

***Hexagon's Western Australian  
Blue Ammonia Project (WAH<sub>2</sub>)***

***7 March 2022***

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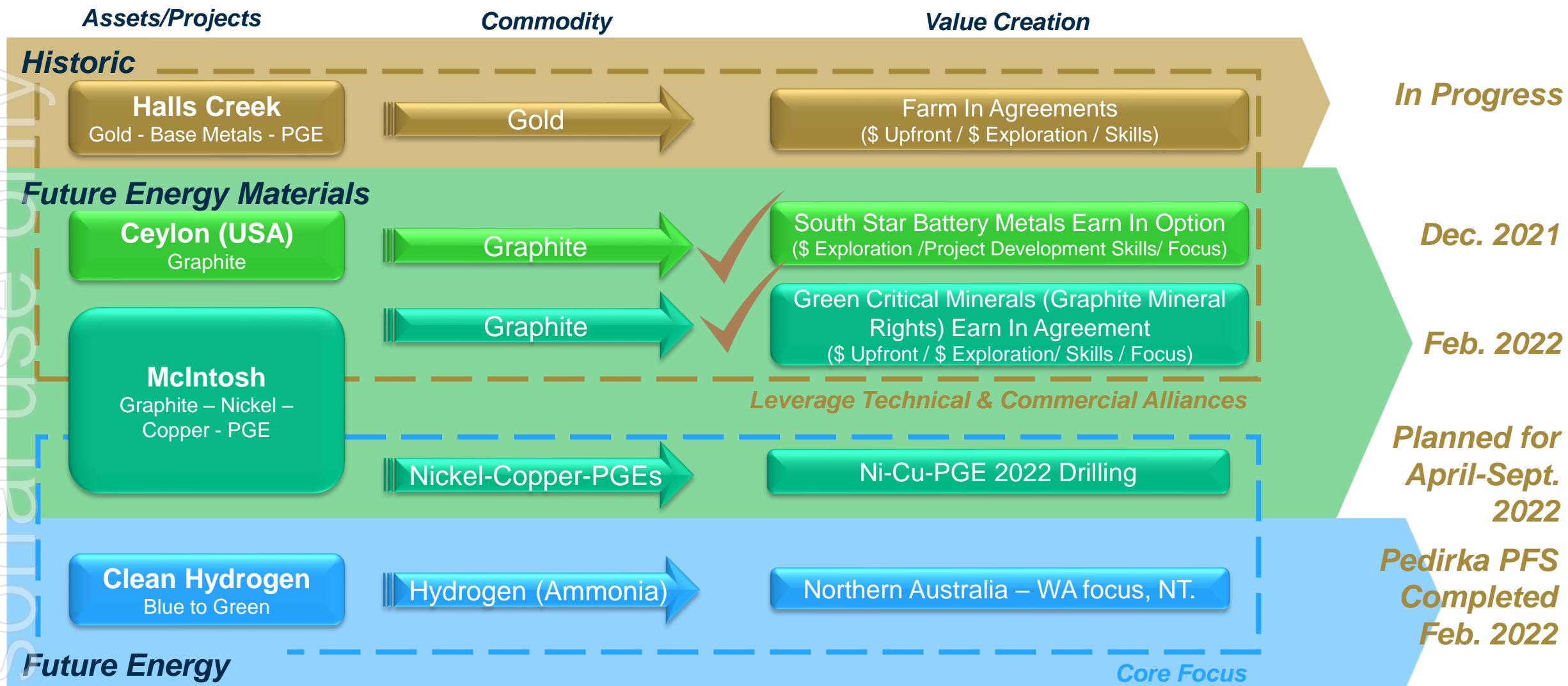
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# Hexagon's corporate strategy

