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		<b>RFI Number</b>	MWP2393CX		

<b>PART A REQUEST FOR AN EXPRESSION OF INTEREST (EOI)/ REQUEST FOR INFORMATION (RFI)</b>			
<b>Description of the works/goods/services</b>	Request for Information for the Engineering, Supply, and Construction for the Development of a Green Hydrogen Facility Pilot Plant Using Electrolysis		
<b>Deadline for submission</b>	23 February 2024	<b>At (South African Standard Time)</b>	10h00
<b>Tender Office address</b>	Retail Centre Megawatt Park 1 Maxwell Drive Sunninghill 2000		

Eskom Holdings SOC Ltd (“Eskom”) invites you to submit an:


- **Request for information (RFI)** to submit information for the services as stated in the table. This RFI is a stand-alone information-gathering and market-testing exercise, intended only to inform and assist Eskom’s further deliberation and development of a strategy for the Request for Information the engineering, supply, and construction for the development of a Green Hydrogen Facility Pilot plant using electrolysis.

Eskom may request indicative prices if so, stated in this RFI.

Eskom has delegated the responsibility for this **RFI** to the signatory of this document, whose details can be found below.

We look forward to receipt of your response.

Yours faithfully

<b>Name</b>	<b>Designation</b>	<b>Signature</b>	<b>Date</b>
Damela Mathetja	Procurement Manager		09.01.2024
<b>Telephone number</b>	011 800 5611	<b>Fax and/or e-mail address</b>	

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## 1 DEFINITIONS

In this Document, except as otherwise defined herein, the following terms shall have the following meanings:

<b>B-BBEE</b>	-	means Broad-Based Black Economic Empowerment;
<b>Capacity</b>	-	the capacity at any time and from time to time, expressed in normal cubic meters per hour of hydrogen produced (Nm <sup>3</sup> /h) or kilogram (kg) of hydrogen produced;
<b>Document</b>	-	this document which outlines the requirements of the RFI and for the Renewable Hydrogen Facility Development;
<b>ERIC</b>	-	Eskom Research and Innovation Centre that is located at Green Route, Rosherville, Gauteng.
<b>Nm<sup>3</sup>/h</b>	-	Normal cubic meter per hour is defined at 20°C (293.15 K, 68°F) and 1 atmosphere (101.325 kPa);
<b>Project</b>	-	the design, engineering, supply, construction, commissioning, operation and maintenance of a Renewable Hydrogen Facility, as relevant.
<b>Procurement Process</b>	-	Means the procurement process being conducted in terms of this RFI in respect of the Project;
<b>Renewable Hydrogen Facility</b>	-	A certifiable hydrogen production facility
<b>RT&amp;D</b>	-	Research, Testing and Development, a business unit in Eskom
<b>Respondent</b>	-	any entity or consortium that submits a Response to this Document;
<b>State Owned Company or SOC</b>	-	a legal entity that is or has previously been created by the Government in order to partake in commercial activities on the Government's behalf, where in the context of the Project, such entity may include any entity with a mandate to engage in the energy or financing sector;

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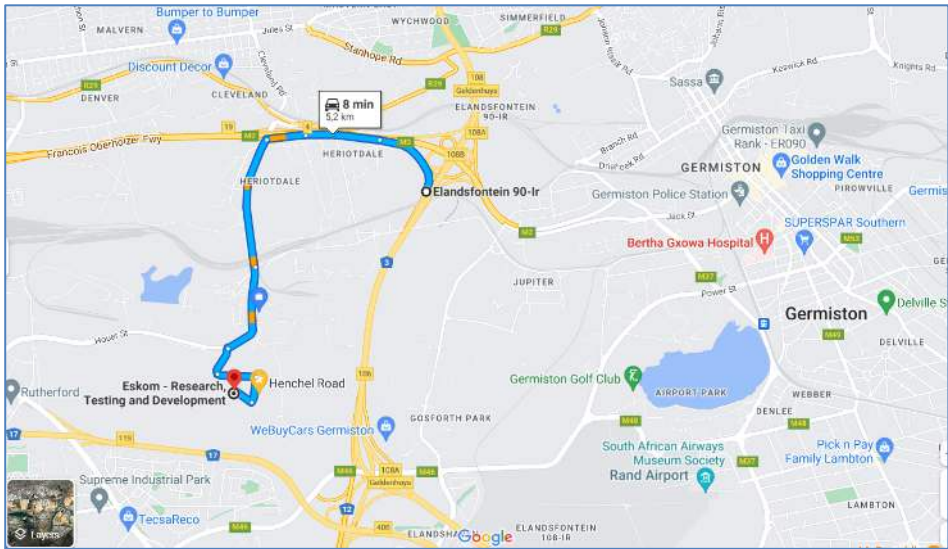
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## 2 INTRODUCTION AND BACKGROUND

A Renewable Hydrogen Facility (RHF) presents one of the first and earliest opportunities for Eskom and its Research, Testing and Development (RT&D) unit to partake in the hydrogen economy at a pilot and demonstration scale where the required developmental experience can be gained at reasonable cost.

