

## **ANNEXURE 6**

### **CITY DEEP AND KASERNE PRECINCT AIR CONDITIONING SPECIFICATION AND INVENTORY**

**TDR FOR PROVISION OF INTEGRATED FACILITIES MANAGEMENT  
AT TRANSNET CITY DEEP AND KASERNE PRECINCT  
FOR A PERIOD OF 3 YEARS**

## A. INTRODUCTION

The installed Air conditioning systems/ equipment require service and maintenance. The document addresses the inspection and repair thereof on comprehensive preventive maintenance program. The original equipment manufacturers maintenance manuals should be used in conjunction with this specification. The contract will provide for repairs to the equipment and related equipment (pumps, motors, condenser and evaporator coils). Transnet house rules shall apply to the maintenance contract.

- a) Original equipment manufacturers manuals should be used in conjunction with this document.
- b) Repairs to the equipment/ systems (and related equipment such as pumps, motors, condenser and evaporator coils) should be provided
- c) Transnet house rules shall apply to the maintenance contract.
- d) The Contractor shall furnish all supervision, labour, materials, equipment, tools, chemicals, transportation and all effort necessary to perform the requirements herein.
- e) Components purchased relating to repairs shall be approved by Transnet.

## B. EQUIPMENT SUMMARY

#	Equipment description and requirements	Qty	Maintenance/ service
1	<b>VRV/VRF system</b> (500 kW VRV)	1	
	Major/Annual Preventative maintenance		1 x per annum
2	<b>Normal split units</b> (Minor Equipment: 12000 – 18000 BTUh <sup>-1</sup> )	49	
	Minor Service - Mid wall Split		2 x per annum
	Minor Service - Window Wall Split		2 x per annum
	Minor Service - Ceiling Cassette Split		2 x per annum
	Major Service – Mid wall Splits		once every 2 years
	Major Service - Window Wall Split		once every 2 years
	Major Service - Ceiling Cassette Split		once every 2 years
	Minor Service – Cleaning of filters, temperature adjustments, etc	All	Monthly

Minimum Aircon Maintenance personnel: 2x technicians and 1x supervisor

## C. EQUIPMENT/ SYSTEM DESCRIPTION AND REQUIREMENTS

### 1. VRF/VRV SYSTEMS

## SERVICE SCHEDULE

The contractor shall perform one comprehensive annual service and inspection. Frequency of schedule may be altered by Transnet. The annual service shall be done in winter season. A checklist of all inspections and tests performed (as listed below) shall be supplied to Transnet. Electronic checklists would be required and a signed hard copy shall be the preferred method for submission. It shall be the Contractor's responsibility to maintain the unit (main body and all components attached to the body) and ancillary components in a manner that causes the machine to be fully functional in accordance to manufacturer's and industry standards.

## ANNUAL PREVENTIVE INSPECTION AND MAINTENANCE

Frequency	Component	Activity
1 x per Annum	Refrigerant System	Compressor: <ul style="list-style-type: none"> <li>Check for acoustic sound and vibration at start and stop</li> <li>Measure insulation resistance</li> <li>Check the Looseness of terminals and Contact of wires</li> </ul>
1 x per Annum	Refrigerant System	Pulse motor valve: <ul style="list-style-type: none"> <li>Check for operation</li> <li>Check Operation sound at power ON/OFF</li> </ul>
1 x per Annum	Refrigerant System	Refrigerant system: <ul style="list-style-type: none"> <li>Check for operation of 4-way valve and insulation performance</li> <li>Check for Corrosion and abnormal sound</li> </ul>
1 x per Annum	Refrigerant System	Heat Exchange: <ul style="list-style-type: none"> <li>Check clogging by dirt or damage</li> <li>Check for Gas leakage</li> </ul>
1 x per Annum	Electric Parts	Fan Motor: <ul style="list-style-type: none"> <li>Check acoustic sound</li> <li>Measure insulation resistance</li> </ul>
1 x per Annum	Electric Parts	Float switch: <ul style="list-style-type: none"> <li>Check for Operation</li> <li>Check for the Breaking of wires</li> </ul>
1 x per Annum	Moving and Removable Parts	Filter: <ul style="list-style-type: none"> <li>Check dirt or snag</li> </ul>
1 x per Annum	Moving and Removable Parts	Fan, fan casing, bell mouth: <ul style="list-style-type: none"> <li>Check fluctuation &amp; balance</li> <li>Check Stick of dirt and the overall Outlook</li> </ul>

