor	5 years' experience; qualified & registered aircon tech as authorized as refrigerant gas practitioner
2.3	Safety Officer	3 years related experience; Matric, Samtrac (Not site bound)
2.4	4 X Artisans (Aircon Trade Test)	3 years related experience; qualified aircon technician/artisan (trade test) as authorized as refrigerant gas practitioner
2.5	4 X Semiskilled personnel	3 years related experience; Matric (Grade 12)
2.6	1 X General Worker	Grade 10/STD 8.
2.7	Unknown/Other	1 Year related experience

2.1.3 Employers Objectives and Purpose of The Service

The *Contractor* must be authorized in terms of Plant Safety Regulations (PSR) (Low Voltage) to be able to perform the following activities covered in the scope of work, failing which a 10% penalty will be deducted on a monthly gross labour charge effective after 6 months when the contract is in place/signed.

This service shall include all outage work, routine maintenance, repairs, inspections & cleaning, support services, emergency breakdown services, statutory inspections/maintenance and defect correction during normal and abnormal condition or operation, to ensure the integrity of the installed ventilation and air conditioning systems at NHLS Block 14.

The *Contractor* shall through execution of the services ensure that all systems are safe and operational. These will include but not limited to all systems and its sub system components.

NHLS Block 14 operates on a 24-hour basis, 7 days a week and 365 days a year.

2.1.4 Employer's Requirements for The Service

- a. The contractor shall ensure that relevant personnel are authorized as authorized refrigeration practitioners, in terms of the OHS act pressure equipment regulations. Proof of all authorization/qualifications shall be submitted to the employer at the begin of the contract.
- b. The contractor is solely responsible for the operation of the HVAC systems and that ensures that it works optimally and as per employers' requirements.
- c. The contractor maintains repairs and replaces all plant components which form part of the HVAC system (plant spares are the responsibility of the contractor), as and when necessary, including associated motors, compressors, fans and control circuitry (i.e., All electrical, mechanical and control and instrumentation maintenance).
- d. The contractor provides the service in accordance with the original equipment manufacturers (OEM) specifications and any additional standards which the employer stipulates. This also include the statutory requirements for the future and current installed HVAC system.
- e. The contractor provides the service as per approved maintenance strategies.
- f. The contractor performs the service to the employers' requirements and the contractor's performance is measured, monthly using work week management key performance indicators (KPI's. The contractor's performance is measured according to the KPI's and the level of performance required is given. Poor performance will be measured according to the service level table and applicable damages are paid by the contractor. Refer to additional specification **SA:**
GENERAL MAINTENANCE
- g. The contractor is present and suitable personnel perform standby as per an approved roster and report to site within 45 minutes of a call out as and when required.
- h. The contractor attends to plant breakdowns immediately and until these are fully rectified and completed, unless the employer instructs otherwise, and both the contractor and employer are in agreement that the work may be

re-planned for a later completion.

- i. The contractor attends to complaints from clients regarding air-conditioning problems and keeps the clients informed of progress and completion.
- j. The contractor cleans and removes any spares, used parts, materials and debris, dust and rubble arising from work done in order to ensure that the employers' premises are left in a clean condition afterward. Waste disposal is done in accordance with the employer's site regulations.

No dust shall be generated or water spillages when maintenance of the air con plant is being performed.

- k. The contractor conducts a monthly inspection of the plant before the end of each month, and provides a detailed, written report within 3 (three) working days thereafter.
- l. The contractor provides cell phones and radio communication for all employees to enable prompt communication with the employer and workers without any delay.
- m. The Contractor ensures that there is a vehicle in good condition and road worth available for the employees to use during working hours for transportation of tools and equipment as well as for use during standby periods.
- n. Any other act or procedure deemed necessary or applicable if the work includes some toxic and/or hazardous substances during normal and routine maintenance activities stipulated in this document. In this case the Contractor handles such hazardous substances in accordance with the applicable regulations and procedures and is disposed of by the Contractor in accordance with the applicable law.
- o. The contractor shall be based off-site and report for duty during scheduled maintenance times and or during breakdown repair periods which must take place during employer's normal working hours.
- p. In addition, the contractor provides a standby service after hours with weekends and holidays included.

2.2 People

- a) The contractor ensures that the number of personnel provided is sufficient and able to manage all works on-site to the employer's satisfaction as per section 2.1.1 and

2.1.2 above.