Eskom Research and Innovation Centre (ERIC) in Rosherville was chosen as the preferred location and is in the south of Johannesburg, near the N3 and N17 highways, see Figure 1.




**Figure 1: Eskom Research and Innovation Centre Location**

The RT&D facility currently has installed infrastructure available that can be integrated into a renewable hydrogen facility. This infrastructure is shown in Figure 2 below and includes:

- 1. 400 kW solar Photo-Voltaic (PV) plant,
- 2. 2.2 MWh battery storage,
- 3. 1000 l/h demineralised water treatment plant,
- 4. supporting electrical network, and
- 5. maintenance, security and other support.

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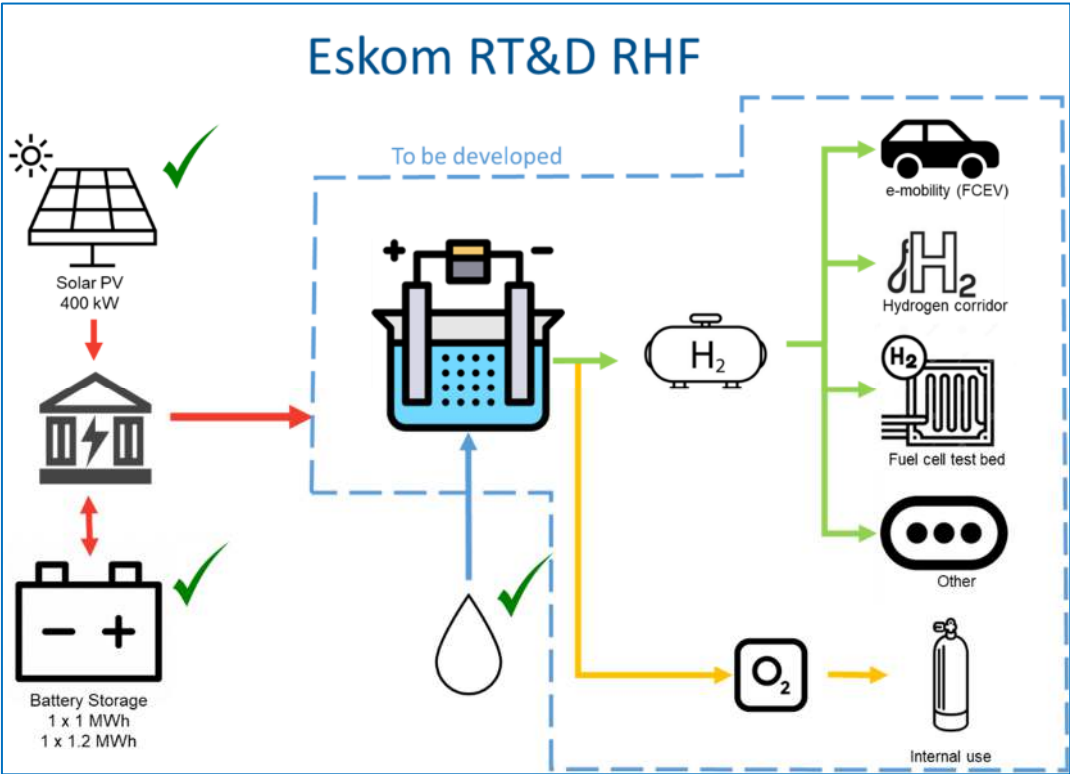
**Figure 2: Research, Testing & Development premises at Rosherville for RHF implementation**

The infrastructure installed at ERIC enables Eskom to develop a renewable hydrogen facility for R&D purposes. Hydrogen production via Electrolysis is predominantly used and can be easily integrated into the system, as proposed in the layout of the RHF is shown in Figure 3. The hydrogen will be stored as pure hydrogen and the project will not yet consider other hydrogen carriers via ammonia or liquid organic hydrogen conversion methods.

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**Figure 3: Renewable Hydrogen Facility Proposed Layout**

The R&D plant will be used for technology understanding within an integrated system, training and skills development and the application of regulations and standards for green certification. Safe plant operation must be ensured by on-line monitoring of all critical parameters, gas analysis and automatic control of the hydrogen system. The hydrogen generating plant, bulk storage, metering, and reticulation needs to be controlled as an integrated system to ensure safety. The design of the hydrogen generating system must prevent unnecessary stopping of the plant to optimise cell stack life expectancy and limit venting to the atmosphere.

