Eskom	Scope of Work	Research, Testing & Development

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Date: ……	Date: ……

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1. INTRODUCTION

The Eskom Flow Laboratory is a SANAS accredited (ISO: 17025:2017) liquid flowmeters calibration laboratory located at Eskom, Research, Testing & Development in Rosherville, Johannesburg. The laboratory was established in 1980 to calibrate or test flow devices such as Eskom acceptance test flowmeters, process flowmeters, payment flowmeters, valve testing and other South African Industries' flow requirements. The laboratory uses various sizes of carbon steel pipes for carrying out the calibration tests, due to the age of the laboratory (+40 years) the mentioned components have deteriorated. As a result of this deterioration the laboratory is experiencing water leaks which shall be combated since water is a scarce resource in South Africa. To combat these water leakages, there is a need for a major refurbishment of all the piping components.

2. SUPPORTING CLAUSES

2.1 SCOPE

This scope of work is limited to the refurbishment of the Eskom Flow Laboratory steel pipes.

2.1.1 Purpose

The purpose of this document is to define a detailed scope of work for the refurbishment of the Eskom Flow Laboratory steel pipes.

2.1.2 Applicability

This document shall apply to service provider appointed for the provision refurbishment of the Eskom Flow Laboratory steel pipes.

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] 32-1034: Eskom Procurement Policy

[2] Occupational Health & Safety Act 85 of 1993

[3] BS EN ISO 8501-1:2007 Preparation of steel substrates before application of paints and related products. Visual assessment of surface cleanliness. Rust grades and preparation grades of uncoated steel substrates and of steel substrates after overall removal of previous coatings

[4] BS EN ISO 8502-4: 2017 Preparation of steel substrates before application of paints and related products. Tests for the assessment of surface cleanliness. Guidance on the estimation of the probability of condensation prior to paint application

[5] 240-101712128 Eskom Standard for the Internal Corrosion Protection of Water Systems, Chemical Tanks and Vessels and Associated Piping with Linings

[6] BS 6374-5: 1985 Lining of equipment with polymeric materials for the process industries. Specification for lining with rubbers

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2.2.2 Informative

[7] ISO 9001:2015 Quality Management System

[8] Eskom Health, Environment and Quality (SHEQ) Policy 32-727

[9] 240-93411424: Stacking and Storage Standard

[10] General Safety Regulations R: 1031 of 1986

[11] 240-53716726: Tender Technical Evaluation Form

2.3 DEFINITIONS

Term	Definition

2.3.1 Disclosure Classification

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

2.4 ABBREVIATIONS

Abbreviation	Description
SABS	South African Bureau of Standards
SANS	South African National Standard
OHS	Occupational Health and Safety
ECSA	Engineering Council of South Africa
Pr.	Professional
RT&D	Research Testing & Development
M&E	Metrology & Engineering Section
QCP	Quality Control Plan
DN	Nominal Diameter

2.5 ROLES AND RESPONSIBILITIES

Compiler : designer and compiler of the report.

Functional Responsible : relevant professional accountable for the information contained in herein.

Authoriser : responsible for authorisation of the document.

2.6 PROCESS FOR MONITORING

New Engineering Contract (NEC)

Supplier Method Statement

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2.7 RELATED/SUPPORTING DOCUMENTS

Tender Technical Evaluation Form

Documents listed under normative and informative references.

3. SCOPE OF WORK

The scope of work is to provide major refurbishment of the Eskom Flow Laboratory carbon steel pipes and components as per below.

3.1 REFURBISHMENT ON CARBON STEEL PIPES

Refurbishment to be carried on the below items:

