

**ANNEXURE 7**

**ELECTRICAL INFRASTRUCTURE MAINTENANCE**

**SCHEDULE AND INVENTORY**

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

## INVENTORY SUMMARY

#	Item	Qty	Size		
1	Standby Generators	1	250 kVA Marelli		
		1	62.5 kVA		
2	Geysers	11	150L		
		7	200L		
		1	400L		
3	LV Distribution Boards	133	10 circuits average per DB		
4	UPS Boards	5	5 circuits per board		
5	Luminaires	1306	Single to triple lamp		
6	High masts lighting	Qty	Height	No. of Lamps	Lamp size (each)
		74	20m	2-8	400W HPs

### 1. STANDBY GENERATORS

Quantity	
Specification	
Frequency	Activity
Oil Inspection	
Monthly	<ul style="list-style-type: none"> <li>- Check oil level and top up as required</li> <li>- Check oil viscosity for dilution by water or fuel</li> <li>- Repair all oil leaks</li> </ul>
Battery Inspection	
Monthly	<ul style="list-style-type: none"> <li>- Check starter battery terminals and apply contact grease</li> <li>- Check battery cables for damage and secure terminals</li> <li>- Check battery electrolyte</li> <li>- Check battery voltage and record</li> <li>- Check battery voltage drop during engine cranking and record</li> <li>- Check battery charger operation after a cranking test.</li> </ul>
Fuel Inspection	
Monthly	<ul style="list-style-type: none"> <li>- Check level of fuel tank and top up if necessary</li> </ul>

	<ul style="list-style-type: none"> <li>- Check proper function of fuel pumping</li> <li>- Check bulk fuel tank (If applicable)</li> <li>- Replace all fuel leakages.</li> </ul>
<b>Cooling Water Inspection</b>	
Monthly	<ul style="list-style-type: none"> <li>- Check engine coolant level</li> <li>- Check proper function of cooling water pump</li> <li>- Check proper function of cooling tower fan</li> </ul>
<b>Engine and Generator Inspection</b>	
Monthly	<ul style="list-style-type: none"> <li>- Check engine temperature during operation</li> <li>- Check abnormal engine speed during operation</li> <li>- Check engine synchronising mechanism during operation</li> <li>- Check change-over mechanism during operation</li> <li>- Verify generator alarm functions during operation</li> <li>- Check accumulation of dust on Generator and clean if necessary</li> <li>- Test run generator on load and record volts amperes and frequency</li> <li>- Clean generator set and switched back into "auto" mode</li> <li>- Check and rectify any loose components</li> </ul>
<b>Generator Set Inspection</b>	
12 monthly	<ul style="list-style-type: none"> <li>- Drain oil sample and submit for analysis to establish need for an oil change</li> <li>- Record output parameters while on load</li> <li>- Record running hours</li> <li>- Service diesel engine and steam clean engine, Generator as well as day tank</li> <li>- Inspect all rubber hoses and wiring, replace if required</li> <li>- So cold starting volt drop test on prime mover starter battery, replace starter battery if required</li> <li>- Clean slip rings and inspect brush gear. Open Generator terminal box, clean and tighten terminations</li> <li>- Check and record earthing valve as measured with resistance measuring instruments</li> <li>- Service change-over switchgear Disassemble contractors and clean test operation</li> <li>- Service alarm panel and clean internally and externally</li> <li>- Simulate and verify alarm and shut down conditions</li> <li>- Replace all inoperative lamps, sirens and meters</li> </ul>
<b>Generator Room</b>	
12 Monthly	<ul style="list-style-type: none"> <li>- Clean plant room and re-lamp luminaires</li> <li>- Seal all sleeves with chicken wire and builders foam.</li> <li>- Provide relevant poison inside cable trenches.</li> <li>- Paint floor with epoxy paint</li> <li>- Check laggings on exhaust system and repair if necessary</li> <li>- Check and fit new padlocking if necessary</li> </ul>
<b>Cooling System</b>	
24 Monthly	<ul style="list-style-type: none"> <li>- Drain cooling system, flush and refill with water and prescribed water conditioner.</li> </ul>