- b) The contractor provides qualified and competent personnel to perform preventative maintenance (PM), corrective maintenance (CM), and continuous operating and monitoring of all employers Heating, Ventilation and Air Conditioning (HVAC) systems at NHLS Block 14 and immediate surroundings, Camden outside plants including but not limited to outside plant buildings and offices.
- c) This will include adequate management and supervision, along with suitable qualified technicians, artisans and lower task level employees for work such as filter cleaning.

2.3 Applicability

This document is applicable to NHLS Block 14 – HVAC Repair and Maintenance.

2.4 Legislation And Site Regulations

The contractor conforms to all prevailing legal requirements of the Republic of South-Africa, and NHLS Block 14 Site legal requirements.

With special reference but not limited to the following: (Note that latest revisions apply before and during contract period.)

- a) Occupational Health and Safety Act 85 of 1993 as amended and its regulations.
- b) Compensation for Occupational Injuries and Diseases Act 130 of 1993 as amended.
- c) CIDB grade level relevant for this type of construction work.
- d) National Environmental Management Act 107 of 1998 as amended.
- e) National Environmental Waste Act 59 of 2008 as amended.
- f) National Water Act 36 of 1998 as amended.
- g) NHLS procedures and safety requirements set out in Safety, Health and Environmental specifications, Document.
- h) Employer's policy for waste management on Site.
- i) NHLS Block 14 Security access control

Any other act or procedure deemed necessary or applicable if the work includes some toxic and/or hazardous substances during normal and routine maintenance activities stipulated in this document.

In this case the Contractor handles such hazardous substances in accordance with the applicable regulations and procedures and is disposed of by the contractor in accordance with the applicable law.

2.5 Disclosure Classification

Controlled Disclosure: Controlled Disclosure to external parties (either enforced by law, or discretionary)

2.6 Abbreviations

Abbreviations	Description
RP	Responsible Person
EMD	Electrical Maintenance Department
PPE	Personal Protective Equipment
PTW	Permit To Work
QA	Quality Assurance
QC	Quality Control
QCP	Quality control program/plan/procedure
HVAC	Heat Ventilation and Air Conditioning.
SHEQ	Occupational Safety, Health, Environmental, and Quality
SOW	Scope of Work
NCR	Non-Conformance Report

2.7 Roles And Responsibilities

Roles and responsibilities are as follows:

2.8.1 Artisan

Must perform work to the highest standard and regarding to the safety regulations, hold points and notify supervisor when work is completed.

Ensure to have all required tools in his/her possession.

Must do proper inspection of plant equipment to identify when the replacement of the parts is necessary.

2.8.2 Supervisor (R.P)

Ensure that:

1. All workers have appropriate P.P.E
2. All workers are familiar with the risk assessment, safety precautions and hazards
3. The work is carried out by authorized or competent person
4. Ensure that all documents are accurately completed and signed before returning the documents like service instruction and information documentation to Work Management Department for capturing and filing.

2.8.3 Quality Controller

Must inspect the system after the maintainer has maintained, following the approved quality control plan.

2.8.4 Utility Person

Assist the artisan and must perform their work to the highest standards with regards to the safety regulations and notify the supervisor when the work is completed.

2.8.5 Contractor

All contractors shall work within the parameter of the job description and scope of work. To keep all instructions/ procedures on hand and supply NHLS with reference to be included in this document and supply record and history requirements.

Contractors must also ensure that the work is performed to the highest standard and safety standards and regulations.

2.8 Process For Monitoring

After the production related HVAC system has been maintained, the operating temperature, humidity and pressurization, if all in operation shall be monitored via the BMS

system.

Regular plant walk inspection shall be conducted to monitor the HVAC system performance and identify any potential defects to be corrected based on their criticality.

2.8.1 Plant Modification

No plant modification shall be executed in the plant without an approved engineering instruction accepted by the employer/service manager. This include changing plant operating settings which shall be approved by engineering before get implemented.

If any plant or item is suspected or has been found modified, it must be reported to the employer immediately.

Alarm respond procedure for HVAC system shall be adhered at all times by the contractor.

2.10 Accommodation

The Contractor will be responsible for the provision of accommodation to his personnel – the Employer does not provide accommodation.

2.11 Provided by The Contractor

The contractor shall provide reliable and sufficient transport to transport all employees to and from work on daily basis and on standby, equipment, standard PPE and all required measures to render required services. The contractor has to ensure own cleaning of Protective Clothing.

