Eskom	Strategy	Engineering

Title: **Duvha Weather Station Mast Design, Supply, Installation, Commissioning and Testing Tender Technical Evaluation Strategy**

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TABLES

1. INTRODUCTION

Duvha Power Station (P.S.) is situated near the town of Witbank in Mpumalanga, South Africa. It is a base load plant which means it operates around the clock to help meet South Africa's electricity requirements. It is a coal fired power station with five (5) generating units of 600 MW each. Construction of Duvha Power Station started in November 1975 and the last unit was placed into commercial operation in February 1984.

Currently, it is impossible to accurately measure the weather conditions surrounding Duvha Power Station (P/S). Cooling tower design specifications were initially based on an ambient temperature of 15 degrees Celsius. However, these conditions are not being met year-round as we mainly experience these temperatures during the winter months. Climatic conditions are critical in the overall design and operation of the cooling towers, resulting in new specifications to be designed.

The objective of the scope is to make necessary arrangement for the execution of installation of a weather station mast at Duvha power station.

The scope of *works* includes:

- The installation of a 10m high weather station mast on the South side of the Power Station to accurately measure climatic factors such as ambient temperature (wet and dry bulb), pressure, humidity, rainfall in mm/24h period, wind speed and direction.
- Data will be transmitted from a data logger to Duvha's online historian, VA View

1.1.1 Objectives

The main objective of the weather station is to enable data capturing that will allow:

(1) Accurate monitoring climatic conditions for assessment of cooling tower performance as to avoid incorrectly specifying maximum and minimum temperature conditions.
(2) Design of new cooling tower specifications
(3) Energy efficiency predictions to improve and optimise the station as a whole
(4) Increasing cooling tower performance and efficiency
(5) Improving cooling tower lifespan
(6) Lowering cooling tower performance assessment costs
(7) Specifying data for future projects such as cooling tower fill repack
(8) Basing cooling tower related problems on facts rather than assumptions
(9) Correlating data when assessing the performance of the cooling towers once projects have been completed as there will be legal penalties involved for contractors that do not meet the specified design proposed and implemented.

The Tender Technical Evaluation Strategy has defined the mandatory and qualitative evaluation criteria which serve as a basis for the technical evaluation process.

2. SUPPORTING CLAUSES

2.1 SCOPE

This document covers the different aspects that will be evaluated by the multidisciplinary technical evaluation team to complete the technical evaluation of the installation of a weather station mast at Duvha power station. The team members are listed along with their designation and responsibilities.

2.1.1 Purpose

The purpose of this tender technical evaluation strategy is to define the Mandatory Evaluation Criteria, Qualitative Evaluation Criteria and TET member responsibilities for tender technical evaluation. The technical evaluation strategy serves as basis for the tender technical evaluation process.

2.1.2 Applicability

This document applies to the tender evaluation team for the installation of a weather station mast at Duvha Power Station.

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] 240-48929482: Tender Technical Evaluation Procedure

[2] Section 3: Installation of a Weather Station Mast Works Information.

2.2.2 Informative

None.

2.3 DEFINITIONS

2.3.1 Classification

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

2.3.2 Criterion

Mandatory: required by law or mandate; compulsory.
Qualitative: relating to, measuring, or measured by the quality of something rather than its quantity.

2.4 ABBREVIATIONS

Abbreviation	Description
C&I	Control and Instrumentation

Abbreviation	Description
CV	Curriculum Vitae
DCS	Distributed Control System
ECSA	Engineering Council of South Africa
EDWL	Engineering Design Work Lead
I/O	Input/Output
LDE	Lead Design Engineer
MW	Mega Watt
N/A	Not Applicable
OPC	Open Platform Communications
PR	Professional Registered
P. S	Power Station
TET	Technical Evaluation Team
VA	Visual Automation
WI	Works Information
WMO	World Meteorological Organisation
WMS	Work Method Statement

2.5 ROLES AND RESPONSIBILITIES

N/A

2.6 PROCESS FOR MONITORING

N/A

2.7 RELATED/SUPPORTING DOCUMENTS

N/A

3. TENDER TECHNCIAL EVALUATION STRATEGY

3.1 TECHNICAL EVALUATION THRESHOLD

The mandatory technical evaluation criteria are must criteria. These criteria shall not be weighed but shall be assessed on a yes /no basis as to whether the criteria are met or not. An assessment of No against any criterion shall technically disqualify the tenderer and shall not be further evaluated against qualitative criteria.