1 x per Annum	Structural Parts	<ul style="list-style-type: none"> <li>▪ Check clogging dirt, or drain dirt</li> <li>▪ Check peel or rise of paint on the cabinet</li> <li>▪ Check dirt or damage on the make-up panel and louver</li> <li>▪ Check dirt or damage on the front, top and side cabinet</li> <li>▪ Check for hardening or deterioration of cushion rubber</li> </ul>
---------------	------------------	---

## 2. NORMAL SPLIT UNITS (MINOR EQUIPMENT)

### MINOR INSPECTION AND MAINTENANCE SERVICE

Frequency	Component	Activity
2 x per Annum	Mid wall Split	<ul style="list-style-type: none"> <li>▪ Clean Filters</li> <li>▪ Check Refrigerators</li> <li>▪ Check for correct Operation</li> </ul>
2 x per Annum	Window/ wall unit	<ul style="list-style-type: none"> <li>▪ Clean Filter</li> <li>▪ Check &amp; Test Temperatures</li> <li>▪ Check &amp; Test correct operations of 4 way valve</li> </ul>
2 x per Annum	Ceiling cassette	<ul style="list-style-type: none"> <li>▪ Clean Filters</li> <li>▪ Check &amp; Test Temperatures</li> </ul>

### MAJOR INSPECTION AND MAINTENANCE SERVICE

Frequency	Component	Activity
Once every 2 years	Mid wall Split	<ul style="list-style-type: none"> <li>▪ Chemical clean condenser &amp; Evaporator</li> <li>▪ Clean drip tray &amp; Drain pipe</li> <li>▪ Clean Evaporator &amp; Condenser Fans</li> <li>▪ Clean Filters on Evaporator (Renew if necessary)</li> <li>▪ Check all Electrical Connections, Voltages &amp; Currents</li> <li>▪ Check LP &amp; HP Pressures</li> <li>▪ Top up Refrigerants</li> <li>▪ Wash Condenser &amp; Evaporator (Handy Andy &amp; Water)</li> <li>▪ Test Unit Heating &amp; cooling for correct Operation.</li> </ul>
Once every 2 years	Window/ wall unit	<ul style="list-style-type: none"> <li>▪ Disconnect Unit, Remove from casing.</li> <li>▪ Strip condenser covers.</li> <li>▪ Brush &amp; Blow out Unit.</li> </ul>

		<ul style="list-style-type: none"> <li>▪ Chemical clean condenser &amp; evaporator</li> <li>▪ Replace Condenser Covers.</li> <li>▪ Check all Electrical Corrections.</li> <li>▪ Check correct operation of four-way Valve</li> <li>▪ Check Evaporator &amp; Condenser Fans &amp; Clean.</li> <li>▪ Clean Filter (Renew if necessary)</li> <li>▪ Check Temperatures (with Temp meter)</li> <li>▪ Replace Unit in Casing &amp; secure</li> <li>▪ Connect and replace front Cover.</li> <li>▪ Check for correct operation.</li> </ul>
--	--	--

## D. WARRANTY

Responsibility for equipment room conditions or overall system performance shall be for contractors' accountability. The minimum warranty period shall be twelve (12) months for new parts; six (6) months for labour. Warranty repair and/or replacement shall be performed at no additional charge to Transnet. All warranty periods shall begin upon acceptance by the end user department.

## E. MINIMUM STOCK HOLDING

The bidder should, at all times, stock any replacement part necessary for the execution of Works. The principle that applies to stock keeping is that downtime on equipment should be kept to a minimum. Therefore, all consumables that might be necessary for the execution of the works shall be readily available. The bidders should list exclusions, if any, to the above with the maximum time necessary to acquire this spare part.

Item name/ description	Time to acquire

## **F. MINIMUM SPECIAL EQUIPMENT**

The bidder should list any special equipment, if any, that might be necessary for the execution of the Works, that will not be, either on site, or at the premises on daily basis. The bidder should indicate the maximum time necessary to acquire this equipment.

<b>Item name/ description</b>	<b>Time to acquire</b>