## 2. GEYSERS

Quantity	
Specification	
Frequency	Activity
<b>Piping</b>	
Monthly	<ul style="list-style-type: none"> <li>- Insert water piping and equipment for water leaks and repair leaks where required</li> <li>- Safety valves must be flushed to ensure that there is no blockage</li> <li>- Insert pipe work, pipe joints, pipe work insulation and pipe support and rectify where required</li> <li>- Insert valves, steam traps, water gauges, temperature controls sight glasses thermometer etc. for water leaks, and repair where necessary</li> <li>- Flush clean all pipe work to remove any wild scale, stones or other debris which may damage the tank living.</li> </ul>
<b>Industrial geysers</b>	
12 Monthly	<ul style="list-style-type: none"> <li>- Check and ensure that all electrical connections are tight and tighten any loose electrical connections</li> <li>- Drain water from the industrial geysers and check any internal defects and ensure that corrosion protection is still intact</li> <li>- Check and service sacrificial anode thermostat and burnt element after geyser water drainage. Replace all items if required.</li> <li>- Sample and test cold water supply for foreign particles which may damage the geyser systems, purify cold water supply if necessary.</li> <li>- Check and clean electrical control panel and check for correct operation.</li> </ul>

## 3. LOW VOLTAGE DISTRIBUTION BOARDS (DBs)

Quantities	
Frequency	Activity
<b>L.V Board</b>	
6 Monthly	<ul style="list-style-type: none"> <li>- Check DB labelling, danger signs and legend and replace if necessary</li> <li>- Check all electrical are not loose, and tighten if necessary</li> <li>- Check all DB covers are in place, and replace if necessary</li> <li>- Check all DB covers and locks are in place and replace/repair if necessary</li> <li>- Check all circuit breakers and isolators are operational as per specification, and replace if damaged</li> <li>- Check all DB blank covers are in place and replace if damaged/missing</li> <li>- Check the condition of the busbars and replace if and tighten all loose busbars.</li> </ul>
12 Monthly	<ul style="list-style-type: none"> <li>- Check and replace all damaged cable terminations including cable ferrules and rings</li> <li>- Check paint work and re-paint distribution boards including framework, panels and chassis, if necessary</li> <li>- Check busbars inside distribution boards as far as insulation and clearance distances, creepage distance joints, insulation resistance dielectric strength, deflection test, absorption resistance and short time withstand current on concerned record concerned record values and rectify if necessary.</li> <li>- Check the correct individual circuit breaker continuous current rating, trap routing and rupturing capacity, rectify if necessary</li> <li>- Check and clean all DB circuit breaker contacts with suitable cleaning material</li> </ul>

	<ul style="list-style-type: none"> <li>- Check and verify circuit breaker operating handle position indication of "ON" "OFF" and TRIP, and rectify if necessary</li> <li>- Check and test LV distribution earthing and provide COCs for distribution board in accordance with SANS 10142 Code of Practice for Wiring of Premises as amended.</li> <li>- Check and test earth leakage unit operation, and replace if necessary</li> <li>- Check and test installed indoor surge arrestors, and replace if necessary.</li> </ul>
Daily	<ul style="list-style-type: none"> <li>- Check daily operations, minor repairs, trips monitoring, etc</li> </ul>

#### 4. UPS BOARDS

Quantities	
Frequency	Activity
UPS Board	
Monthly	<ul style="list-style-type: none"> <li>- Inspect and repair as required</li> <li>- Load test and repair or replace batteries as required</li> </ul>

#### 5. LUMINAIRES

Quantities	
Frequency	Activity
Luminaires	
Daily	<ul style="list-style-type: none"> <li>- Inspect for lamp or luminaire failure and replace lamps as required</li> <li>- Repair luminaires as required</li> </ul>

#### 6. HIGH MAST LIGHTING

Quantity	
Frequency	Activity
High Mast Structure	
12 Monthly	<ul style="list-style-type: none"> <li>- Check paint work and re-paint with suitable paint if necessary</li> <li>- Check the proper functioning of mast head assembly pulleys on self-lubrication bearing</li> <li>- Check the raising and lowering of the luminaire carriage by means of single winch operation</li> <li>- Check all bolts, nuts and studs for high mast structure</li> </ul>
Mast Distribution Board	
12 Monthly	<ul style="list-style-type: none"> <li>- Check weather proof distribution doors and locking mechanism</li> <li>- Check all circuit breakers busbars, contactors, terminals and wiring necessary to supply the luminaires</li> <li>- Check earthing at distribution board</li> </ul>
High Mast Luminaires	
36 Monthly	<ul style="list-style-type: none"> <li>- Check and replace all flood lighting lamps</li> <li>- Clean all glass covers using suitable cleaning agent</li> <li>- Check and tighten all loose wiring.</li> </ul>

#### 7. 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

#### **8. 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.

Item name/ description	Time to acquire

**NB: Minimum Personnel: 2 Electrical technical personnel/handy men and 1 supervisor**