Qualitative technical evaluation criteria are weighted criteria used to identify the highest technically ranked tenderer after determining that all the mandatory evaluation criteria have been met. The qualitative evaluation criteria are weighed to reflect relevant importance of each criterion.

The minimum weighted final score (threshold) required for a tender to be considered from a technical perspective is 70%.

3.2 TET MEMBERS

Table 1: TET Members

TET number	TET Member Name	Designation
TET 1	Nomfundo Mthethwa	Duvha Power Station Senior C&I Technologist
TET 2	Lemuel Zwart	Duvha Power Station C&I Engineer
TET 3	Thapelo Lesame	Duvha Power Station Civil Engineer
TET 4	Preetha Sewlall	Duvha Power Station Senior Process Engineer
TET 5	Elliot Mamba	Duvha Power Station Electrical Engineer

3.3 MANDATORY TECHNICAL EVALUATION CRITERIA

Table 2: Mandatory Technical Evaluation Criteria

	Mandatory Technical Criteria Description	Reference to Technical Specification / Tender Returnable	Motivation for use of Criteria
1.	Proof of Professional Accreditation by the World Meteorological Organisation (WMO)	Certificate of Professional Accreditation with WMO	Compliance
2.	Professional Civil Engineering registration as a Technologist /Engineer with ECSA to sign off the designs	Copy of minimum Qualification/ Certificates required and a CV with contact references	Compliance
3	Professional Electrical Engineering registration as a Technician/ Technologist /Engineer with ECSA to sign off the designs	Copy of minimum Qualification/ Certificates required and a CV with contact references	Compliance

3.4 QUALITATIVE TECHNICAL EVALUATION CRITERIA

Table 3: Qualitative Technical Evaluation Criteria

	Qualitative Technical Criteria Description		Reference to Technical Specification / Tender Returnable	Criteria Weighting (%)	Scoring (%)	Criteria Sub Weighting (%)
1	**Project Execution Methodology and Relevant Experience**			**60**		
	1 1	Detailed Work Method Statement - A statement from the Tenderer detailing how they plan to execute the work for each	A Detailed Work Method statement with an execution		No submission/Work Method Statement (WMS)cover none of	30

		section described in the Works Information (WI)	plant that covers all the key points of the scope of work		key points =0%=0, WMS missing 3 or more key points =40%=2, WMS missing 2 key points = 80%=4, Detailed WMS Covers all key points of the scope of work=100%=5	
	1 2	Tenderer's relevant experience in the design supply installation and commissioning of a similar Weather Station Mast (including solar panels, palisade fences, data logger, fibre connection between the weather station and analogue I/O modules (DCS), Open Platform communications (OPC), weather station instrumentation mentioned in WI) A list of at least two (2) verifiable references demonstrating as per the above-mentioned requirements The list must also include the date the work was done and the client's details Photographs & testimonials from the client will be advantageous	At least minimum of 2 or more Projects for Installation of Weather Station Mast Projects in the past 10 years Copies of completion certificates/ Testimonial letters for each reference shall have the following • Project name • Principal contractor • Client • Description of work performed • Project cost (only for scope performed) • Name, designation, and contact number of reference person • Purchase order/certificate		0 proj=0%=0, 1 proj=40%=2, 2 proj=80% =4, More than 2 proj =100%=5	40
	1 3	The Tenderer proves that the proposed weather station system is			No OPC Compliance Certificate and no proof of compatibility with VA	30