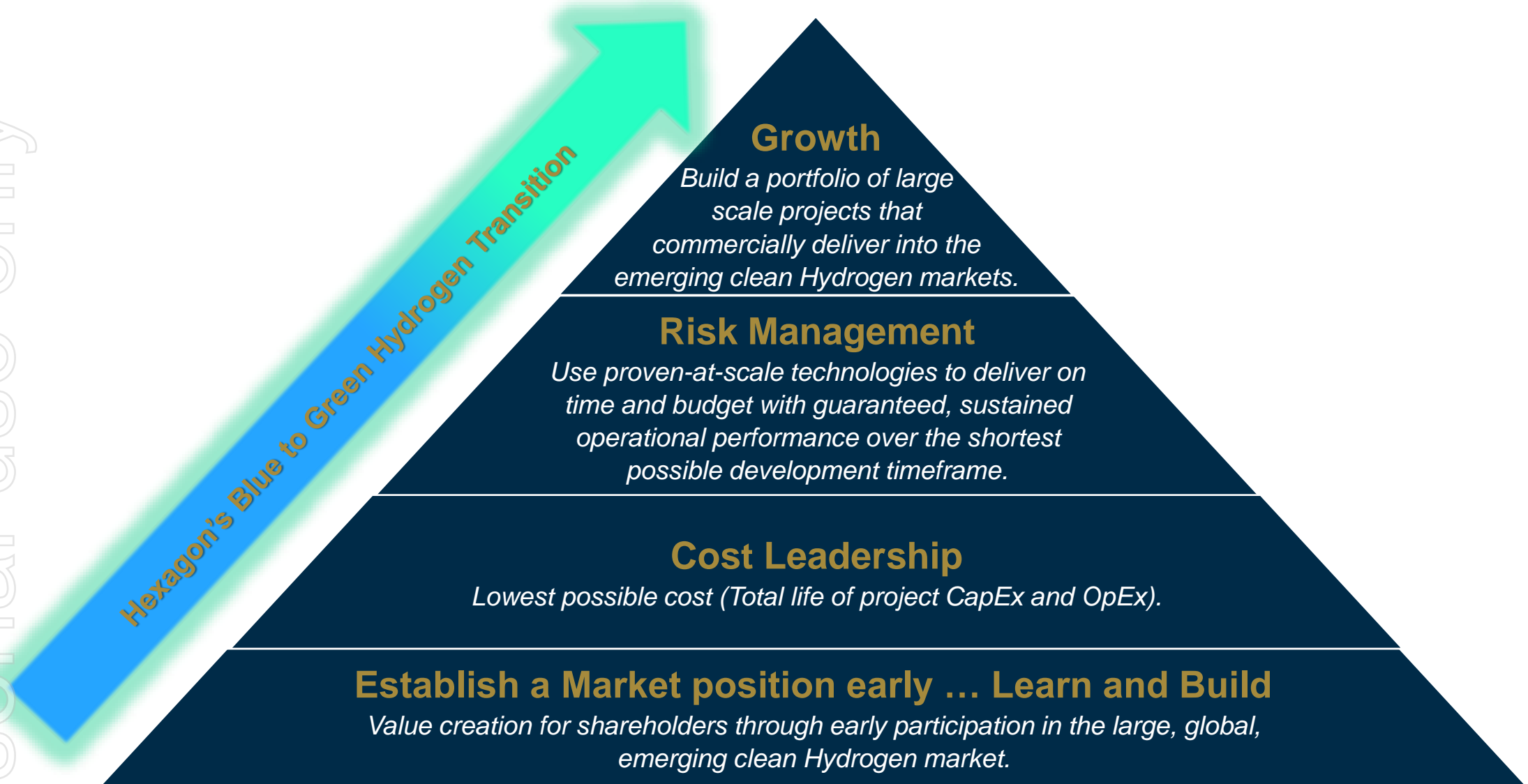


Hexagon is a future energy (Clean Hydrogen) and future energy materials (Ni-Cu-PGE & Graphite) company



Hexagon's WAH<sub>2</sub> Project.

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**Executive Summary**

2

**Western Australian Hydrogen Project (WAH<sub>2</sub>) -  
Progress made on key components**

3

**Moving Forward**

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# Executive Summary

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01

Northern WA combines plentiful energy availability with well established infrastructure including for CCS

## Natural Gas Feedstock

- Australia's largest offshore oil and gas resources.
- Well established Dampier to Bunbury (DB) NGP provides ready access to domestic gas.

## Land, Infrastructure and Services

- Well established oil and gas sector with access to electricity, water and services.

## Renewable Energy

- Highest concentrated solar power capacity factor in Australia.
- Intermediate wind region with wind generation capacity.

## Sustainable CCS

- Proven CO<sub>2</sub> storage sites at advanced stages of toll CCS business model development.



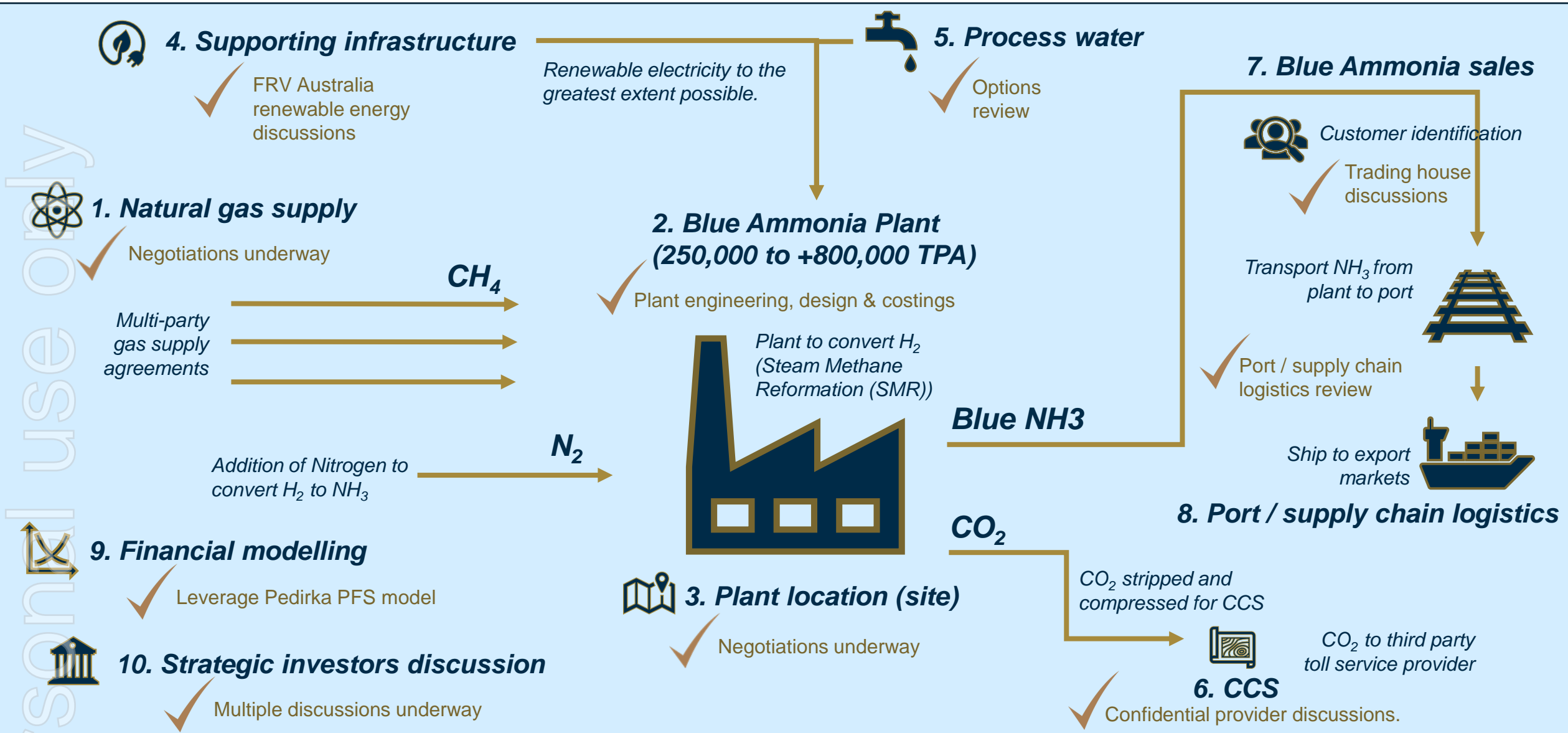
Source: AusH2 Australia's Hydrogen Opportunities Tool, Australian Government Geoscience Australia, <https://portal.ga.gov.au/persona/hydrogen>

