

	<b>Work Instructions</b>	<b>Engineering</b>
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Title: **Scope of Work: Supply & Deliver LED Lighting at Tutuka Power Station** Document Identifier: **New/Existing document Number e.g. 240/559-XXXXXX**

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## Content

	Page
1. Introduction.....	3
2. Supporting Clauses .....	3
2.1 Scope.....	3
2.1.1 Purpose.....	3
2.1.2 Applicability .....	3
2.2 Normative/Informative References .....	3
2.2.1 Normative.....	3
2.2.2 Informative.....	3
2.3 Definitions .....	3
2.4 Abbreviations .....	4
3. Detailed Scope of Work.....	5
3.1 Assessment and Planning .....	5
3.2 Description of Led lighting fixtures required .....	5
3.3 Procurement of Lighting Fixtures.....	5
3.4 Luminaire samples to be submitted. ....	6
4. Acceptance.....	6
5. Revisions.....	7
6. Development Team .....	7
Appendix A – Schedule B .....	8

### CONTROLLED DISCLOSURE

## **1. Introduction**

The current illumination levels in many areas of Tutuka Power Station, particularly within the turbine and boiler house areas, are insufficient due to a lack of maintenance. This has led to unsafe working conditions for employees. A significant number of light fixtures are non-functional or damaged, making it impossible to restore adequate illumination levels through standard maintenance practices. Current Lighting is therefore required to be upgraded into LED lighting.

## **2. Supporting Clauses**

### **2.1 Scope**

#### **2.1.1 Purpose**

The objective of this scope of work is to supply and deliver the required LED light fixtures to Tutuka Power Station. The selected supplier/tenderer is required to provide a datasheet of the lighting fixtures which they intend to supply and also include delivery Schedules and quotations, to meet the required safety and operational standards.

#### **2.1.2 Applicability**

This document shall apply throughout Eskom Holdings Limited Divisions.

### **2.2 Normative/Informative References**

Parties using this document shall apply the most recent edition of the documents listed in the following paragraphs.

#### **2.2.1 Normative**

- [1] ISO 9001 Quality Management Systems
- [2] 240-48929482: Tender Technical Evaluation Procedure.
- [3] SANS 10142-1 The wiring of premises Part 1: Low-voltage installations
- [4] 240-53716726: Technical Scoring Form
- [5] 240-53716712: Technical Evaluation Results

#### **2.2.2 Informative**

- [6] ISANS 10142-1 The wiring of premises Part 1: Low-voltage installations
- [7] 240-55714363 Eskom Generation Power Station Lighting and Small Power Installation Standard

### **2.3 Definitions**

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<b>Definition</b>	<b>Explanation</b>
Confidential	the classification given to information that may be used by malicious/opposing/hostile elements to harm the objectives and functions of Eskom Holdings Limited.
Works	Refers to the Works information for the Outside Plant Electrical Maintenance Contract at Tutuka Power Station
Contractor:	Refers to the entity/party which has submitted information for the Tender Requirements for the Works

## 2.4 Abbreviations

<b>Abbreviation</b>	<b>Description</b>
A	Electrical Current Amperes
AC	Alternating Current
CAD	Computer-Aided Design
CIDB	Construction Industry Development Board
CT	Current Transformer
CV	Curriculum Vitae
DB	Distribution Board
DC	Direct Current
DOL	Department Of Labour
ECSA	Engineering Counsel of South Africa
EMD	Electrical Maintenance Department
GO	General Overhaul
HZ	Hertz
ISO	Internal Organization For Standard
KW	Kilowatts
LV	Low Voltage,
m	Meters
MTBF	Mean Time Between Failures
N/A	Not Applicable
OEM	Original Equipment Manufacturer
OHS	Occupational Health And Safety
QCP	Quality Control Plan
RFP	Request For Proposal
RFQ	Request For Quotation
SANAS	South African National Accreditation System
SANS	South African National Standard

### CONTROLLED DISCLOSURE

Abbreviation	Description
SHE	Safety, Health & Environmental
SOW	Scope Of Work
TET	Technical Evaluation Team
V	Volts

### 3. Detailed Scope of Work

#### 3.1 Assessment and Planning

- Conduct a detailed site assessment to identify all non-functioning and damaged light fixtures in the turbine and boiler house areas.
- Evaluate the existing lighting levels against the **Eskom Generation Power Station Lighting and Small Power Installation Standard 240-55714363** and determine the number and type of luminaires needed for adequate illumination.
- Develop a lighting proposal and design that ensures compliance with **Eskom Generation Power Station Lighting and Small Power Installation Standard 240-55714363** and submit a Proposed Relux simulation. Consider the use of high bay type luminaires above the crane for the turbine hall and hose-proof IP65-rated luminaires for the boiler area.
- Submit Certificate indicating lead time for delivery from date of order