		compatible with OPC Interface and Visual Automation (VA) View			View = 0%=0, OPC Compliance Certificate only/ proof of compatibility with VA View only = 40%=2, OPC Compliance Certificate and proof of compatibility with VA submitted =100% = 5	
2.	**Technical staff, Company Profile, *Training & Qualifications***			**40**		
	2 1	Provide a detailed organogram for the Duvha project that indicates the organisational hierarchal structure, the lines of communication and critical relations between the different employees (by name and expertise), including the outsourced sub-contracting organisations and their interaction with the Employer	As a minimum, the following positions are clearly identified on the organogram - Project Manager - Lead Engineer (PR registered) - Quality Controller - Other resources		No organogram = 0, 50 percent complete =2,80 percent complete = 4, 100 percent complete = 5	10
	2 2	C&I personnel shall have a minimum of N6/National Diploma in Electrical (Low Current) Engineering Minimum of two (2) years of relevant experience with weather station instrumentation and fibre connection to analogue I/O modules	Copy of minimum Qualification/ Certificates required and a CV with contact references		N6/Nation Diploma/ No Qualification with 8 Months= 0%=0, N6/Nation Diploma/ No Qualification with 12 Months =40%=2, N6/Nation Diploma/ No Qualification with 18 Months =80% =4, N6/Nation Diploma/ No Qualification with 2yrs=100%=5	30

	2 3	Relevant structural design and construction experience Minimum of two (2) or more years of relevant structural design and construction experience	Copy of CV with contact references		No experience = 0, 1 year experience =2, 2 years' experience =4, More than 2 years' experience = 5	30
	2 4	Electrical Technician shall have a minimum of N6/National Diploma in Electrical Engineering Minimum of two (2) years of relevant experience with solar panels, batteries, and controller charger	Copy of minimum Qualification/ Certificates required and a CV with contact references		N6/Nation Diploma/ No Qualification with 8 Months= 0%=0, N6/Nation Diploma/ No Qualification with 12 Months =40%=2, N6/Nation Diploma/ No Qualification with 18 Months =80%=4, N6/Nation Diploma/ No Qualification with 2yrs=100%=5	15
	2 5	CV of each candidate in the organogram, as well as Professional Engineers/Technologists who will signs off the designs Technicians, Artisans and Fitters must at least have minimum qualifications of N3 plus Completed trade test certificate and 2 relevant experiences	CVs & Copy of minimum Qualifications/ Certificates		N3 with 8 Months=0%=0, N3 with 12 Months=40%=2, N3 with 18 Months=80%=4, N3 with 2yrs=100%=5	15
				TOTAL 100		

3.5 TET MEMBER RESPONSIBILITIES

Table 4: TET Member Responsibilities

Mandatory Criteria Number	TET 1	TET 2	TET 3	TET 4	TET 5
1	X	X	X	X	X
2	X	X	X	X	X
3	X	X	X	X	X
Qualitative Criteria Number	**TET 1**	**TET 2**	**TET 3**	**TET 4**	**TET 5**
1 1	X	X	X	X	X
1 2	X	X	X	X	X
1 3	X	X			
2 1	X	X	X	X	X
2 2	X	X			
2.3			X	X	
2 4				X	X
2 5	X	X	X	X	X

FORESEEN ACCEPTABLE / UNACCEPTABLE QUALIFICATIONS

Risks

Table 5: Acceptable Technical Risks

Risk	Description
1	Marginally failing to meet the 70% threshold as stipulated in section 3.1
2	Alternative solutions with the same or better performance
3	
4	
5	
6	
7	

Table 6: Unacceptable Technical Risks

Risk	Description
1	Exclusions of scope specified in the employer's requirements
2	Unclear staff organogram. i.e., the staffing plan is weak not showing clarity in allocation of tasks and responsibilities.
3	
4	
5	
6	

Exceptions / Conditions

Table 7: Acceptable Technical Exceptions / Conditions

Risk	Description
1	N/A
1	
2	
3	
4	
5	
6	

Table 8: Unacceptable Technical Exceptions / Conditions

Risk	Description
1	As per the requirements set out under the Qualitative Technical Evaluation Criteria section 3.4 of this document.
2	
3	
4	
5	
6	
7	

4. AUTHORISATION

This document has been seen and accepted by:

Name	Designation
[redacted]	[redacted]
[redacted]	[redacted]
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6. DEVELOPMENT TEAM

[redacted]ople were involved in the development of this document:

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7. ACKNOWLEDGEMENTSDOCUMENT REVIEW TEAM, AS LISTED IN SECTION 4

Technical evaluation team members, as listed in table 1.