Flow Metrology Areas	DISCRIPTION	DIAMETER	LENGTH MM	THICKNESS MM	QUANTITY
Right side of Resevoir	Elbow	700	167	6.3	1
	Straight Slightly Bend	700	4130	6.3	1
	Straight	700	6680	6.3	3
	Y-Section	700	2840	6.3	1
Front of Resevoir	Elbow	300	994	6.5	1
	Spool - Straight	300	1560	6.5	1
	Straight	300	6190	6.5	2
	BI-Directional Elbow	300	650	6.5	1
	Reservoir manhole covers		2430 x 1570		4
Left side of Resevoir	Straight Pipes	400	9060	6.5	7
	Elbow	400	1550	6.5	2
	Long Bend	400	2110	6.5	2
	Striaght Pipe	150	110	5.7	1
	Long Elbow	150	1108	5.7	1
	Short Elbow	150	460	5.7	1
Concrete Tower	Duck Foot	400	800	6.5	3
	Straight Pipe	400	3600	6.5	12
	Short Elbow	400	460	6.5	2
	Short Elbow	150	750	5.7	2
	Reduser	1100	600		1
	Gavanize Tank		2400 x 2500		1
	Supply IBR Galvanized Roof Sheet		6000		1
	Supply IBR Firberglass Clear View		6000		1
	Tower Staircase Steel & Handrails		21000		1
Testing Area Laboratory	Straight Pipe	700	3110	6.3	1
	Long Radius Bend	700	3300	6.3	1
	Spool Piece	700	1200	6.3	1
	Straight Pipe	700	7900	6.3	2
	Spool Piece	700	1900	6.3	1
	Spool Piece	50	1200	3.1	1
	Straight Pipe	700	1445	6.3	1
	Straight Pipe	700	3900	6.3	1
	Straight Pipe	700	1900	6.3	1
	Straight Pipe	700	1500	6.3	1
	Long Radius Bend	700	3300	6.3	1
	Straight Pipe	700	1680	6.3	1

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Duckfoot	700	1600	6.3	1
Straight Pipe	700	520	6.3	1
Straight Pipe	700	3900	6.3	1
Long Radius Bend	700	1600	6.3	1
Straight Pipe	700	500	6.3	1
Long Radius Bend	700	600	6.3	1
Reduser Pipe	1150	500	9.1	1
Reduser Pipe	1150	3900	9.1	1
Reduser Pipe	1200	500	9.1	1
Reduser Pipe	1200	5900	9.1	1
Straight Pipe	450	1960	6.3	1
Straight Pipe	450	3600	6.3	4
Straight Pipe	450	1900	6.3	1
Straight Pipe	450	3950	6.3	1
Straight Pipe	450	5900	6.3	2
Straight Pipe	450	1900	6.3	2
Straight Pipe	450	1200	6.3	1
Straight Pipe	450	500	6.3	1
Y-Section	450	1810	6.3	1
Long Radius Bend	450	2400	6.3	1
Straight Pipe	450	3900	6.3	1
Straight Pipe	450	1950	6.3	1
Straight Pipe	450	1100	6.3	1
Straight Pipe	450	6300	6.3	1
Straight Pipe	450	3900	6.3	1
Reducer Pipe	700	500	6.3	1
Straight Pipe	450	3940	6.3	1
T-Piece	450	2220	6.3	1
Straight Pipe	450	1700	6.3	1
Straight Pipe	450	8000	6.3	1
Straight Pipe	450	5000	6.3	1
Straight Pipe	450	250	6.3	1
Straight Pipe	450	550	6.3	1
Straight Pipe	450	1500	6.3	1
Straight Pipe	450	560	6.3	1
Straight Pipe	450	220	6.3	1
Straight Pipe	450	1400	6.3	1
Straight Pipe	450	2700	6.3	1
Long Radius Bend	450	2040	6.3	1
Straight Pipe	450	2220	6.3	1
Straight Pipe	450	200	6.3	1
Straight Pipe	150	5700	5.7	1
T-Piece	150	440	5.7	1
Straight Pipe	150	2000	5.7	1
T-Piece	150	440	5.7	1
Straight Pipe	150	400	5.7	1
Elbow	150	400	5.7	2
T-Piece	150	370	5.7	1
Straight Pipe	150	300	5.7	1
Reduser Pipe	350	550	6.7	1
Straight Pipe	150	2000	5.7	1
Straight Pipe	150	900	5.7	1
Reduser Pipe	250	270	6.7	2

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	Straight Pipe	100	700	3.1	2
	Straight Pipe	100	1700	3.1	1
	Straight Pipe	100	580	3.1	1
	Straight Pipe	100	3000	3.1	1
	Straight Pipe	100	2960	3.1	1
	T-Piece	100	420	3.1	1
	Straight Pipe	100	330	3.1	1
	Straight Pipe	50	2500	3.1	2
	Straight Pipe	50	1380	3.1	1
	Straight Pipe	50	1200	3.1	2
	Straight Pipe	50	2700	3.1	1
	Straight Pipe	150	225	5.7	1
	Straight Pipe	150	660	5.7	1
	Reduser Pipe	250	270	6.7	2
	Straight Pipe	150	2010	5.7	1
	Elbow	150	250	5.7	1
	Straight Pipe	150	200	5.7	1
	Straight Pipe	150	1500	5.7	2
	Reduser Pipe	500	1220	6.5	1
	Straight Pipe	200	6100	6.5	1
	Reduser Pipe	500	1220	6.5	1
	Straight Pipe	300	1520	6.5	1
	Straight Pipe	230	6100	6.7	1
	Straight Pipe	300	1220	6.5	1
	Straight Pipe	300	1520	6.5	1
	Straight Pipe	300	6100	6.5	1
	Straight Pipe	350	6100	6.6	1
	Straight Pipe	350	3050	6.6	1
	Reduser Pipe	500	1220	6.5	1
	Straight Pipe	150	6100	5.7	1
	Straight Pipe	350	6000	6.6	1
	Straight Pipe	250	6000	6.7	1
	Reduser Pipe	600	1220	6.2	1
	Straight Pipe	250	3050	6.7	1
	Straight Pipe	250	1520	6.7	1
	Reduser Pipe	600	1220	6.2	1
	Straight Pipe	580	1000	6.2	2
	Straight Pipe	580	1500	6.2	1
	Straight Pipe	350	3050	6.6	1
	Straight Pipe	150	3040	5.7	1
	Reduser Pipe	500	1220	6.5	1
	Straight Pipe	350	1220	6.6	1
	Straight Pipe	350	3000	6.6	1
	Straight Pipe	200	3050	6.5	1
	Reduser Pipe	550	1220	6.2	1
	Straight Pipe	200	1400	6.5	1
	Straight Pipe	350	300	6.6	1
	Reduser Pipe	550	1220	9.1	1
	Straight Pipe	200	3000	6.5	1
	Straight Pipe	350	4000	6.6	1
	Straight Pipe	350	3050	6.6	1
	Straight Pipe	350	4000	6.6	1
	Straight Pipe	600	9000	6.2	1

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	Straight with Reduser	500	6000	6.5	1
	Straight Pipe	500	9000	6.5	1
	Straight Pipe	600	9000	6.2	1
	Reduser Pipe	850	300	8.1	3
	Reduser Pipe	1050	600	9.1	1
	Straight Pipe	350	3050	6.7	2
	Straight Pipe	500	9000	6.5	1
	Reduser Pipe	1100	600	9.1	1
	Reduser Pipe	950	300	8.2	1
	Straight Pipe	450	6000	6.3	1
	Straight with Reduser	300	6000	6.5	1
	Straight Pipe	260	9000	6.7	1
	Straight Pipe	300	6400	6.5	1
	Straight Pipe	450	6000	6.3	1
	Straight Pipe	500	5000	6.5	1
	Straight Pipe	400	6100	6.5	1
	Straight Pipe	350	3500	6.7	1
	Straight Pipe	400	2470	6.5	1
	Straight Pipe	450	9000	6.3	1
	Straight Pipe	450	6100	6.3	1
	Straight Pipe	500	3000	6.5	1
	Straight Pipe	250	3220	6.7	1
	Reduser Pipe	650	300	6.2	1
	Straight Pipe	300	1800	6.5	1
	Straight Pipe	400	2000	6.5	8
	Straight Pipe	400	1500	6.5	1
	Straight Pipe	450	9000	6.3	1
	Straight Pipe	450	1000	6.3	1
	Straight Pipe	400	800	8.0	10
	Straight Pipe	200	3800	6.5	2
	Straight Pipe	200	3500	6.5	2
	Concrete channel cover plates	4	2500 x 1350		
PUMP HOUSE	Straight Pipe	400	170	6.5	1
	Straight Pipe	400	1200	6.5	1
	Straight Pipe	400	440	6.5	1
	Straight Pipe	400	800	6.5	1
	Straight Pipe	400	150	6.5	1
	Straight Pipe	400	1220	6.5	1
	Straight Pipe	400	700	6.5	1
	Straight Pipe	400	360	6.5	1
	Straight Pipe	400	860	6.5	1
	Straight Pipe	400	600	6.5	1
	Straight Pipe	400	320	6.5	1
	Straight Pipe	400	2300	6.5	1
	Straight Pipe	400	330	6.5	1
	Straight Pipe	400	260	6.5	1
	Straight Pipe	400	1500	6.5	1
	Straight Pipe	400	850	6.5	1
	Straight Pipe	400	500	6.5	1
	Straight Pipe	400	930	6.5	1

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	Straight Pipe	400	610	6.5	1

3.1.1 Scope of work

The service provider is expected on a **ONCE-OFF** basis to carryout refurbishment as follows:

- Remove pipes where required
- Conduct all necessary inspections and testing on the pipes including but not limited to welds, cracks, corrosion, internal and external conditions.
- Conduct surface preparation by means of deep cleaning, remove grit and sandblasting.
- Conduct repairs where necessary by means of weld patches, weld fills or deposit or replace worn-out sections.
- Apply coating at a thickness of 800 microns to the internal surfaces. The external surfaces will be coated with primer at 175 microns, followed by the application of a suitable UV topcoat to ensure long-term protection as means for corrosion protection as per relevant standards indicated in the QCP. Service provider may also propose their preferred method of internal lining and external coating.
- Service provider to provide project schedule prior commencement of project.
- Supplier to supply a crane for removal of pipes and dismantling vertical pipes inside a 21 meter concrete tower.

3.2 SUPPLY & DELIVER

The service provider is expected to provide the following:

- All consumables which may be required such as gaskets, lubricants etc.
- All broken components such as bolts, nuts, struts, etc.
- Provision of crane with a minimum knuckle boom of 21 meter.
- Provision of slings, chain blocks, all rigging equipments or requirements.
- Provision of scaffolding or alternative lifting equipments.

3.3 GENERAL

Service Provider must provide:

- Their own full Personal Protective Equipment (Include in the quotation)
- Their own first aid box (Include in the quotation)
- Safety File (Include in the quotation)
- Their own printing papers for reports where necessary.
- Service provider is responsible for dismantling, taking out, handling or machine lifting, transportation where necessary and re-installing and commissioning the pipes.
- It is the responsibility of the service provider to confirm and ensure that all the Eskom Flow Laboratory Pipes are included in their BOQ. Ensure to confirm the above lists.
- All carbon steel pipes not painted from pump-house, to tower and to the test area inside laboratory to be refurbished.
- Service Provider to confirm on-site the pipes schedule and flange standards.
- Pipes to be pressure tested on-site after installation in the presence of the service provider and service provider is responsible for closing off leaks.

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- Service provider to provide at least 120 Months workmanship warranty which shall be executed whenever water starts leaking.

3.4 QUALITY REQUIREMENTS

The Service Provider must have and adhere to their QCP.

3.4.1 Quality Management System

The Service Provider shall be certified or demonstrate compliance to the latest version of the ISO 9001 Quality Management Systems standard.

The Service Provider shall implement the requirements of the latest revision of the Eskom Quality Specification, and have the following documented information as a minimum:

- Quality Policy
- Project Quality Plan
- Operational procedures and work instructions (e.g. inspection and test plans, method statements, control of nonconformity, corrective action, risk management, etc.)

3.4.2 Site Documentation

Service provider shall:

- Conduct risk assessments, SHE inspections etc. as per the Eskom SHEQ requirements.
- Ensure obtain site permit to work.
- Update and sign QCP
- Welding Procedure

3.4.3 Service Provider's Competency

The Service Provider shall demonstrate capability to execute the works prior to the placement of the scope according to the following requirements in line with the scope of work:

1. Quality Check Procedure (QCP)
2. Organization experience
3. Personnel Competency and experience

4. SHE EVALUATION CRITERIA

Criteria	**Supplier to provide proof as follows:**
Acknowledgement of Eskom's rules and requirements	Eskom document - signed
Letter of good standing (COIDA)	Dept. of Labour doc.
SHE Policy	Signed Company document
Baseline Risk Assessment	Signed Company document
Eskom 37(2) Agreement	Signed Eskom 37(2) agreement

5. AUTHORISATION

This document has been seen and accepted by:

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6. REVISIONS

7. DEVELOPMENT TEAM

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