#### 3.2 Description of Led lighting fixtures required

1. Supply and deliver 4300 units of Industrial LED Bulkhead 50.9W Ex rated for Zone 21/22
2. Supply and deliver 400 units of Industrial LED Bulkhead 50.9W Ex rated for Zone 2
3. Supply and deliver 950 units of Industrial LED High bays 400W Non-ex Rated
4. Supply and deliver 300 units of Industrial LED Bulkhead Gen 2 120W Non-Ex Rated
5. Supply and deliver 950 units of Industrial LED Bulkhead Gen 2 80W Ex Rated for Zone 2
6. Supply and deliver 1000 units of Industrial LED High Bay 100W Non-Ex Rated
7. Supply and deliver 300 units of Industrial LED Floodlights 900W Non-ex rated
8. Supply and deliver 4000 units of 4ft LED Lamp bi-pin
9. Supply and deliver 300 units of Industrial LED High Bay 100W Non-Ex Rated
10. Supply and deliver 300 units of Industrial LED High Bay 100W Ex Rated
11. Supply and deliver 300 units of Industrial LED Mini Bulkhead 40W
12. Supply and deliver 300 units of Industrial LED Mini Bulkhead 40W EX TB IIIC t85oc
13. Supply and deliver 600 units of Industrial LED Bulkhead 50.9W inserts

#### 3.3 Procurement of Lighting Fixtures

- Submit a quotation for bulk purchase of the identified lighting fixtures, including high bay luminaires, low glare floodlights, bulkheads, and emergency lighting fixtures, as per **Eskom**

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**Generation Power Station Lighting and Small Power Installation Standard 240-55714363.**

- Ensure that all procured lighting fixtures are energy-efficient, robust, and suitable for the high dust and dirt accumulation environment of the power station.

**3.4 Luminaire samples to be submitted.**

Compulsory One sample of all different luminaires that is proposed must be submitted and be inspected and approved.

Below is a recommended list of pre-approved Light fittings by Eskom RTD

- a) B40-PLATE-LG-67W-LED-LASCON
- b) WXX462 – 4000K-LED PANEL – 60W- EAGLE LIGHTING
- c) WXX432 – 4000K- BACK LIT LED PANEL – 36W- EAGLE LIGHTING
- d) KRATOS I 595W FLOODLIGHT OPTIC 41807 - GENLUX
- e) LUXMO II – 215W FLOODLIGHT OPTIC 41807 – GENLUX
- f) 98W B40 LED - RETROFIT PLATE (OPAQUE DIFFUSER)
- g) AGL305 HIGH BAY120W – EAGLE LIGHTING
- h) 100W - HLED0100 – LED HIGH BAY - MAGNITECH
- i) 200W- HLED0200 – LED HIGH BAY – MAGNITECH
- j) 50.9W MAGLED44 BULKHEAD ALUMINIUM FRAME -MAGNITECH
- k) MAGURP UNIVERSAL MAGLED 44 INSERTS

*If the supplier's offering is one of the pre-approved lights listing and a manufacturer certificate is provided, the suppliers qualitative evaluation will be fully compliant.*

**4. Acceptance**

This document has been seen and accepted by:

Full Name and Surname	Designation
	Electrical Engineer
	Electrical Engineer
	Electrical Engineering

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## 5. Revisions

Date	Rev.	Compiler	Remarks
September 2024	01	Mzamo Mbazima	Scope of work for technical evaluation strategy:

## 6. Development Team

Full Name and Surname	Designation
	Electrical Engineer

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## Appendix A – Schedule B

The Following to be completed by the Tenderer/s per luminaire type.

ITEM NO	DESCRIPTION	U.O.M	SCHEDULE A	SCHEDULE B (Tenderer)
<b>1</b>	<b>Photometric Specifications</b>			
1.1	Colour temperature	K	4000 K (Neutral White)	
1,2	LED luminous flux	lm	Specify	
1,4	Colour rendering index (CRI)		≥ 85	
1,5	Luminaire efficacy	lm/W	≥ 110	
1,5	Light output ratio (LOR)	%	Specify	
1.6	Downward light output ratio (DLOR)	%	≥ 85	
1,7	Time to full brightness	minutes	< 1	
1,8	IES and/or LTD files		Comply	
<b>2</b>	<b>Electrical Specifications</b>			
2,1	Input voltage	VAC	230 ±15%	
2,2	Frequency	Hz	50 ± 5%	
2,3	Input current (maximum)	mA	300-500	
2.4	Efficiency (total LED to total luminaire power consumption)	%	≥ 90	
2,5	Power factor (PF)		≥ 0.95	
2,7	Total Harmonic distortion	%	20	
2,8	Protection type			
<b>3</b>	<b>Electromagnetic Specifications</b>		As specified	
<b>4</b>	<b>Mechanical Specifications</b>			
4,1	Luminaire design		As specified	
4.2	Luminaire material and SANS 475 compliance		As specified	
4,3	Luminaire and accessories		As specified	
4,4	Diffuser		As specified	

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4,5	Reflector material		High-grade super pure deep anodized aluminium	
4,6	LED Drivers capability		As specified	

ITEM NO	DESCRIPTION	U.O.M	SCHEDULE A	SCHEDULE B (Tenderer)
4.7	Luminaire dimensions		As specified	
	Height	mm		
	Width	mm		
	Length	mm		
4,8	Luminaire Weight	kg		
<b>5</b>	<b>General Specifications</b>			
5,1	Number of modules			
5,2	Number of LEDs			
5.3	Arrangement (number of LEDs per module)			
5,4	Operating temperature range	°C	-10 to +60	
5,5	Operating humidity range	%RH	10% - 70%	
<b>6</b>	<b>Guarantee</b>			
6,1	Luminaire housing (minimum)	years	10	
6,2	Electrical components (minimum)	hours	30 000	
6,3	LED modules (minimum)	hours	30 000	
6.4	Luminaire replacement in case of sub-standard performance		As specified	
<b>7</b>	<b>Delivery</b>			
7.1	Lead time for delivery from time of order	Calendar days	60	

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