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### 3 PURPOSE AND STRUCTURE OF THE RFI

- 3.1 The objective of the project facility is to understand the integration of Renewable Energy and Electrolysis to develop a certifiable (“Green Hydrogen”) Renewable Hydrogen Facility, amongst other aspects, whilst utilising existing infrastructure at Eskom Research and Innovation Centre (ERIC).
- 3.2 The facility will enable Eskom to test aspects, including part-load/turn down performance, start-up time and ramp-up/down rates, production energy efficiency, service and maintenance requirements and safety requirements.
- 3.3 To obtain market information from interested Technology and Component Suppliers as shown in Figure 4 for the development and supply of a Renewable Hydrogen Facility (RHF) at Eskom Research and Innovation Centre (ERIC).
- 3.3.1 Information from Technology Suppliers (Electrolysers, Hydrogen Storage Systems, Compressors and End-use Application Technologies) will be used to formulate the scope for the proposed RHF related to technology availability, delivery schedules and costs.
- 3.3.2 Contractors and Suppliers are encouraged to complete as much information as possible even if they are unable to complete in full.
- 3.4 To obtain from the Technology Suppliers will enable Eskom to structure a future Request for Proposal to ensure that it responds to the market demand.
- 3.5 The Respondent is expected to supply information regarding **one or more** of the systems shown in Figure 4 below, depending on capabilities offered.




**Figure 4: Request for Information System Areas**

- 3.6 Submission of the RFI response is not compulsory to participate in the future development of the RHF development.
- 3.7 Responses submitted should be as comprehensive as possible and include information requested and any supporting documentation in respect thereof.

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## METHOD AND PLACE OF DELIVERY

All the responses must be sealed and be delivered at the tender box located at the following:

**THE TENDER OFFICE**  
**Eskom Megawatt Park Tender office**  
**Northside (Retail Centre)**  
**Maxwell Drive**  
**Sunninghill**

**All RFI responses must be clearly marked: “MWP2393” Request for Information the Engineering, Supply, and Construction for the Development of a Green Hydrogen Facility Pilot Plant Using Electrolysis**


## FORMAT OF SUBMISSION

The respondent shall be submitted as 1 (one) printed original RFI, plus 1 (one) printed copy.

<b>PART B</b> <b>RESPONSE SHEET IN TERMS OF A REQUEST FOR INFORMATION</b> <b>To be completed by the supplier</b>			
<b>To</b>	Eskom Holdings SOC Ltd	<b>Date</b>	
<b>Attention</b>	Zekhaya Nzima		
<b>Tel no</b>	011 516 7042	<b>e-mail address</b>	NzimaZZ@eskom.co.za
<b>From</b>		<b>Address</b>	
<b>Address</b>			
<b>Sender</b>			
<b>Description of the works/goods/services</b>			

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Please find below our response to Eskom's questions:

No.	Question	Please indicate your response in this column
1.	Name of the Respondent	
2.	The name and contact details of the person appointed by the Respondent as its representative in the event that Eskom needs to contact the company for clarification or further details.	
3.	Company profile and description of key service offerings and capacities. (Is the company an equipment supplier, a developer of technical products, or specify if not included)	
4.	Is the respondent/company an existing registered Eskom vendor? (Please provide vendor registration details)	
5.	Provide details on respondent/Company empowerment, localisation credentials (Black Youth & Women Owned Enterprise, BBBEE Enterprise etc)	
6.	Is the company locally based or have a local office in South Africa? If no, indicate if the company is familiar with the requirements of South African State-Owned Companies tendering processes.	

#### Section A – Electrolysers Suppliers:

No.	Question	Please indicate your response in this column
<b>A1</b>	The Respondent is required to provide capability statements demonstrating the Respondent's previous experience in the supply of Electrolysers. Such capability statement shall identify the project name, location, dates the work was performed, equipment sizes, key milestone dates, standards and quality systems adhered to, approximate cost of the work performed, and contactable references to verify information supplied.	

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<b>A2</b>	<p>The Respondent is required to provide electrolyzers information within the following ranges:</p> <ul style="list-style-type: none"> <li>• Capacity: 5-30 Nm<sup>3</sup>/h</li> <li>• Operating Pressure: &gt; 25 bar</li> <li>• Technology readiness level 9 (The proposed equipment and technology must be commercially available and in operation for a minimum of 3 years)</li> </ul> <p>Include the following relevant Electrolyser information:</p> <ul style="list-style-type: none"> <li>• Type</li> <li>• Capacity</li> <li>• Pressure</li> <li>• Efficiency</li> <li>• Part-load/turn down performance.</li> <li>• Start-up time</li> <li>• Ramp-up/down rates</li> <li>• Degradation rate</li> <li>• Service and maintenance requirements</li> <li>• Lifespan and typical refurbishment/major repairs timescale against lifespan</li> <li>• Indicative Cost</li> <li>• Lead time to supply</li> <li>• Years in commercial operation</li> <li>• Safety standards and certifications complied to</li> </ul>	
<b>A3</b>	Typical guarantees and warranties that would be offered for the equipment and systems supplied	
<b>A4</b>	<p>Provide information on after sales service capability:</p> <ul style="list-style-type: none"> <li>• Local agent availability in South Africa,</li> <li>• Availability of spares required for routine operations and maintenance.</li> <li>• Typical turn-around time to return plant to service based on local spares holding.</li> <li>• Details of typical service and maintenance contracts available and recommended for the equipment supplied.</li> <li>• Contactable references where maintenance and service contracts are currently in operation.</li> <li>• Training Requirements</li> </ul>	

