

HAZER GROUP LTD

ASX:HZR

ASX Small and Mid-Cap Conference
March 2021

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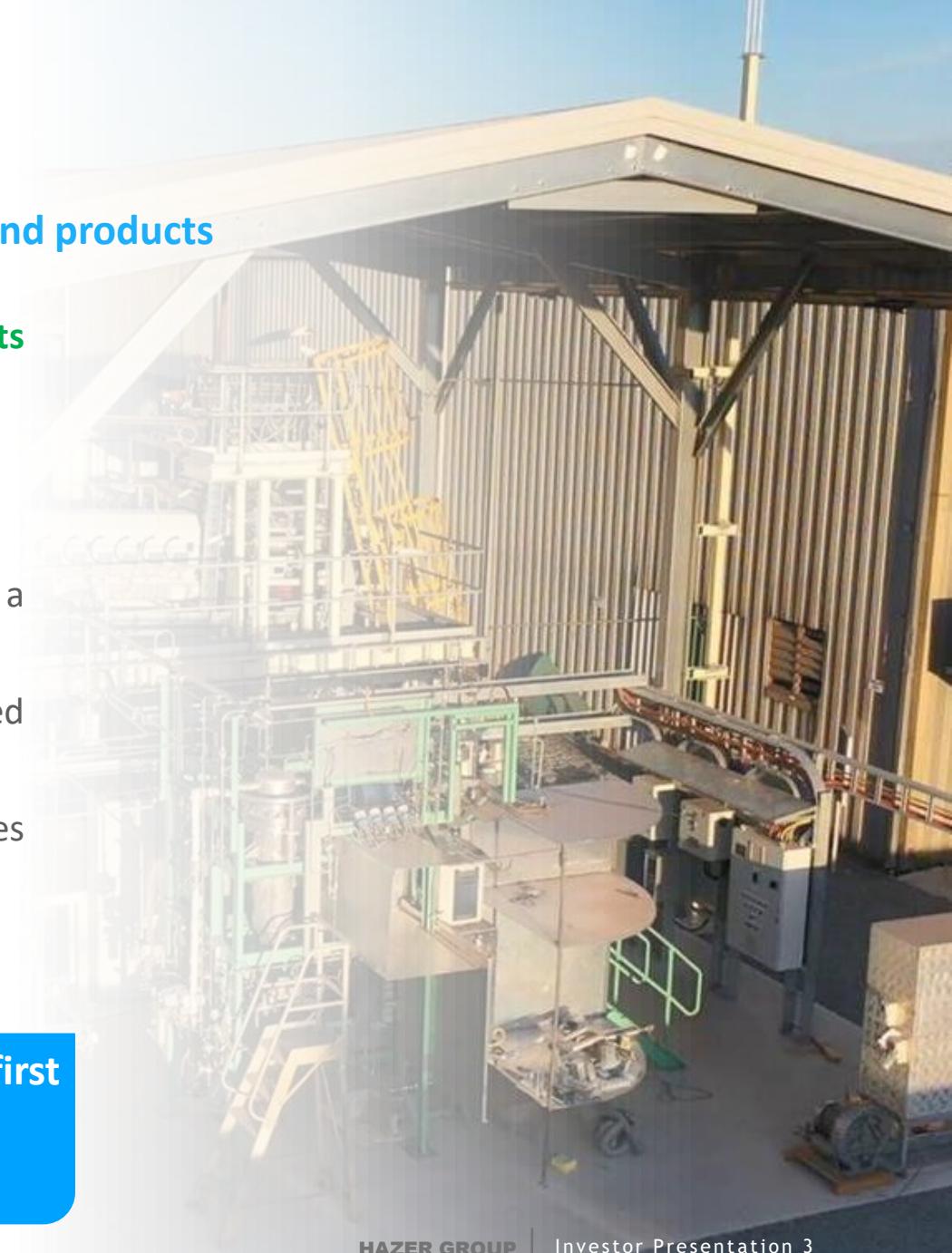
THE HAZER PROCESS