Early to market blue Ammonia/Clean Hydrogen production, transitioning to green

- Building on long term networks and relationships within the area/sector/across end markets
- Assembling a fully integrated project approach across key project components:
  1. **Natural gas supply** – multiple;
  2. **Blue Ammonia plant** engineering, design and costings;
  3. **North West WA plant location (site)** negotiations – 80 hectares in WA Government Strategic Industrial Areas;
  4. **Supporting infrastructure** discussions e.g. Renewable Energy supply, Electrical networks/easements, DBGP access, Road etc;
  5. **Process water** options study;
  6. **CO<sub>2</sub> CCS** - confidential toll service provider discussions – multiple;
  7. **Blue Ammonia sales** discussions – trading houses – multiple;
  8. **Port / supply chain logistics** review/discussions;
  9. **Financial modelling**;
  10. **Strategic investors** discussions – multiple.
- The Hexagon team and the overall Hydrogen team who worked on the Pedirka PFS, bring insights
- Hexagon's Hydrogen core focus and ability to rapidly adapt/progress is difficult for large companies to achieve



# Progress made to date on Hexagon's WAH<sub>2</sub> key project components



# Hexagon's action plan/milestones moving forward on WAH<sub>2</sub>

All activities to be funded through the Company's current cash position

During 2022, on the appropriate conditional project progress terms, Hexagon plans to secure the following milestones for the WA Hydrogen project:

Key milestones	Target date
Commercial natural gas offtake agreements - quantity and price with one or multiple parties	By Q2 FY22/23
Land lease (site) agreement with DevelopmentWA	Q1 FY22/23
Commercial CCS toll treatment services contract(s) with 3 <sup>rd</sup> party	By Q2 FY22/23
Renewable energy supply agreement	Q4 FY21/22
Ammonia export sales agreements/options	By Q2 FY22/23
Strategic investment partnerships/financing	Q1 FY22/23
Complete scoping study level work with the view to proceed into an accelerated PFS	By Q2 FY22/23

Western Australian Hydrogen Project (WAH<sub>2</sub>) -  
Progress made on key components

 02

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- 1 Natural gas supply
- 2 Blue Ammonia plant engineering
- 3 Plant location (site)
- 4 Supporting infrastructure
- 5 Process Water
- 6 CO<sub>2</sub> CCS
- 7 Blue Ammonia sales
- 8 Port / supply chain logistics
- 9 Financial modelling
- 10 Strategic investors



# 1. Natural gas supply

Low cost, reliable natural gas feedstock for plant commissioning targeted for 2028

Hexagon is in discussions with natural gas producers and suppliers that can deliver on a low-cost basis, with minimal exposure to market volatility preserving project development, commissioning and production timelines.

In February 2022, a gas supply brokerage agreement was signed with a well-connected established aggregator to:

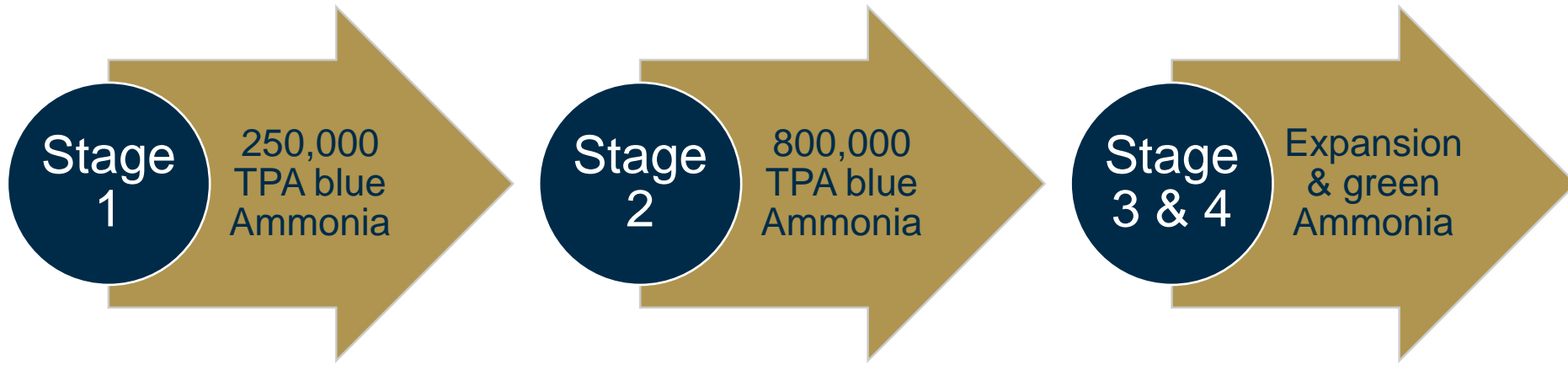
- Support Hexagon within a certain timeframe to secure, on a conditional basis, all of Stage 1 gas feedstock requirements;
  - Offers/interest in supplying 70% of WAH<sub>2</sub> requirements have been received from “top tier” suppliers;
- Similar gas feedstock supply for Stage 2;
- Lead into binding agreements, conditional on project milestone achievement;

Pre-existing discussions are also underway across a range of West Australian gas producers/suppliers.