The Contractor shall provide own cleaning of the workshop premises, offices, kitchen and stores in the Workshop.

2.11.1 Specialized Tools and Test Equipment.

- a) The contractor provides all the necessary tools and equipment to provide the service. This includes all hand tools such as spanners, screw drivers, pliers and electrical / electronic and measuring tools / instruments including drilling machines drilling machines flukes and meggers and any additional tools we will need them to have their own welding power pack, plus bottles. Step ladders, fall arrestors etc.

- b) All tools that need certificates must have valid certificate to comply with safety requirements.

2.11.2 Training

- a) It's the responsibility of the contractor to provide training for his employees on safety, health, environmental and quality management. It's the responsibility of the contractor to train its employees/have always trained qualified employees at NHLS Block 14.
- b) The contractor provides all relevant technical training to his personnel in order to render NHLS with the required services.
- c) The contractor must also make provision for basic training to NHLS personnel: Maintenance, engineering, and operating staff as and when required.
- d) All relevant courses must be attended as required on contractor's account.

2.12 Personal Protective Equipment

Where the contractor is required to make use of Category 2, 2A, and Category 4 ARC Flash protective wear, such as entering and working in Electrical Substations, or where there is a danger of an Electrical Flashover or Arc to occur, or to check electrical Isolations, the contractor shall provide such category Arc flash overalls to their employees. It is the responsibility of the contractor to maintain such equipment in a good condition in line with regulatory requirements.

2.13 Provided by the Employer

2.13.1 Potable Water

Potable water for construction purposes is also available free of charge. Any installation is for the Contractors account.

2.13.2 Meals

Meals on site for the Contractor's personnel are not available.

2.13.3 Sanitary Facilities

Provided by the employer.

2.13.4 General

The Contractor is to comply with all Site requirements and instructions. The onus is on the Contractor to ensure his familiar with the Employers Site regulations and Inspections.

2.13.5 Fire Protection

The Contractor is to comply with requirements of Fire prevention and protection of Contractors premises on Engineering Sites" and of Site Regulations pertaining fire protection.

2.13.5.1 Fire Precautions

Any tampering with the Employers fire equipment is strictly forbidden. All exit doors, fire escape routes, walkways, stairways, and stair landings must be kept free of obstruction, and not to be used for work or storage at any time. Firefighting equipment must always remain accessible.

2.13.6 Induction Training to Employees

No person will be issued with an access permit without proof that the person did attend the local NHLS induction course.

A one-day access permit will be issued for persons attending the induction course. It is the Contractors responsibility to arrange with the contract manager one week in advance for the course booking.

2.14 Documentation Submission and Recording

The contractor is to provide the following documentation before commencing with any work in the plant:

- a) Medical and induction certificates
- b) Safety file

- c) Finger prints with criminal checks reports for all contractor's employees covered by the contract.
- d) Quality Control Process files (for quality assurance)
- e) And all other documents requested as per this scope of work.

2.15 Reporting of Accidents

The Employer follows an accident prevention policy that includes the investigation of all accidents involving personnel and property. This is done with the intention of introducing control measures to prevent a re-occurrence of the same incidents.

The Contractor is expected to fully co-operate to achieve this objective. The Contract Manager must be informed immediately of any incidents and any damage to property or equipment must be reported within the same shift.

NOTE! This report does not relieve the Contractor of his legal obligation to report certain incidents to the Department of Labour, or to keep records in terms of the Occupational Health and Safety Act, and Compensation for Occupational Injuries and Diseases Act.

2.15.1 Meeting

The contractor shall adhere to the requirements as stipulated and ensure that:

- a) All relevant meetings must be attended.
- b) Attends other meetings as required and directed by the Service Manager.
- c) Attends Monthly scheduled contract meeting.

2.16 Plant Codification

2.16.1 System Labelling

The contractor shall inspect and reports on all labelling of equipment and plant under his control to ensure the following:

- a) All electrical plant shall be correctly labelled as per employer's requirements.
- b) All non-labelled or defective labelling shall be reported to the Employer.
- c) The employer will provide new labelling which shall then be affixed to the equipment identified.

- d) The contractor ensures that the labelling is affixed to replacement part of any piece of equipment or part that is removed or replaced.

