

## **APPENDIX 1: SCOPE OF SERVICES – LV MOTORS – RW10392264/20**

### **1. INTRODUCTION**

To conduct assessments and repairs of Rand Water's Low Voltage motors within the treatment and distribution plants as part of the Periodic Maintenance Program. Low voltage motors are used at all Rand Water site as part of auxiliaries during water treatment and distribution of water. Assessment and repair of the LV motors must be conducted to ensure Rand Water's treatment and distribution process is performed efficiently.

### **2. OBJECTIVES OF THE WORK**

- a) To ensure that all LV motors are in an operable condition
- b) To ensure that all motors on sites are correctly assessed and repaired.
- c) Motors need maintenance regularly to avoid developing failure which might results in higher maintenance costs.
- d) Motors need maintenance regularly to prolong their lifespan
- e) To prevent operating problems and make sure that the motor continuously provides a reliable operation.
- f) To ensure that the right maintenance is carried out at the right time

### **3. SCOPE OF THE WORK**

This contract is for service and/or repair and delivery of Low Voltage motors at Zuikerbosch Water Treatment Plant, Vereeniging Water Treatment Plant, Zwartkopjes Pumping Station, Panfontien Sludge Plant, Bulk Water Distribution and any other Rand Water plant where LV motors are installed.

**Detailed scope for the service and repair is as follows:**

#### **A. STRIP AND ASSESS SCOPE OF WORK**

##### **Collection of Motor**

- Collect motor from site
- Inspection/ disassembling
- Disassemble motor & mark for identification
- Wash & clean all the parts
- Bake stator & rotor in oven
- Inspection of cooling fan

##### **Electrical assessment**

- Conduct all electrical tests - Megger, IR, resistance, core test @ full flux & watt loss test with thermal imager, PI test
- Conduct rotor bar-bar continuity test

#### **Mechanical assessment**

- Check motor frame for cracks and metal fatigue
- Check end shields and bearing housings

#### **Report**

- Compile failure/assessment report

### **B. REPAIR SCOPE OF WORK**

#### **Stator**

- Remove stator windings, clean & test core & prepare for rewind
- Supply new stator core
- Rewind stator, VPI & bake
- Skim stator feet & conduct concentricity checks
- Overhaul stator & spray with insulating varnish

#### **Rotor**

- Supply new rotor core
- Manufacture new rotor bars & short circuiting rings
- Re-bar new rotor complete
- Final machine rotor to size - on the new core
- Machine off rotor short circuiting rings & remove rotor bars
- Manufacture new rotor bars & short circuiting rings
- Re-bar old rotor complete
- Light skim rotor - on the old core
- Balance rotor at operating speed complete with coupling and slip ring where applicable
- Overhaul rotor & spray with insulating varnish

#### **Mechanical**

- Replace DE bearing
- Replace NDE bearing
- Repair DE End shield
- Repair NDE End shield

- Replace DE End shield
- Replace NDE End shield
- Repair motor feet
- Replace motor feet
- Replace motor cooling fan
- Repair fan cowl
- Replace fan cowl
- Polish DE & NDE bearing journals & seal landings
- Supply & fit new terminal box
- Clean & polish spigots
- Supply and fit motor heaters
- Assemble motor complete
- Clean & paint the motor & terminal box to correct colour specification and prepare for delivery:  
Terminal box B26 light orange and motor F13 Agulhas Blue.
- Conduct no load test at full voltage

#### **General**

- Customer to witness test
- Final inspection & delivery back to site.
- Supply complete data pack

#### **General comments**

- Costs for refurbishment and replacement of each item under repair scope of work to be supplied at tender stage.
- The service provider to quote on all items.
- Rand water to be invited after stripping of components, before cleaning them
- Rand water to do assessment after completion of the strip and assess scope of work and recalculate the order value.
- All components (refurbished or replaced) to be inspected by Rand Water before assembly