## 2. Blue Ammonia plant engineering

Steam Methane Reformation (SMR) is a proven-at-scale technology. This lowers plant and equipment cost estimation risks and increases ongoing performance certainty

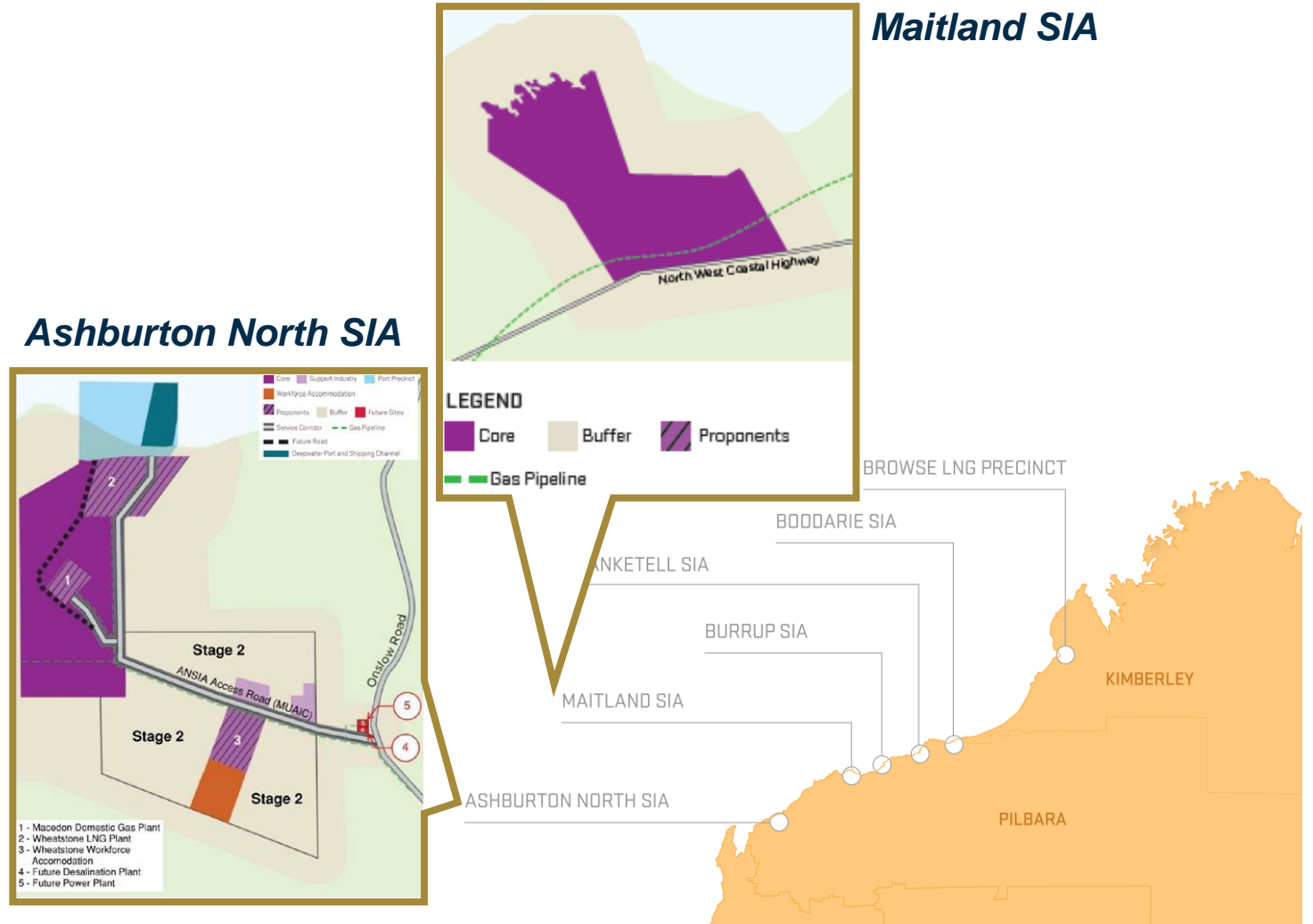




### 3. Plant location (site)

## Northern WA Strategic Industrial Areas of particular interest for Hexagon's WAH<sub>2</sub> project

- In January 2022, Hexagon lodged a proposal with the WA Government (DevelopmentWA) in relation to a strategic site for the WAH<sub>2</sub> project
- Hexagon is currently progressing lease terms to secure 80 ha. of land at the WA Government owned Ashburton North Strategic Industrial Area (SIA)
- Discussions held with DevelopmentWA in February 2022 will see a site within the Maitland SIA also critically assessed
- A multi-criteria review is being used to assess the merits of each site