2.17 Work Permits

No work will be carried out without authorizing work permits which shall be issued by the client upon fulfillment of set requirements.

The contractor ensures that supervisors, technicians, and artisans each become authorized as a responsible person (RP), to fulfil the employer's safety requirements for permit to work applications on HVAC plant and also safely isolating the plant.

2.17.1 Quality Requirements

The contractor prepares the QCP documentation and submits them to the employer's representative for approval.

All HVAC critical task as per the employer list, shall have the QCP approved prior commencing the actual work.

The QCPs on incoming product and services rendered by the contractor shall be done and all materials are to be signed off by the Project Engineer and hold/witness points should be marked to ensure the quality of the supplied goods is according to standard.

2.18 Integration with the Employer's organization

The contractor provides the services in an integrated manner at NHLS Block 14 with the inclusion of the following minimum expectations:

- a) Attends to breakdowns, until completed, unless otherwise agreed with the Contract Manager; Call outs will be according to priority. Refer to additional Specification SA general Maintenance for breakdown response times.
- b) The employer requires on-site maintenance during normal working hours. Standby & call out service, is required after working hours.
- c) Provides personnel on standby on a 24-hour basis, in accordance with his conditions of service. The contractor ensures that there is an emergency Standby team at all times.

2.18.1 Providing access to and interface with others

If other contractors are working or located in the same area with your team, the Contractor co-ordinates his work and planning with other Contract Managers to maintain harmonious working conditions on Site.

During the progress of the works the Contractor provides access to others who also perform work in the same area, on an as and when required basis.

The Contractor makes his own assessment of the problems and difficulties which may be encountered for providing access to and interfacing with others (this includes access difficulties experienced during outages or commissioning phases).

2.19 Key Performance Indicators (KPI's)

2.19.1 The contractor shall be measured on performance on the following criteria:

- a) HVAC system availability – target 100%
- b) Periodic Safety Report compliance and audits – target 100%
- c) Call out response time as below:

REQUIRED MAINTENANCE	MAXIMUM DOWN-TIME ALLOWED
Fatal breakdown (where specified)	2 hours (immediate response)
Emergency Breakdown	24 hours
Ordinary Breakdown	7 days
Operational damage repair	7 days

- d) Quality and Safety audits Using the point system – 100%
- e) Chiller plant down time s – target 0 down time.

NB: Failing to meet any of the above KPIs, a 10% penalty will be deducted on a monthly service charge.

2.19.2 HVAC Works management section the following criteria will be met:

- f) Schedule Compliance – 100% (Execution of Preventative Maintenances on time versus submitted plan to execute.)

- g) Preventative Maintenance Compliance – 100% (Close out of PM's scheduled)
- h) Statutory Violations – 0% violations (Statutory PMs executed on time if any)
- i) QC Compliance – 100% Method statements in place for all critical tasks
- j) Rework Report – 0% Rework in 90-day cycle

NB: Failing to meet any of the above KPIs, a 10% penalty will be deducted on a monthly service charge effective at project commencement.

2.19.3 NCR – Non-Conformance Report

An NCR report will be raised leading to an investigation and close out for non-adherence to the KPI criteria.

3. Spares

3.1 Spares and Consumables

- a) The contractor will be providing all replacement plant components and spares for servicing and repairs as per the table below, within 48Hrs.
- b) The contractor is responsible for keeping of minimum spares requirements as stock holding requirements as per OEM recommendation.
- c) All usable spares shall be kept at NHLS main stores.
- d) No plant item or spares shall leave NHLS Block 14 premises without a permission from the employer NHLS accompanied by an approved gate pass permit.
- e) Consumables which are stock items shall be provided by the Contractor.

3.1.1 Stock holding Spares:

NOTE: Consignment stock or critical spares required to be maintained available by the contractor and also be made available within 48 hrs. is to be determined at the end of phase 2 of the project.

4. Guarantees and Warranties

4.1 Guarantee

The guarantee is related only to workmanship performed and material used, which form part of the service information and the guarantee is valid for 12 months, on condition that only the contractor has worked on the plant within the contract duration.

4.2 Warranties

Warranties for the spares purchased and received from the HVAC contractor are as follow:

- 18 Months warranty if NHLS receive the spares and stores them.
- 12 Months if NHLS receive the spares directly to the plant for installation.

5. Drawing

The HVAC plant system drawings will be as per As built drawings to be prepared at the end of phase 2 of the project: