

# Greater Erregulla to drive development of Project Haber for Mid-West Fertilisers

- Strike is advancing a compelling Mid-West development opportunity to produce low-cost urea from the Company's Perth Basin Gas resources that has the potential to generate significant and diversified revenues.
- Project Haber will secure more than 628 PJ of additional demand for Strike's low-cost Perth Basin gas and will support the commercialisation of the Greater Erregulla gas resources.
- Strike has completed feasibility studies with TechnipFMC on a national scale 1.4 mtpa urea facility with a blended input of some blue and green hydrogen.
- Development WA have approved for award to Strike an option to lease over 60 hectares of strategically positioned land near Geraldton with existing port, rail and road access.
- Urea production will consume the majority of carbon from the gas stream and will enable partial chemical sequestration of the project's carbon output.
- Project Haber will support the Mid-West economy with the creation of hundreds of long-term jobs; whilst making more competitively priced fertiliser available for Australia's agricultural sector and reducing Australia's major reliance on fertiliser imports.

Strike Energy Limited (Strike - ASX: STX) is pleased to announce the launch of Project Haber, a Mid-West ammonia and urea manufacturing facility, which comes after a year of feasibility studies. *(please also note the attached presentation)*

## **Project Haber**

Strike and TechnipFMC have completed feasibility studies on a 1.4 mtpa urea production facility, which would process gas from Strike's Greater Erregulla development in the Perth Basin. Natural gas is a critical input into ammonia and urea production, and access to competitively priced gas from Strike Perth's Basin resources will be a key enabler for the project.

In parallel Strike has been awarded (subject to final execution) an option for a long-term lease over a 60-hectare site in Development WA's Narngulu Industrial Estate. The site is adjacent to the Geraldton Port and has direct access to State rail and road networks. The design of the facility includes an 800kt pa ammonia production train, 300kt of onsite urea storage, power/utilities and steam generation, rail sidings for transport and a 120km raw gas pipeline from the Perth Basin. The development has been designed to the awarded location in Narngulu.

Strike's world class low-cost onshore gas resources in the Greater Erregulla region will form the backbone of the commercial viability of the project. Project Haber will consume 86 TJ per day of natural gas, and up to 628 PJ over a 20-year timeframe.

The Narngulu location has been chosen due to its proximity to Strike's Perth Basin gas fields and access to transport and shipping options. Whilst the economics are supported by Strike's high quality, low-cost gas, it is envisaged that over the useful life of the plant an increased amount of green hydrogen would supplant the raw gas input. As such, Project Haber includes

the construction of a 10MW hydrogen electrolyser which will enable Strike to take advantage of the abundant local wind energy generated in the Mid-West region to form a green hydrogen input stream, which would represent approximately 2% of the initial hydrogen consumed. Local renewable energy will also be preferenced where possible to generate the electricity feed into the plant and reduce fuel gas consumption.

The total development is estimated to cost approximately US\$1.8 billion (A\$2.30 billion) with a 20-30 year useful life. Gross fertiliser revenues from Project Haber are estimated between approximately A\$540-700 million per annum, based on current urea prices in both wholesale and direct markets.

Strike has entered into discussions with several parties with an interest in securing offtake and or equity in the project. In Q2/21, Strike will commence a formal offtake tender with various Australian and international urea consumers.

With the competitive advantage of a low-cost gas input, access to transport infrastructure and proximity to Australian fertiliser consumers, Project Haber is expected to deliver more competitively priced urea than international imports into Australia.

Strike plans to secure offtake agreements for up to 80% of the product prior to entering into front-end engineering and design for the project.

Towards the end of CY21, Strike will begin marketing equity participation in Project Haber, where Strike expects to retain a ~30% carried interest in the project. Between the fertiliser and gas sales revenues, Strike expects to generate superior returns and ultimately a higher realised price for its look through gas supply than, the current long term WA domestic gas price expectations.

### **Urea Production**

Gas forms between 60 and 70 percent of the cost base for urea production. The process of manufacturing urea, a nitrogen-based fertiliser, is reliant on securing low-cost gas to generate competitively priced hydrogen and ammonia, and this is a key driver of the opportunity for Strike and Western Australia to add significant value to our natural gas resources.

Urea is an ammonia-based product which requires very large amounts of hydrogen in the manufacturing process. Currently the only commercially viable way to achieve this is through steam reforming of methane ( $\text{CH}_4$ ) and splitting the hydrogen from the carbon where the waste product is a very pure carbon dioxide stream. After the creation of ammonia using the hydrogen in the Haber-Bosch process, adding back the pure carbon dioxide, prills and granulates the ammonia into urea ( $\text{CH}_4\text{N}_2\text{O}$ ) therefore consuming the original carbon dioxide in the manufacturing process. When the urea is added back into the ground through farming and agricultural applications, this effectively completes the carbon cycle. This process equates to a form of chemical sequestration which will offset a portion of Strike's associated carbon footprint from the Greater Erregulla gas production and consumption.

### **Australian Urea & Fertiliser Market**

Australian domestic urea manufacturing has been pushed offshore due to rising gas prices and scarcity of long-term competitive gas supplies into jurisdictions that either have surplus low-cost gas (US & Middle East) or areas where carbon considerations are secondary with urea being manufactured from coal (China). As a result, Australia has become dependent on international urea supplies from the Middle East and China to feed our growing agricultural sector where grain cultivation represents one of Australia's largest industries and exports.

Australian nitrogen fertiliser consumption has increased 67% over the past decade due to global population growth and the avoidance of additional land clearing placing rising pressures on achieving higher yields from our farms every year.

Australia's reliance on international supply chains (particularly in a post COVID-19 world) places pressure on Australia's own food security and ability to maintain its agricultural momentum.

Importantly, Project Haber has the potential to displace nearly \$1 billion of trade deficit as Australia becomes more self-reliant in the manufacturing of fertilisers.

Project Haber will be primarily focussed on meeting the needs of Australian farmers, with surplus product to be made available to international markets. The advantaged location of Project Haber in Geraldton is its position at the northern end of WA's famous wheatbelt region where ~30% of Australia's total urea consumption occurs. Currently more than 260k tonnes of fertiliser is imported via the Geraldton port, which reinforces the available market in Project Haber's identified location.

### **Benefits to the Mid-West Region**

Project Haber will stimulate the Mid-West economy through the creation of more than 1,000 jobs during construction and hundreds of direct and indirect long term operational roles.

### **CEO & Managing Director, Stuart Nicholls said:**

*"Strike Energy believes Australia should be adding value to its natural resources, rather than just exporting them for others to high grade and sell back to us.*

*"The launch of Project Haber concludes more than a year of feasibility work by the company aimed at identifying the best way to monetise Strike's world class gas resources in the Perth Basin. That work has resulted in this compelling development opportunity, which can kick start Australia's gas led recovery, and manufacture Western Australia's natural resources into a product stream the country now relies on global imports for.*

*"Once in production, Project Haber can support the ongoing competitiveness of Australia's agricultural industries by lowering one of the main cost inputs into Australian farms, all whilst employing regional West Australian's and consuming local natural gas.*

*"Project Haber is a carbon conscious development where the natural advantage of converting gas to urea is that a portion of the project's carbon is returned to the soil. Also, with the application of emerging technologies, the development will integrate as much renewable energy into its hydrogen input stream as it can over time.*

*"Through ownership and integration of Strike's upstream gas resources with this infrastructure, Strike will have a 20 plus year market for its gas via a product that has strong growth rates, all whilst being a meaningful participant in the energy transition to a lower carbon footprint.*

*"Strike is confident that Project Haber will attract and secure high-quality partners and customers in order to generate the appropriate financing conditions to commit to construction. On completion, we see Project Haber delivering considerable shareholder value in the form of long-term industrial revenues."*

This announcement is authorised for release by the Managing Director and Chief Executive Officer in accordance with the Company's Continuous Disclosure Policy.

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### **Future Statements**

Statements contained in this release (including but not limited to those regarding the possible or assumed future costs, performance, dividends, returns, production levels or rates, oil and gas prices, reserve or resource potential, exploration drilling, potential growth of Strike, industry growth and any estimated company earnings) are or may be forward looking statements.

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Subject to any continuing obligations under applicable law and the Listing Rules of ASX Limited, Strike does not undertake any obligation to publicly update or revise any of the forward looking statements in this release or any changes in events, conditions or circumstances on which any such statement is based.

# Project Haber

*Australia's fertiliser security*



personal use only





**Summary information**

This presentation contains summary information regarding Strike Energy and its subsidiaries current as at 8<sup>th</sup> January 2021. The information in this presentation is of general background only and does not purport to be complete. The contents of this presentation should be considered in conjunction with Strike Energy's other announcements lodged with the Australian Securities Exchange available at [www.asx.com.au](http://www.asx.com.au).

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**Future Statements**

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## Project Haber

*What?*

1. Strike Energy is advancing a compelling Mid-West development to produce low-cost fertiliser from the Company's Perth Basin Gas resources
2. Development WA has awarded Strike an option to lease over 60 ha of strategic land near Geraldton with existing port, rail and road access<sup>1</sup>
3. Strike has completed feasibility studies with TechnipFMC on a national scale 1.4 mtpa urea facility with a blended input of blue and green hydrogen.
4. Project Haber offtake and equity will be marketed during CY21 prior to FEED

## Benefits

*Why?*

1. Project Haber will secure more than 628 PJ of additional integrated demand for Strike's low-cost Perth Basin gas and will support the commercialisation of the Greater Erregulla gas resources
2. Will generate material diversified revenues with a common cost base
3. Urea production will consume the majority of carbon from the gas stream and will enable partial chemical sequestration of the project's carbon output
4. Supports the Mid-West with the creation of hundreds of long-term jobs and reduces Australia's reliance on fertiliser imports whilst making competitively-priced fertiliser available for Australia's agricultural sector

<sup>1</sup> Subject to execution of definitive documentation.

## Create gas demand

- Project Haber enables Strike to generate significant long term domestic gas demand (86TJ/d) equivalent to 628 PJ over 20-years
- Greater Erregulla regional gas has direct nearby consumer with dedicated access via pipeline

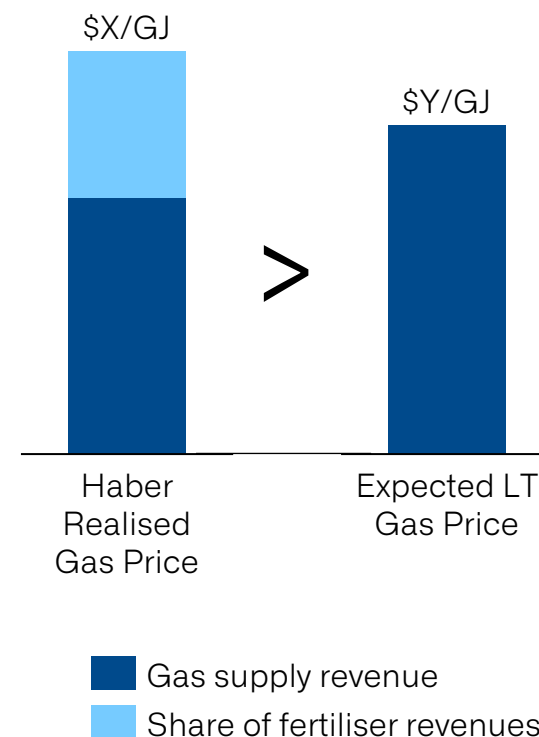
## Vertical integration

- Compelling economic case for vertical integration as gas forms between 60 and 70% of the cost base for urea production
- Integration creates a diversified revenue stream and enables Strike to capture incremental margin whilst managing its entire carbon footprint from production to consumption

## Superior shareholder returns

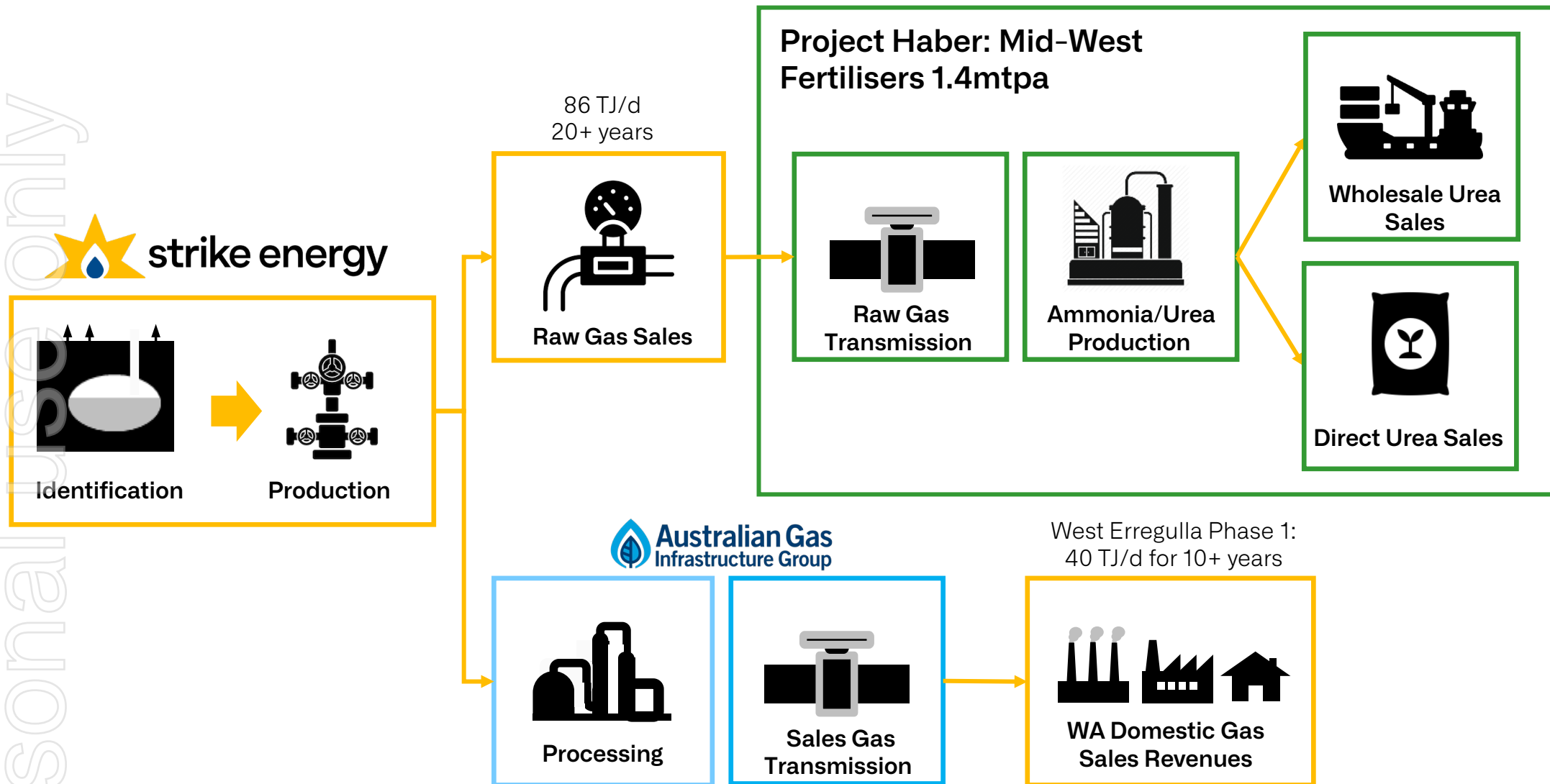
- Strike expects Project Haber will deliver more attractive shareholder returns than a traditional long term domestic gas sales agreement
- Strike strives to achieve the highest shareholder returns by maximising the Realised Gas Price<sup>1</sup> it can attain for the resource it brings to market

**Project Haber is expected to generate a realised gas price<sup>1</sup> greater than expected long term WA gas prices**



<sup>1</sup> Realised Gas Price = revenue received for gas supply plus fertiliser revenues received as an equity holder in a downstream industry divided by the total volume of gas supplied to the fertiliser plant

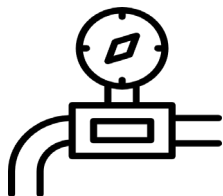




**Strike will be positioned throughout the value chain providing diversified revenues whilst managing a common primary input cost**

## Project Haber

### Gas supply



- Access to 20 years of globally competitively priced gas



### Local Customers



- Sufficient domestic demand to provide sustainable seasonal economic return
- Close proximity to customers reduces handling and transport



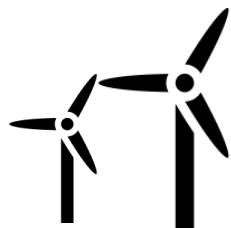
### Proximity to gas fields



- Plant proximal to the source of gas to reduce gas transmission and processing costs



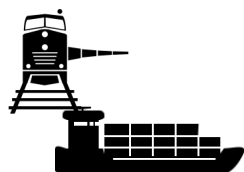
### Utilities & Labour



- Access to substantial regional power supply or additional gas fired electricity
- Close proximity to a secure water source (salt or fresh)
- Access to skilled workers required for plant operations



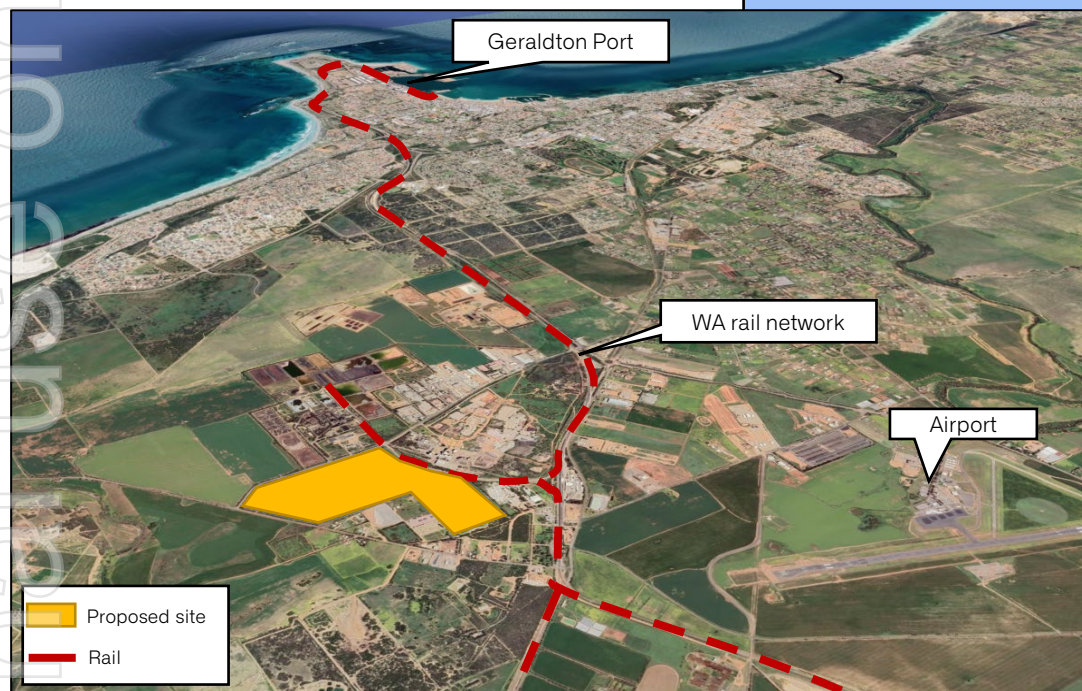
### Path to market



- Plant ideally is < 15km to a port in order to provide transportation alternatives and access to global markets if domestic markets are out of season



Option to lease for 60ha land parcel with Development WA has been approved to support Project Haber



- The WA rail network is primarily designed to collect grain from 'Wheatbelt' towns and transport it to ports along the WA coast for export.
- Rail will be utilised to transport urea to ships at the port for movement to the East Coast.
- Returning empty trains may provide an excellent opportunity to efficiently distribute and store urea throughout the state.



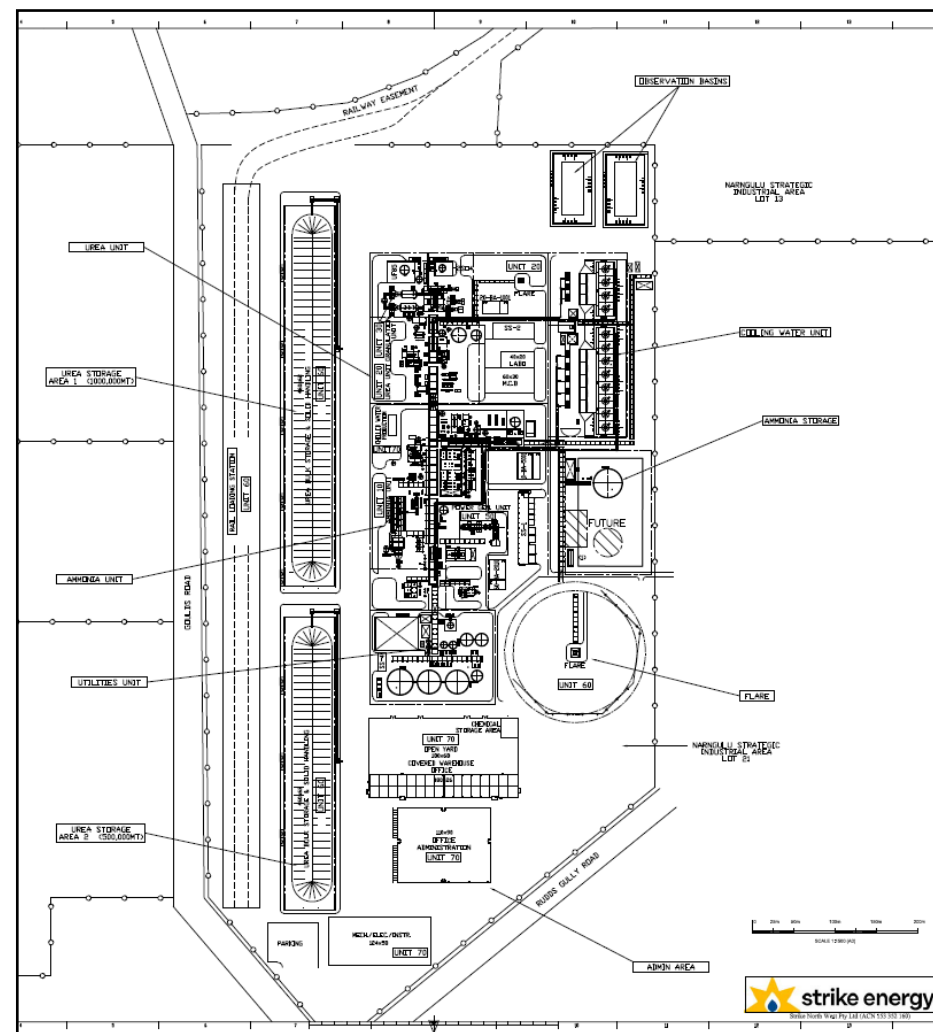
## Summary

- 1.4mtpa Urea plant (800kt pa ammonia)
- Located at Narngulu Strategic Industrial Estate, Geraldton in Western Australia
- Supply domestic and international fertiliser market
- 60ha plot secured from WA Government
- Feasibility study completed by TechnipFMC
- Onsite gas fired power and steam generation
- Onsite storage (300kt) and rail loading sidings
- 10MW renewable energy hydrogen electrolyser
- 20-30 years useful operating life
- 86 TJ/d of natural gas supply from the Greater Erregulla gas fields
- 120km direct raw gas pipeline from Strike's Perth Basin Permits

## Capital estimate:

- US\$1.80 billion (A\$2.3 billion)

## Plot Plan for 60ha site

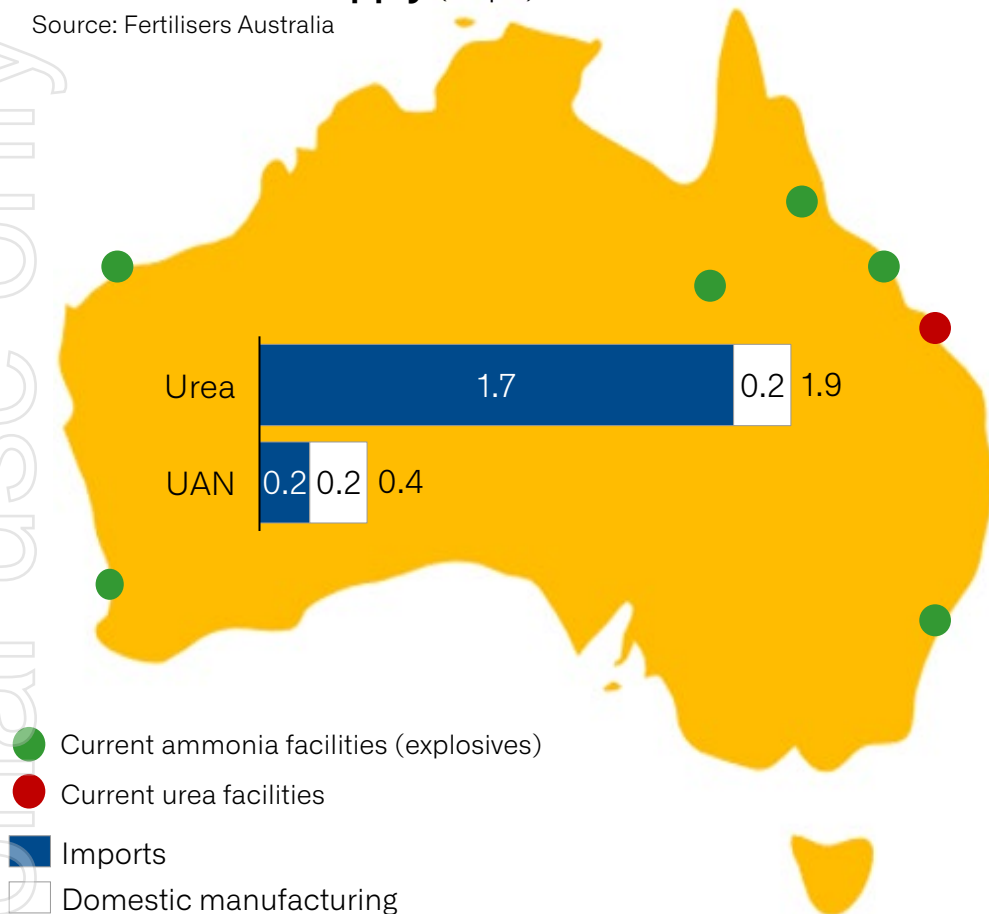


**Gross fertiliser revenues are estimated between A\$540-700 million per annum<sup>1</sup>**

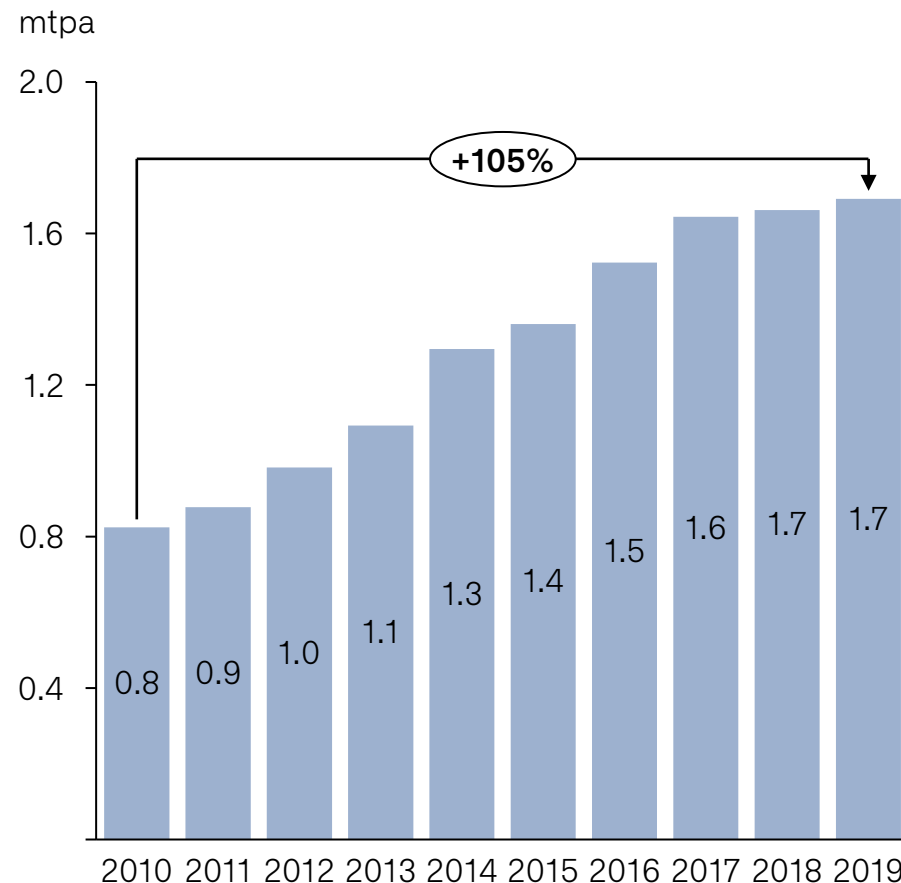
<sup>1</sup>based on current urea prices in both wholesale and direct markets

## 2002-2017 average Australian nitrogen based fertiliser supply (mtpa)

Source: Fertilisers Australia



## Australian urea imports have increased >100% on a rolling 5-year average

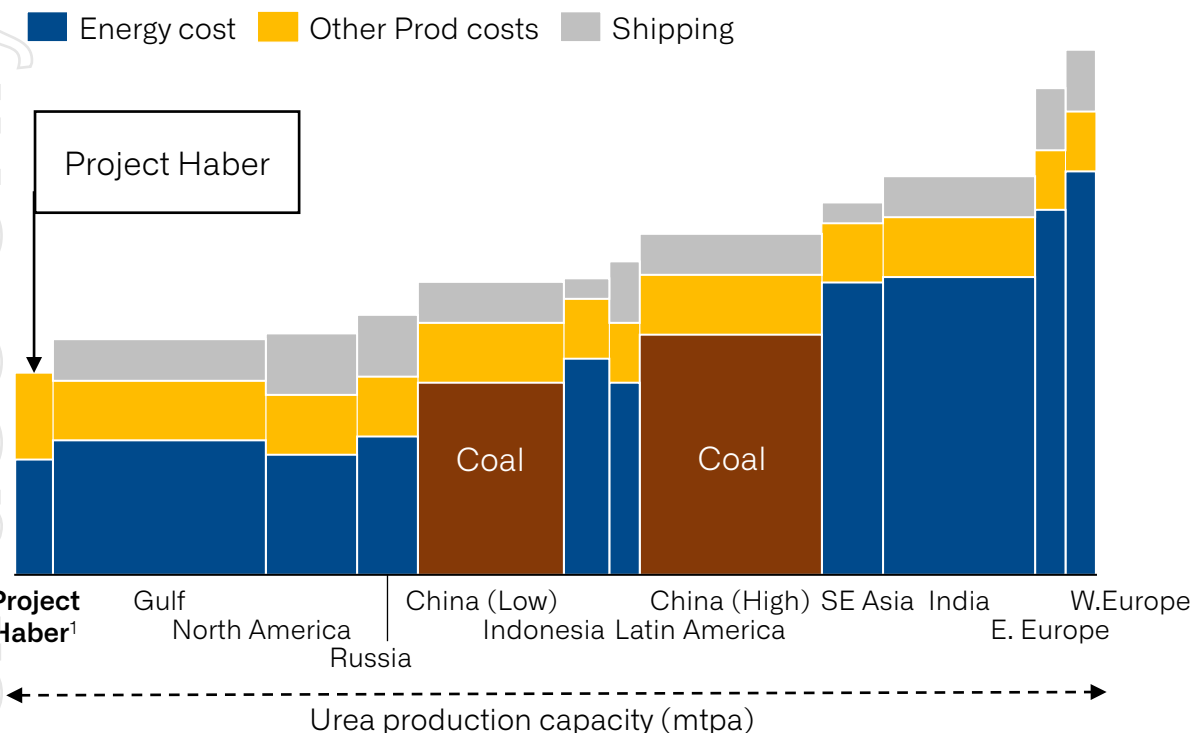


Source: Dept of Foreign Affairs & Trade

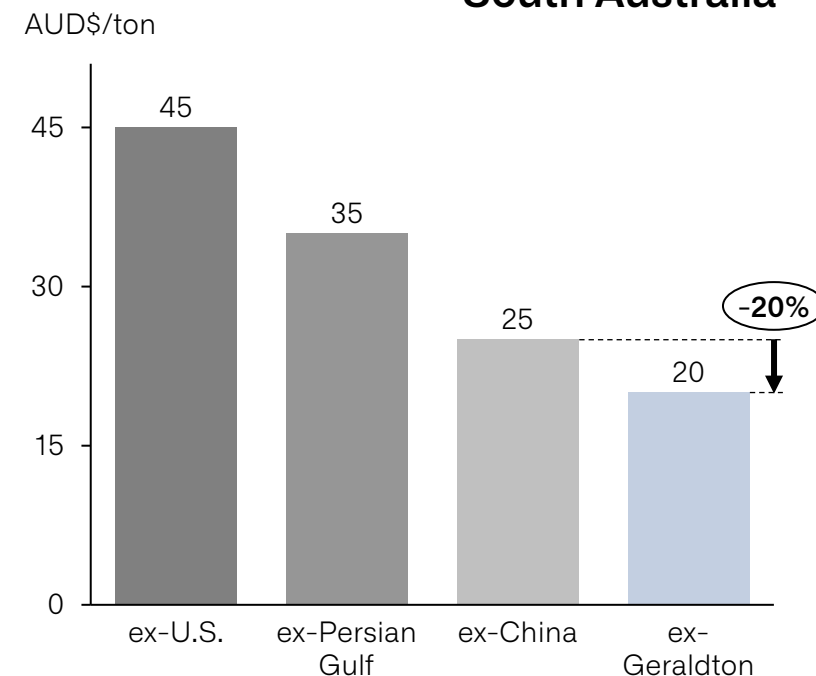
**Australian domestic urea production has almost completely ceased due to rising input (energy) costs. Urea demand has seen strong growth as Australia pivoted to imports**



## A\$/t urea cash cost delivered Western Australia

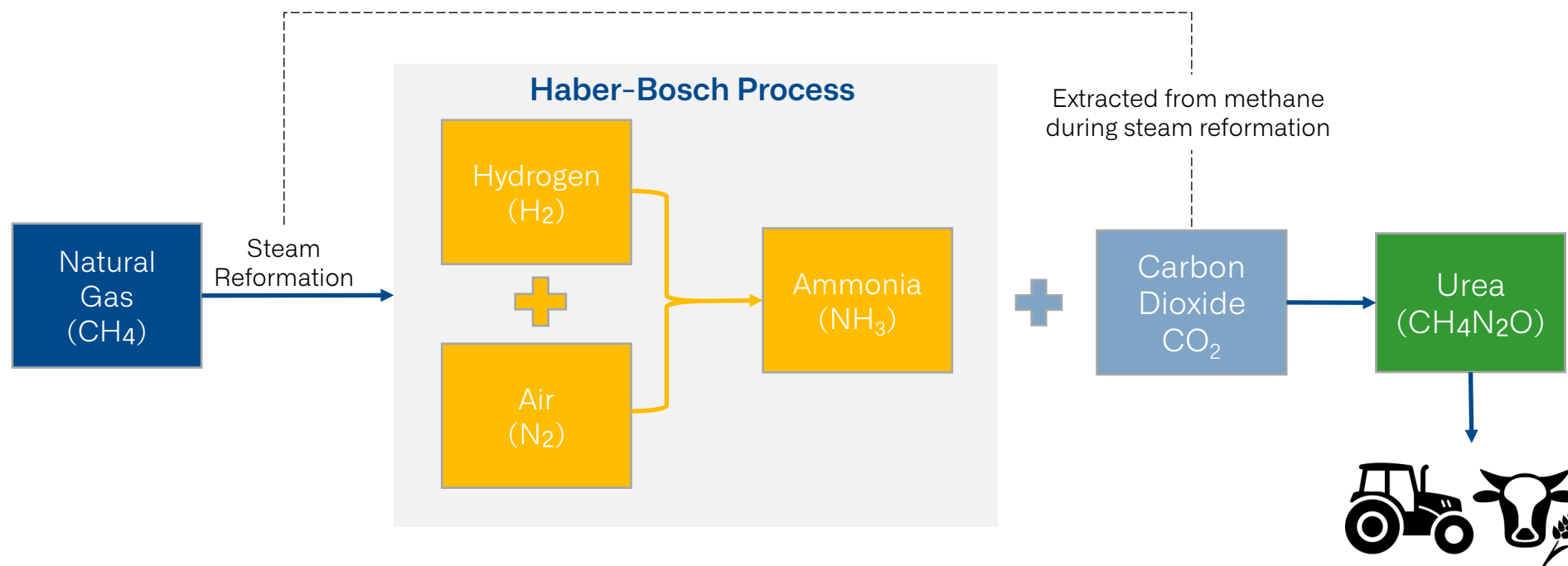


## A\$/t shipping delivered to South Australia



- Greater Erregulla gas expected to be a more competitive energy feedstock than ~75% of the global urea market
- Shipping urea ex-Geraldton into SA will be 20% to 50% cheaper vs international import competitors

**Project Haber may land urea more competitively around Australia than importing from the major international competitors**

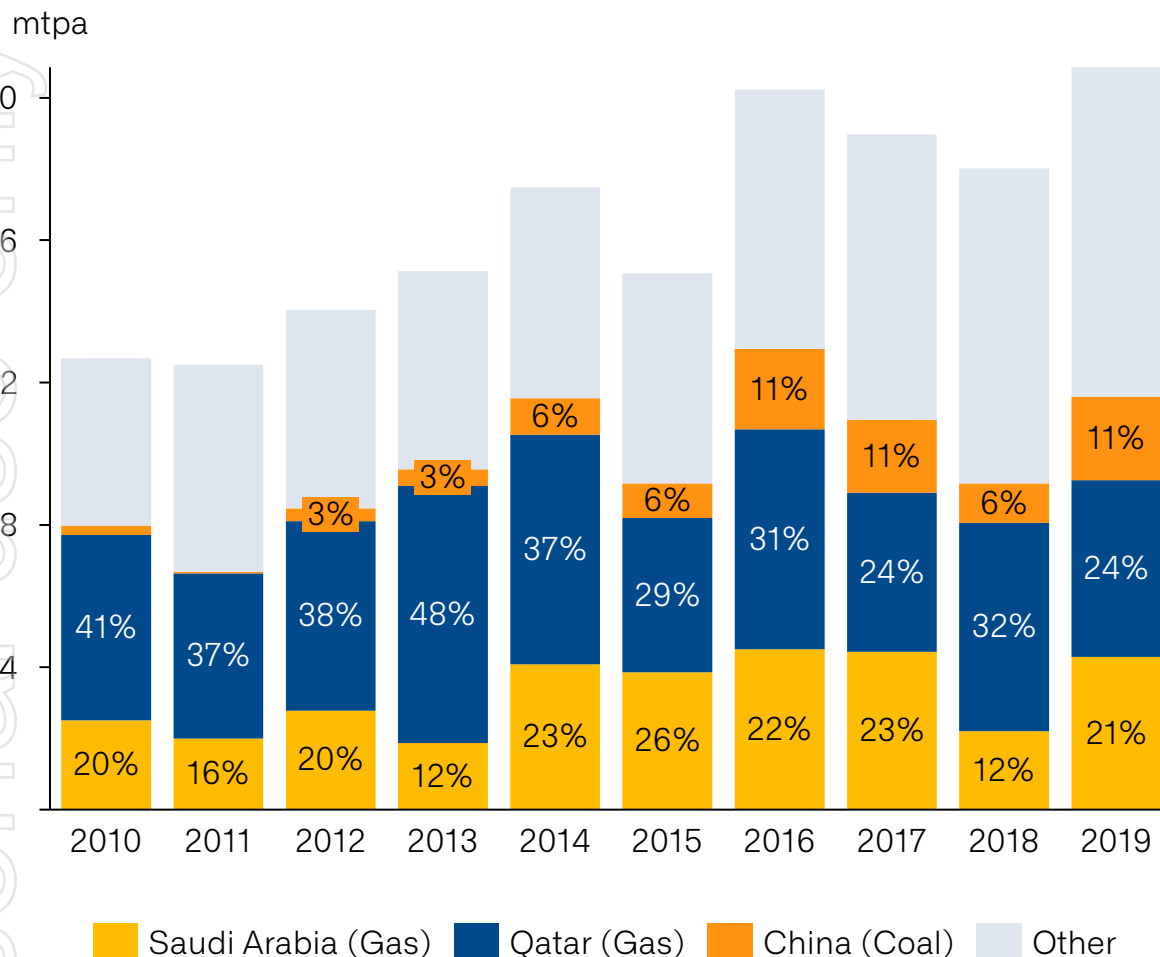


- Production of urea will consume waste CO<sub>2</sub> streams from natural gas, which are then partially returned back to the soil in the urea
- With vertical integration and consumption of own gas, Strike will be able to manage and minimize its carbon footprint throughout the whole chain from production to consumption of its natural gas

**Urea is a natural chemical sequestration for a portion of Strike's associated carbon from the Greater Erregulla gas fields**

## Australian urea imports – country of origin

Source: Department of Foreign Affairs and Trade (DFAT)



- High carbon urea consumption has been increasing in recent years due to rise in global LNG markets with China's coal based urea accounting for 11% of imports in 2019
- Project Haber could displace higher carbon urea whilst still reducing farm input costs
- Project Haber has the potential to displace nearly \$1 billion of trade deficit as Australia becomes more self-reliant in the manufacturing of fertilisers

**Midwest fertilisers could displace higher carbon sourced fertilisers whilst still reducing Australian farming costs**

## Project Haber

### Urea Plant

1.4Mtpa Urea  
20-30MW power requirement

### Onsite Gas Turbine

- 35-40 MW Gas Turbine Generator (GTG)

### 10MW Hydrogen Electrolyser

- Produces 2% of the plants H<sub>2</sub> requirement for NH<sub>3</sub> production
- Scale up over time as technology matures and renewable capacity builds

Currently included in project scope and cost

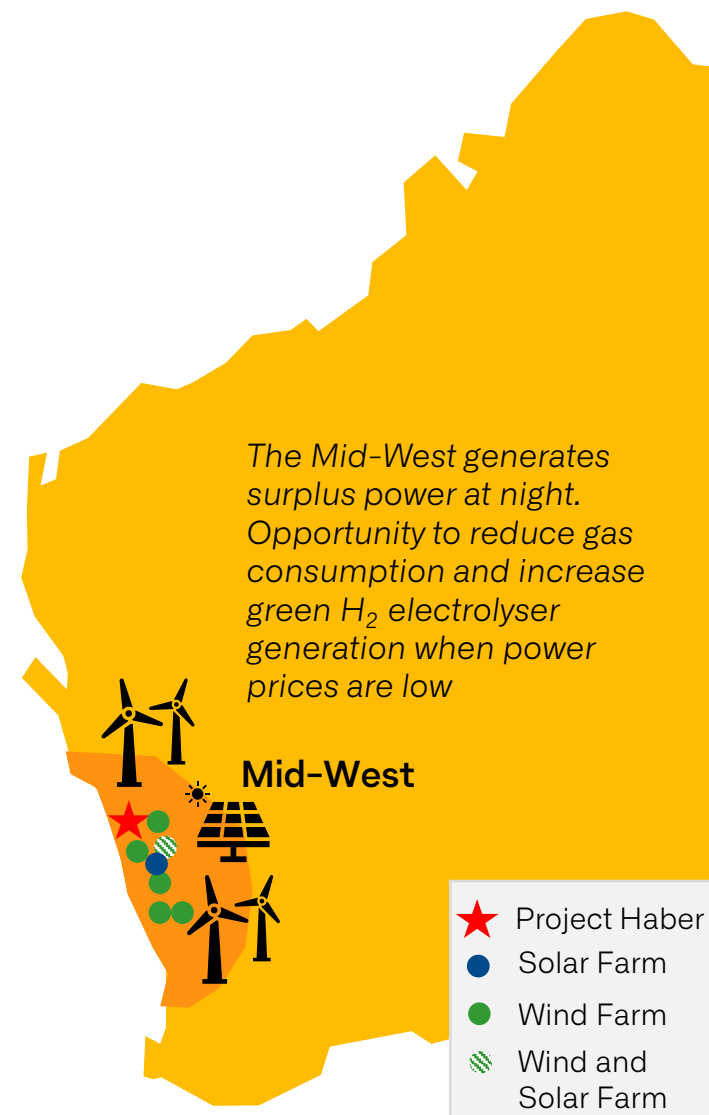
## Midwest Renewable Projects

### Operating (~900MW)

- Walkaway Wind Farm (80MW)
- Warradarge Wind Farm (180MW)
- Yandin Wind Farm (214MW)
- Badgingarra Wind & Solar Farm (130MW)
- Emu Downs (80MW)
- Greenough River Solar Farm (40MW)
- Mumbida Wind Farm (55MW)

### Under development (+ multiple GW)

- Oakajee Strategic Industrial Area
- Midwest Wind and Solar Project
- Murchison Renewable Hydrogen Project



**Economic development case supported through gas with supplemental renewable energy that will increase over the facility's life**

## Offtake

- Strike will commence a formal offtake tender in Q2 2021 with various Australian and international urea consumers
- With the competitive advantage of a low-cost gas input, access to transport infrastructure and proximity to Australian fertiliser consumers, Project Haber is expected to deliver more competitively priced urea than international imports into Australia.

## Equity & Finance

- Strike will be seeking, through a competitive process, in Q4 2021 equity partners to fund the capital requirement of the project. Strike expects to retain a 30% carried interest in the plant.
- Strike's gas supply to underpin international competitiveness of Project Haber's fertiliser offtake.
- Strong interest already shown from several existing parties, domestic banks and investment and infrastructure investors

## Government support

- Strike has received excellent support from all levels of Government for Project Haber due to the broad range of economic benefits
- Both State and Federal government agencies have been identified to provide assistance in targeted funding and support with discussions progressing