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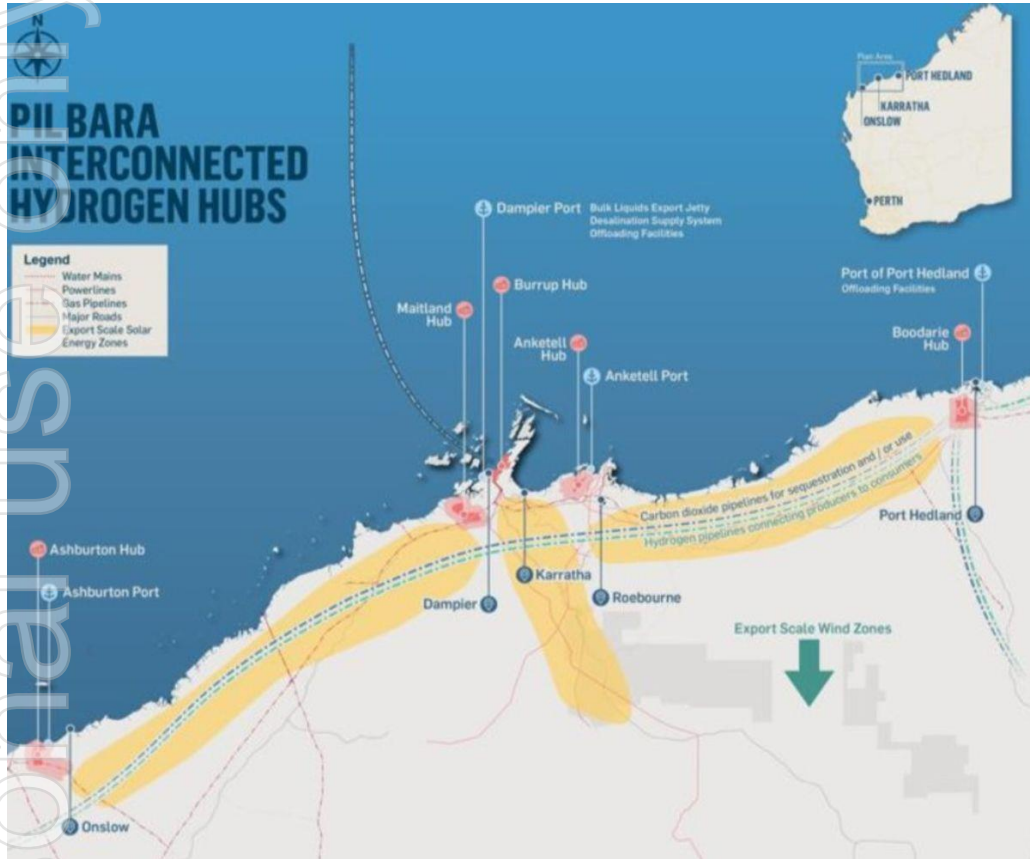


# Location is critical - within the Pilbara WA interconnected Hydrogen hubs



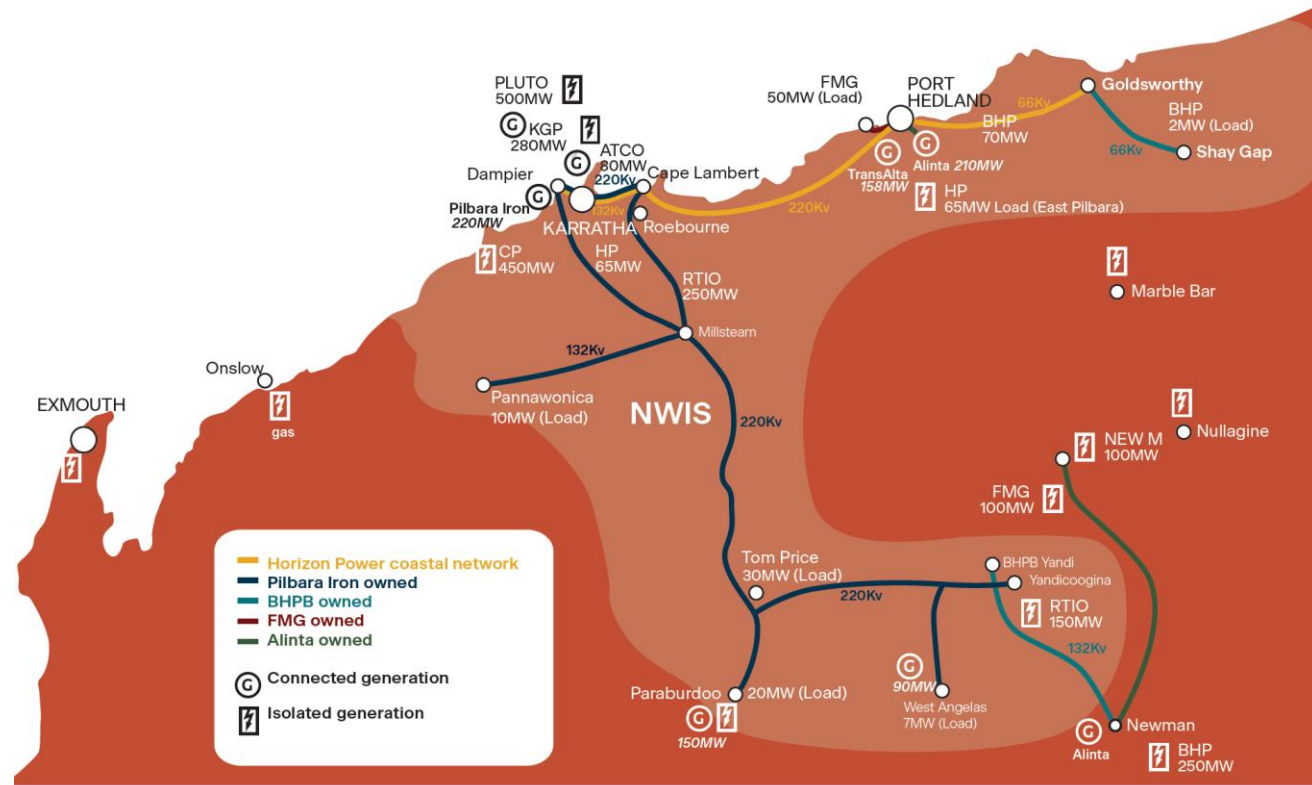
... with the potential to support substantial hydrogen sector (blue & green) growth, strengthen & expand the NWIS, unlock more gas for LNG export & decarbonise large industrials through open access to more renewables

