SMEC South Africa
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Media Release

Project managing one of South Africa's largest future renewable energy hubs

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Emerging green hydrogen company, Prieska Power Reserve (Pty) Ltd – a collaboration between the Industrial Development Corporation (IDC), Mahlako a Phala and Central Energy Corporation (CENEC) – is developing Prieska Power Reserve (PPR), a green hydrogen project located in the Siyathemba Local Municipality of the Northern Cape, South Africa.

As a catalytic project that is geared towards promoting economic growth and development in the Northern Cape, PPR will start producing green hydrogen and ammonia in 2026 through a combination of high-yielding renewable solar and wind energy resources, along with the other natural resources of water and air.

Set to become one of the largest renewable energy hubs in South Africa, the PPR project will not only assist in reducing South Africa's greenhouse emissions but will also increase the country's green ammonia exports by $10.5 billion and contribute an estimated R82 billion to GDP. This can be done by upscaling South Africa's renewable electricity generation beyond what is envisaged in the country's Integrated Resource Plan (IRP) for electricity. Around 300 GW of wind and 300 GW of solar are required by 2050 to provide the energy required to meet South Africa's electricity needs, as well as produce the potential 25 million to 30 million tonnes per annum of green hydrogen for export, mostly in the form of tradeable products such as ammonia, aviation fuel and steel. Solar and wind would effectively become a by-product of green hydrogen production.

The abundant solar and wind resources in South Africa, and its strategic positioning in relation to various key markets creates an opportunity for South Africa to capture a significant 5% - 10% of the

global green hydrogen market share. As one of the pioneering projects within South Africa's green hydrogen sector, the PPR project has the ability to capture a large portion of the total South African market.

In November 2021, engineering and infrastructure consultancy firm, SMEC South Africa, was appointed by Prieska Power Reserve (Pty) Ltd to provide project management services to the PPR project. In addition to providing programme development, scheduling, risk mitigation and scope development services, the SMEC team has also been overseeing progress monitoring and reporting; cost, quality and communication management; procurement management; and project control.

The SMEC team – which is made up of a group of best-in-class project managers, engineers and technologists – has been instrumental in the PPR project reaching a number of key milestones, including the completion of technical and pre-feasibility studies for the chemical plant, wind, solar, battery energy storage system and micro-grid control; attaining environmental approvals for certain portions of the site; and the installation of monitoring infrastructure for renewable energy.

It is anticipated that as the project progresses into the next phase, SMEC's involvement in the project will encompass design facilitation and reviews, cost estimation and technical assistance through the firm's various functional groups: Roads and Highways; Power and Energy; Construction and Pavements; Management Services; Urban Development; Geotechnical; and Water and Environment.

Speaking on SMEC South Africa's involvement in the project, Regional Manager and Project Director, **Roan Ackerman**, says that PPR is the first project of its kind in South Africa where a hybrid renewable energy system will be used to produce green molecules (green hydrogen) – an alternative to the current popular green electrons (renewables) generated/used for energy demand. "We are proud to be involved in a project that not only has the potential to rapidly decarbonise South Africa's existing industries, but also attract industrial investment to the Northern Cape from across the globe seeking to meet new standards of green power in the production process."

Green ammonia production on PPR makes use of renewable energy sources through solar power, wind turbines as well as a waste-to-energy plant. Unlike brown and grey ammonia, which is made using fossil fuels as the feedstock, the raw materials for green ammonia are hydrogen obtained through the electrolysis of water (powered by renewable energy sources) and nitrogen (obtained from the air using an air separation unit). Green ammonia is then synthesised from nitrogen and hydrogen via various methods, with the Haber-Bosch process currently being the only method used on a commercial scale – the same method that will be used in the PPR project.

Similar to fossil fuels, ammonia is both a chemical energy carrier, with a high H_2 content, and a potential fuel, where energy is released by the breaking of chemical bonds. Ammonia has the advantage of not releasing any carbon emissions if used as a fuel, and its green credentials can be enhanced even further if sustainable energy is used to power the production of ammonia.

The first phase of the PPR project will target the production of 72 000 tonnes of green ammonia per annum with a green hydrogen content of 12 900 tonnes beginning in 2026 through 180MW solar,

130MW of onshore wind generation and 129.4MWh of battery storage. Memorandums of Understanding have already been signed with local off-takers for the full estimated 72 000 tons per annum of green ammonia during phase 1. Production of green ammonia will be increased to over 500 000 tonnes per annum by 2030, with the later phases planned to reach more than 5GW of renewable generation capacity through wind and solar.

It is anticipated that PPR will create over 176 000 job years that will benefit local communities and develop skills for skilled and non-skilled labourers together with women and youth; and will result in increased market penetration by female industrialists and female-owned green infrastructure providers. In addition, it is estimated that the PPR project will result in the upskilling of 16 500 people over a 30-year period, as well as the development of approximately 300 new small businesses, the majority of which will be local and black-owned.

ENDS.

Image Captions:

Image 1: Prieska Power Reserve wind turbine site.

Image 2: One of Prieska Power Reserve's three 60MW solar sites.

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About SMEC South Africa:

Leveraging its more than 70-year history of delivering nation-building infrastructure, SMEC South Africa provides technical expertise and advanced engineering services to resolve complex challenges within all areas of infrastructure, including roads, highways, rail, airports, urban, water and renewable energy markets. The company's design leaders and specialist teams draw on exceptional expertise and experience delivering projects across a range of diverse environments, from some of South Africa's most remote locations to some of the densest urban surroundings.

SMEC South Africa's partnership with the Surbana Jurong Group provides a global talent pool of over 16 500 people across a network of 120 offices in over 40 countries. Collaborating closely with its parent and sister companies, SMEC South Africa develops, designs, supervises, operates and manages projects to help shape a sustainable future.

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