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	<ul style="list-style-type: none"> <li>• Upskilling/retraining requirements</li> <li>• Certification of operator requirements</li> </ul>	
<b>A5</b>	Provide any other additional information in respect of the Electrolysers which you may deem necessary to bring to the attention of Eskom	

### Section B – Hydrogen Storage Systems:

No.	Question	Please indicate your response in this column
<b>B1</b>	The Respondent is required to provide capability statements demonstrating the Respondent's previous experience in the supply of Hydrogen Storage Systems. Such capability statement shall identify the project name, location, dates the work was performed, key milestone dates, standards and quality systems adhered to, approximate cost of the work performed, and contactable references to verify information supplied.	
<b>B2</b>	<p>Identify bulk storage methods available within the following ranges:</p> <ul style="list-style-type: none"> <li>• Capacity: 20 m<sup>3</sup> to 80 m<sup>3</sup></li> <li>• Operating Pressure: &gt; 25 bar</li> </ul> <p>Include the following Storage information:</p> <ul style="list-style-type: none"> <li>• Type</li> <li>• Capacity</li> <li>• Pressure</li> <li>• Material of construction</li> <li>• Lifespan and refurbishment/major repairs timescale</li> <li>• Inspection requirements</li> <li>• Indicative Cost</li> <li>• Lead time to supply.</li> <li>• Safety and certification standards complied to</li> </ul>	
<b>B3</b>	Identify any compression requirements prior to storage.	

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<b>B4</b>	Provide any other additional information in respect of the Hydrogen Storage which you may deem necessary to bring to the attention of Eskom	
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### Section C – Hydrogen Compressor Suppliers:

No.	Question	Please indicate your response in this column
<b>C1</b>	The Respondent is required to provide capability statements demonstrating the Respondent's previous experience in the supply of Hydrogen Compressors. Such capability statement shall identify the project name, location, dates the work was performed, key milestone dates, standards and quality systems adhered to, approximate cost of the work performed, and contactable references to verify information supplied.	
<b>C2</b>	<p>Identify hydrogen compression methods available within the following ranges:</p> <ul style="list-style-type: none"> <li>Capacity: 1-3 kg per hour Hydrogen</li> <li>Operating Pressure: Up to 700 bar</li> </ul> <p>Include the following Compressors information:</p> <ul style="list-style-type: none"> <li>Type</li> <li>Capacity</li> <li>Pressure</li> <li>Material of construction</li> <li>Electricity/Energy consumption? (per kg of hydrogen with pressure differential)</li> <li>Service/maintenance intervals and requirements</li> <li>Indicative Cost</li> <li>Lead time to supply</li> </ul>	
<b>C3</b>	Provide details regarding the safety standards that the compressors comply to.	

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## Section D – Hydrogen End-use Application Technology Suppliers

No.	Question	Please indicate your response in this column
<b>D1</b>	<p>The Respondent is required to provide capability statements demonstrating the Respondent's previous experience in the supply of Hydrogen End-use application Technologies. Such capability statement shall identify the project name, location, dates the work was performed, key milestone dates, standards and quality systems adhered to, approximate cost of the work performed, and contactable references to verify information supplied.</p>	
<b>D2</b>	<p>Identify Hydrogen End-use Application Technologies and components related (but not limited) to:</p> <ul style="list-style-type: none"> <li>• Mobility</li> <li>• Household appliances</li> <li>• Fuel Cells</li> <li>• Bottled Hydrogen</li> </ul> <p>Include the following information:</p> <ul style="list-style-type: none"> <li>• Type</li> <li>• Capacity</li> <li>• Pressure Requirements</li> <li>• Indicative Cost</li> <li>• Quality Specifications</li> <li>• Standards</li> <li>• Lead time to supply</li> </ul>	
<b>D3</b>	<p>The Respondent is to provide any additional information in respect of its Project which it may deem necessary to bring to the attention of Eskom. This would include expected challenges and risks, and proposed mitigations.</p>	

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Yours faithfully

Name	Designation	Signature	Date
Telephone number		Fax and/or e-mail address	

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