# FUTURE ENERGY AND ENERGY MATERIALS

# **FUTURE ENERGY**

## WAH<sub>2</sub> – LOW EMISSIONS AMMONIA



The WAH\_2 Project is Hexagon's flagship project to supply low-emissions ammonia (NH\_3) to the decarbonising powerhouse economies of the Asia-Pacific.

Countries such as Japan and South Korea have mandated emissions control standards for the power generation industry that can be met in part by co-firing low-emissions ammonia in currently coal-fired power stations. In recognition of this, Japan and South Korea are each seeking to establish secure supply chains for NH<sub>3</sub>.

With an allocated 40ha site in the Maitland Strategic Industrial (SIA) Hexagon is well placed to deliver competitive, low-carbon, low-risk hydrogen using proven technology to reform natural gas feedstock, carbon capture and storage (CCS) in depleted gas reservoirs, and harness North-Western Australia's renewable energy potential.

The produced hydrogen will then be converted to low-carbon ammonia as the most appropriate energy carrier. This offers reduced processing and transporting costs and greater energy efficiency than the alternatives of liquid hydrogen or liquid organic hydrogen carriers – and aligns with the customers' need for ammonia.

### Prefeasibillity Base Case

The completed  $WAH_2$  Project Pre-Feasibility Study (PFS) demonstrates the technical and financial feasibility of the project and supports Hexagon's commitment to pre-FEED with a FID target of 2025 and production by 2028. The PFS describes the analysis conducted, risks identified, mitigation strategies and next steps with respect to the project.

The PFS Base Case is an 'islanded project' that builds, owns, and operates dedicated facilities for the supply of utilities, production of ammonia and production export. This provides for a project that is, as far as practicable, independent of others and therefore offers Hexagon a high degree of control. It also facilitates the evaluation of potential benefits of third-party provision of services and shared infrastructure.

The Base Case Phase 1 development is estimated by the PFS to have a capital cost of A\$1629 million (AACE Class 4) based on the following parameters:

 600 kTPA of potential NH3 production capacity with an emissions intensity of 1.1kg CO2e/kg H2e, bettering international lowemissions benchmarks;

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- A levelised cost of supply4 of US\$552 /T NH3 which is considered competitive;
- At this price the project would deliver NPV8 of A\$248 M (100% Project) and is robust to most downside outcomes.



The Base Case Phase 2 development PFS analysis has been completed based on an assumed doubling of production capacity and makes use of some existing infrastructure. At an ammonia price of US\$552/T, the combined Phase 1 and Phase 2 development would be expected to deliver an NPV8 of A\$486 M (100% Project) at an IRR of 10.5%

Hexagon intends to farmout 65-75% of project ownership to strategic partners.

#### Site location

Hexagon has been allocated a 40ha site in the Maitland Strategic Industrial Area (SIA) in north Western Australia. The site provides excellent access to an existing deep-water port, existing infrastructure corridors, multiple CCS options and is adjacent to the Dampier to Bunbury Natural Gas Pipeline.

#### Why is WAH2 unique?

More than 140 hydrogen related projects have been announced in Australia:

- Only 30 are targeting low-emissions ammonia as the product
- The majority of these are electrolysis-based with cost and schedule challenges
- Only five are based on gas reforming with carbon capture and storage (CCS)
- WAH<sub>2</sub> is currently the only gas-based project with access to an existing deep-water port and multiple, mature CCS projects nearby.

Not surprisingly, the most attractive sources of supply are expected to be those with the lowest cost of production. Low-emission ammonia produced by reforming natural gas and sequestering the associate  $CO_2$  has a significantly lower cost of production than the alternative of electrolysis of water using electricity from rewewable sources and is expected to dominate supply over the next decade.

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## WAH2 Project Process

Material volumes of low-emissions, low-cost ammonia from a stable environment. Target online before 2030



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Hexagon 100% owns the McIntosh Nickel-Copper-PGE and Graphite project in Western Australia and the Halls Creek and Base Metals project in WA. The Company 80% owns the Ceylon Graphite project located in Alabama in the USA.

### 1. MCINTOSH PROJECT – Ni-Cu-PGE's

The McIntosh Project comprises 17 exploration tenements spanning 542km2 in the East Kimberley region of Western Australia. The project area hosts known graphite deposits but more recently the Company has been assessing the project for base metals (nickel-copper) and platinum group element (PGE) deposits, such as are known to occur in close proximity. Panoramic Ltd's Savannah Nickel project and processing plant is to the North and Future Metals NL's Panton PGE project is to the south of Hexagon's McIntosh project ground holdings. Over the past three years Hexagon has undertaken substantial appraisal work to establish the geology of the project which is currently subject to strategic discussions regarding future development.

### 2. MCINTOSH & CEYLON PROJECTS – Graphite

- a. In February 2022 Hexagon signed an Earn-in deal over the Graphite Mineral rights at McIntosh with Green Critical Minerals Pty Ltd (GCM) to unlock value from past investments (McIntosh's Graphite assets are a combined total Graphite resource of 23.8 million tonnes, grading 4.5% TGC, with 81% indicated).
- b. In December 2021 Hexagon signed a development deal (Binding Earn-in-Option) with Canadian headquartered graphite project development company South Star Battery Materials Corporation (TSXV: STS) in relation to Hexagon's 80% owned Ceylon Graphite project (comprising of ground holdings of 500 km<sup>2</sup>) located in Alabama in the USA. The agreement provides for an 'on the ground' program (expenditure) of in excess of CAD \$750,000 to develop the Ceylon project led by South Star out to 2025.

### 3. HALLS CREEK PROJECT – Gold and Base Metals

Hexagon holds 430km<sup>2</sup> of highly prospective Au-Cu ground (13 Exploration Tenements) in the historic gold mining area of Halls Creek in WA, with multiple priority targets identified through completed geophysical work.