## 'In the mix' Hydrogen hub wise



Source: JTSI, WA Today 8/2/2022

## Renewable energy - working with FRV potential



Source: Horizon Power





## 4. Supporting Infrastructure

**FRV Australia** - In January 2022, Hexagon and renewable energy company FRV signed an MoU

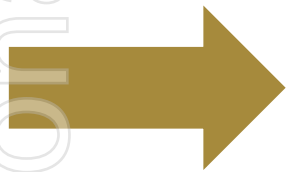
- FRV has developed 9 solar farms investing + A\$1 B in Australia (800 MWdc generation capacity) to date
- 2,000 MW of renewable energy generation installed globally by FRV's parent
- Green hydrogen projects already in operation, ranging from <1MW to 20MW

### ***Who is FRV in Australia?***

- Partners with OMERS Infrastructure (49%) – Potential reach through
  - Canada's largest public pension funds and global infrastructure investor
- Part of Abdul Latif Jameel Energy (51%)



Source: FRV, Photovoltaic Plant, Lilyvale Qld



***WAH<sub>2</sub> project specific agreement discussions have commenced***



## 6. CO<sub>2</sub> Carbon Capture & Storage (CCS) – What are the ‘keys’ to success?

Being able to de-risk for toll customers and ensure sustainable, cost effective and long-term treatment

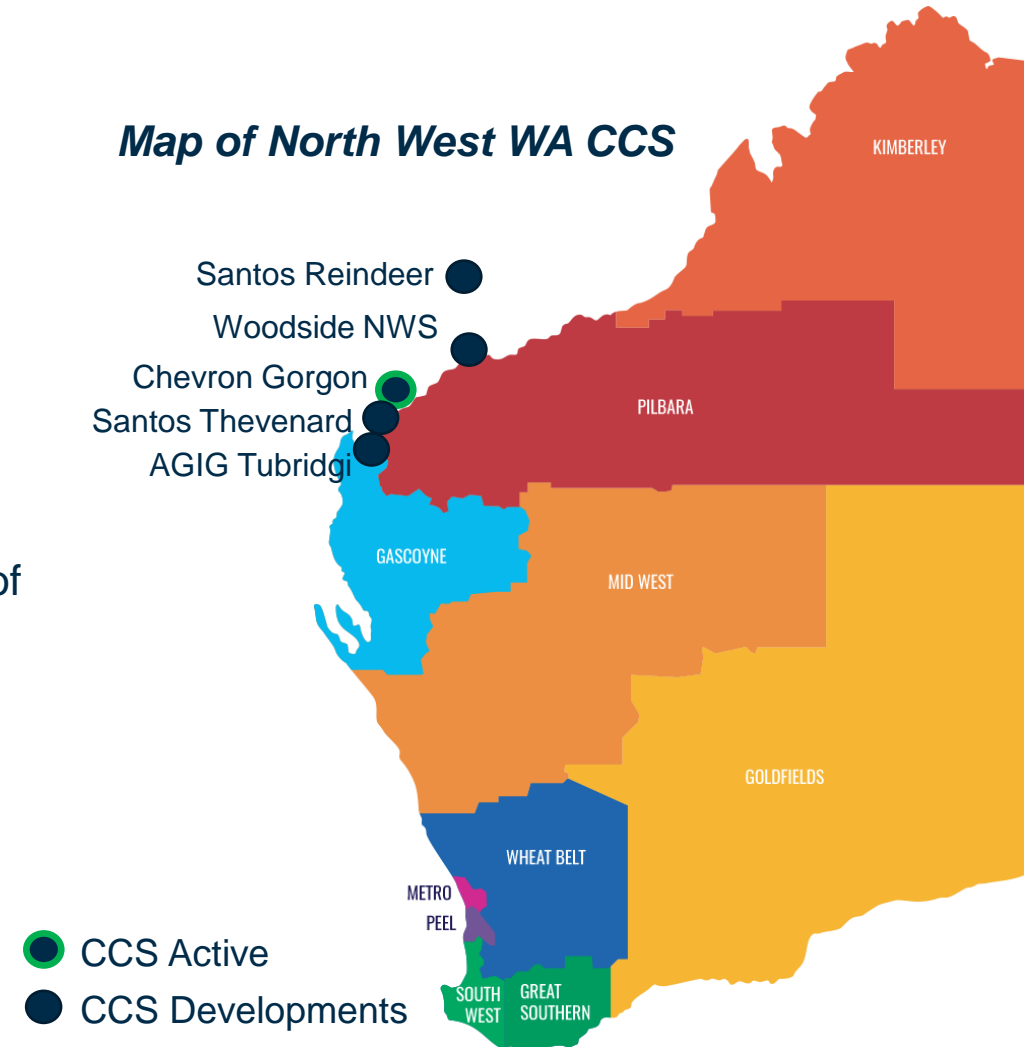
The key integrated CCS business components are:

- Suitable/depleted reservoir;
- Subsea infrastructure including for monitoring;
- Surface facilities (on shore ideally);
- Permitting and approvals;
- Carbon credit access; and
- Multi-customer base.

The keys to success in practical terms are likely to be:

1. Containment (seal) capable of retaining CO<sub>2</sub> for tens of millions of years;
2. Capacity that is well understood through historic hydrocarbon extraction;
3. Injectivity - well understood energy requirements to inject based on well established infrastructure;
4. Longevity (ultimate size containment reservoir);
5. Reliable measuring, monitoring and management; and
6. As part of a de-risked package for CO<sub>2</sub> CCS customers.

Map of North West WA CCS



# 7. Blue Ammonia (DCAmmonia\*) sales

Hexagon's **DCAmmonia\*** will unlock global decarbonisation targets by providing a new, clean fuel source

\* De-Carbonised Ammonia

## Coal-Fired Power Stations



### FUTURE ENERGY – BLUE AND GREEN AMMONIA END MARKETS

#### CO-FIRING DECARBONISED AMMONIA IN COAL FIRED POWER PLANTS

##### OVERVIEW

Globally, coal is the largest source of energy for electricity generation (43% in 2021, IEA). Coal-fired power plants are highly cost competitive in electricity generation, they account for about 30% of global CO<sub>2</sub> emissions (2021, IEA).

Co-firing Coal-fired power plants with decarbonised Ammonia or **DCAmmonia** (Blue and/or Green Ammonia) has the potential to significantly cut carbon emissions, as Ammonia does not emit Carbon Dioxide (CO<sub>2</sub>) when burned.

##### THE CHEMICAL REACTION

**Coal combustion reaction:**  $CH_4 + 2 O_2 \rightarrow 2H_2O + CO_2$   
Methane + Oxygen → Water + Carbon Dioxide

**Ammonia combustion reaction:**  $2NH_3 + \frac{3}{2} O_2 \rightarrow 3H_2O + N_2$   
Ammonia + Oxygen → Water + Nitrogen

Ammonia does not emit CO<sub>2</sub> when burned

## Maritime/Shipping Vessels



### FUTURE ENERGY – BLUE AND GREEN AMMONIA END MARKETS

#### USE OF DECARBONISED AMMONIA AS A MARITIME SHIPPING FUEL

##### OVERVIEW

Maritime shipping accounts for 75% of total global freight transport activity (IEA, 2021). Generally, the maritime shipping industry has used oil as the fuel source, coupled with reciprocating diesel engines due to their operating simplicity, robustness, and fuel economy. The international shipping industry represents approximately 3% of global greenhouse gas emissions (IMO, 2021). The use of decarbonised (Blue and/or Green) Ammonia or **MAmmonia** as a shipping fuel has the potential to significantly cut carbon emissions. Ammonia does not emit Carbon Dioxide (CO<sub>2</sub>) when burned.

##### THE CHEMICAL REACTION

**Diesel combustion reaction:**  $4C_{12}H_{23} + 71O_2 \rightarrow 46H_2O + 48CO_2$   
Diesel + Oxygen → Water + Carbon Dioxide

**Ammonia combustion reaction:**  $2NH_3 + \frac{3}{2} O_2 \rightarrow 3H_2O + N_2$   
Ammonia + Oxygen → Water + Nitrogen

Ammonia does not emit CO<sub>2</sub> when burned

Source:  
Image Credits: c-job.com  
<https://www.marineinsight.com/shipping-news/ammonia-as-ships-fuel-c-job-plans-future-proof-way-of-thinking/>



Markets are rapidly emerging – Japan developing long term blue & green Hydrogen & Ammonia supply chain

COAL | ENERGY TRANSITION | NATURAL GAS | PETROCHEMICALS — 18 Feb 2022 | 04:36 UTC

## Japan's JERA eyes up to 500,000 mt/year ammonia long-term supply from FY 2027-28

### HIGHLIGHTS

JERA eyes 20% co-burning of ammonia at No. 4 Hekinan unit in late 2020s

Japan sees 3 mil mt/year ammonia demand for power in 2030

Japan's largest power generation company JERA said Feb. 18 it plans to issue international tenders to buy up to 500,000 mt/year of fuel ammonia from long-term contracts starting in fiscal year 2027-28 (April-March).

Source: S&P Global Platts

<https://www.spglobal.com/platts/en/market-insights/latest-news/energy-transition/021822-japans-jera-eyes-up-to-500000-mt/year-ammonia-long-term-supply-from-fy-2027-28>

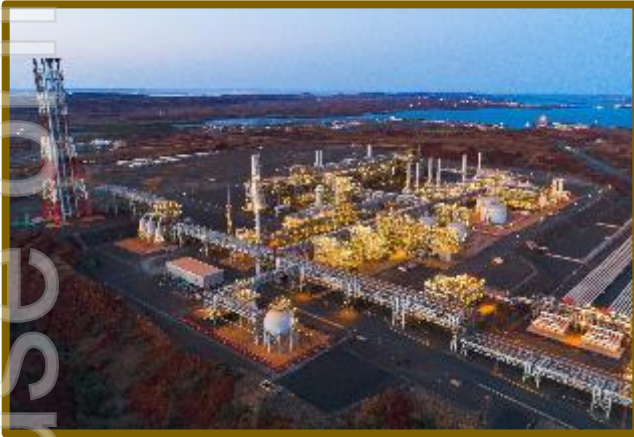
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## 10. Strategic Investors

Similar to LNG business model, financing opportunities lie with major Japanese trading houses

Taking differing equity in the whole value chain - acting as foundation long term LNG customer and underpinning the commercial viability of new LNG Projects. Mitsui, Mitsubishi, JERA, Sumitomo, Sojitz, Inpex & others do this.



### Minority equity position in Gas fields and LNG Plant

**Example:** JERA et al owns 10% of Wheatstone gas fields and 8% of LNG Plant

Source: [www.chevron.com/projects/wheatstone](http://www.chevron.com/projects/wheatstone)

### Equity LNG off taker and Long term third party purchaser

**Example:** JERA at Wheatstone. Equity offtake (0.7MMTPA) plus an additional 4.5MMTPA at arms length

<https://www.tradewindsnews.com/gas/two-shell-g-class-steam-turbine-lng-carriers-find-new-homes/2-1-720419>. 11 December 2019 13:27 GMT.

### Majority equity owner of Thermal Power Stations

**Example:** JERA Futtsu Power Station (5160Mw) with LNG storage and regasification

Source: Creative Commons (<https://creativecommons.org/licenses/by-sa/3.0/>)

**Example:** Wheatstone LNG equity owned by PE Wheatstone Pty Ltd (PEW) which is owned by Tokyo Electric Power Company (TEPCO) , Mitsubishi Corporation and Nippon Yusen. PEW owns 10% of the field development & 8% of the LNG plant. PEW has equity LNG offtake of 700KTPA LNG per annum. Separately, TEPCO has offtake agreements for 3.5MTPA.

# Moving Forward

03

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# WAH<sub>2</sub> will take advantage of a number of North West WA factors

Advanced CCS third party solutions, natural gas supply options and well-established large-scale infrastructure will all significantly impact Hexagon's WAH<sub>2</sub> project economics

## Natural Gas Feedstock



- ✓ Australia's largest offshore oil and gas resources.
- ✓ Well established Dampier to Bunbury (DB) Natural Gas Pipeline (NGP) providing gas access.

## Land, Water, Infrastructure & Services



- ✓ Well established oil and gas sector with ready access to electricity, water and services.
- ✓ Access to WA Government owned land within Strategic Industrial Areas on the coast next to or near major export ports.
- ✓ Large scale, well-established and expertly operating export ports managed by port authorities.

## Renewable Energy



- ✓ Highest concentrated solar power capacity factor in Australia.
- ✓ Combination of renewables available e.g. solar and wind energy options.

## Sustainable CCS



- ✓ Proven CO<sub>2</sub> storage sites on North West Shelf.
- ✓ Major operators/companies at advanced stages of toll CCS business model development who bring the core elements to be successful.

## Customer Offtake



- ✓ Strategic push by companies in large scale decarbonisation.
- ✓ Customer familiarity with Northern WA ports and infrastructure
- ✓ Common customers to LNG already established accessing end product in Northern WA.

# Hexagon's action plan/milestones moving forward on WAH<sub>2</sub>

All activities to be funded through the Company's current cash position

During 2022, on the appropriate conditional project progress terms, Hexagon plans to secure the following milestones for the WA Hydrogen project:

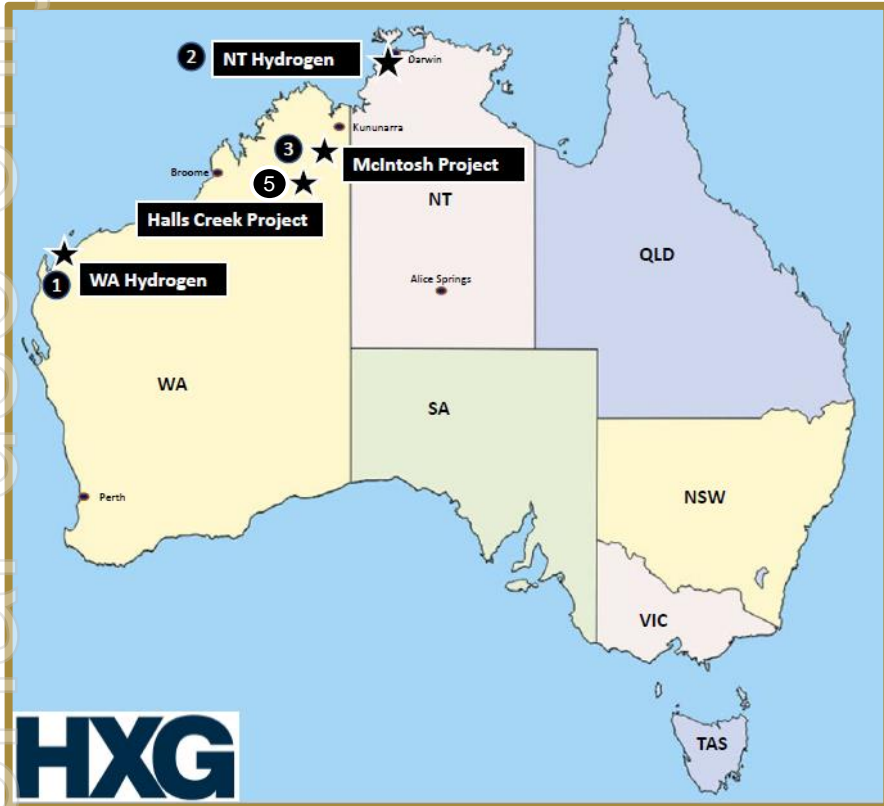
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Ammonia export sales agreements/options	By Q2 FY22/23
Strategic investment partnerships/financing	Q1 FY22/23
Complete scoping study level work with the view to proceed into an accelerated PFS	By Q2 FY22/23



# Hexagon's asset base/projects in its portfolio

Hexagon is a future energy and future energy materials project development company primarily focused on Northern Australia

## Northern Australia



## U.S.A.



Source: Britannica,  
<https://www.britannica.com/place/Alabama-state>

## Future Energy: Northern Australia

1. WAH<sub>2</sub>
2. Clean Hydrogen at Middle Arm, Darwin, Northern Territory, longer term

## Future Energy Materials:

3. The McIntosh Project: Graphite, Nickel, Copper and PGEs
4. Ceylon Graphite Project in Alabama, U.S.A.

## Historic:

5. The Halls Creek Gold and Base Metals Project

## *Historic*

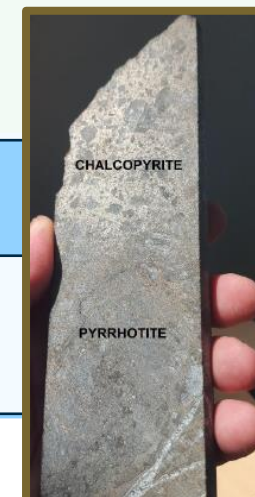
- Halls Creek Gold and Base metal **exploration negotiations** progressed

## *Future Energy Materials*

- **Expert geochemist review** of 2021 field season collected McIntosh soil samples (further to Hexagon's ASX Announcement 2 February 2022)
- Analysis for **Nickel-Copper-PGE's** of drill core from the McIntosh Graphite drilling campaign (not analysed for these elements)

## *Future Energy*

- **WAH<sub>2</sub> progress updates** – across project components



Source: HXG AGM Presentation  
27 November 2015.

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# HEXAGON

**FOCUSED ON  
FUTURE  
ENERGY AND  
FUTURE  
ENERGY  
MATERIALS IN  
NORTHERN  
AUSTRALIA**