Low cost, low emissions process to create two high value, high demand products

- Hazer Process – **low emission path to create two high value products** utilizing methane feedstock and iron ore catalyst
 - Hydrogen; 99.99% + purity
 - Synthetic Graphite; 80 – 95% TGC
- **Strong Market Dynamics:** Hydrogen and graphite are both key products in a de-carbonizing economy
- **Clean and Cost-effective:** Carbon content of natural gas feedstock captured in form of solid graphite - a saleable by-product – vs. conversion to CO₂
- **Clean Hydrogen:** Hazer's emissions are lower than alternative technologies when operated with renewable biogas as feedstock
- **Premium market** for hydrogen from low-emission sources is emerging

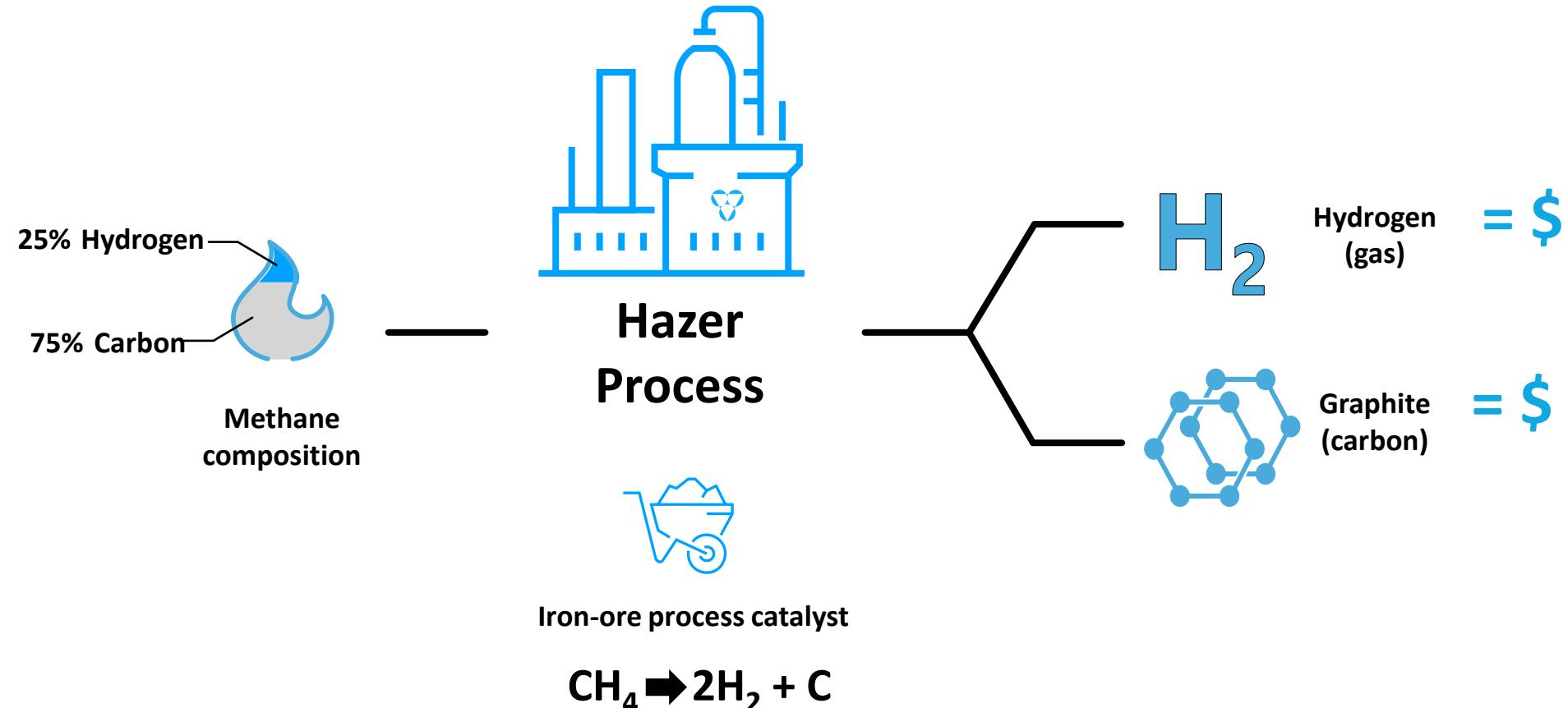
Fully funded to develop Hazer commercial demonstration project – first larger scale fully integrated deployment of the Hazer process

Expected final cost \$17.9 – 18.7 million



THE HAZER PROCESS

Producing two sustainable and valuable products without creating CO₂ in the process

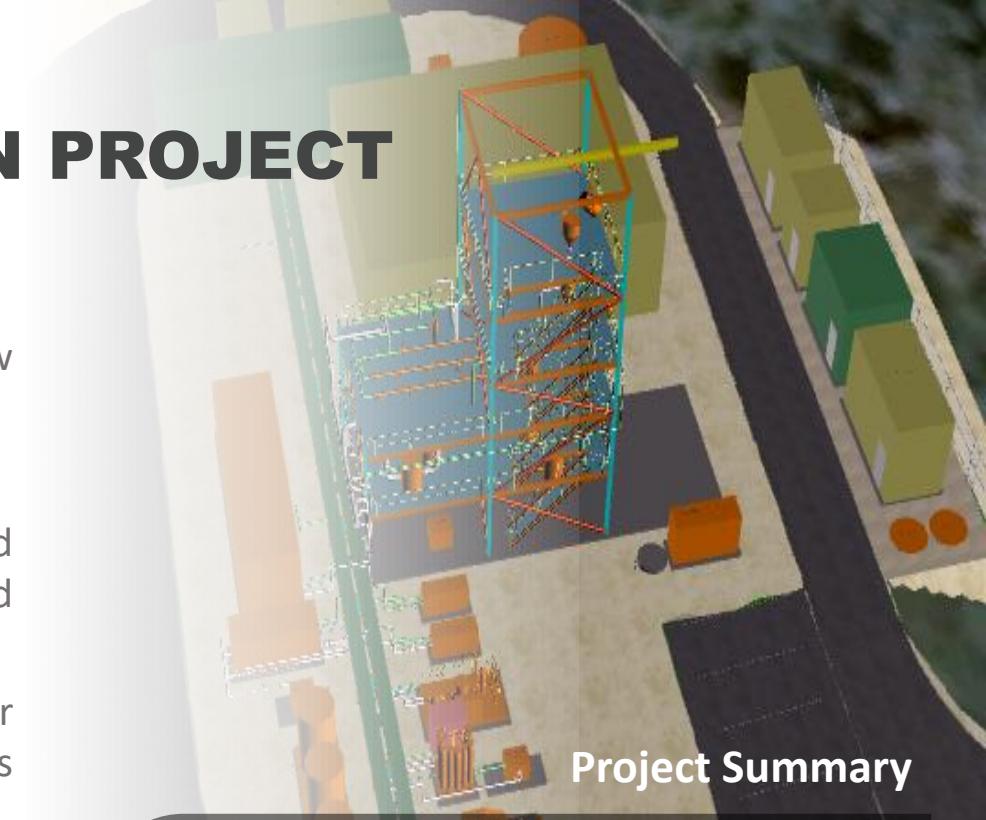


* CO₂ abatement potential : 100 - 150 t CO₂ (equiv) / t Hydrogen when utilising biogas feedstock

HAZER COMMERCIAL DEMONSTRATION PROJECT

First fully integrated larger scale demonstration of the Hazer Process

- **Capacity** - 100 tonne p.a. fuel cell grade hydrogen capable of being used as low emission transport fuel, for power generation or clean industrial applications
- **Feedstock** – Biogas – methane produced in waste-water treatment process
- **Strong collaboration** with Water Corporation: Biogas Supply Agreement and Project Collaboration Agreement provides security of feedstock supply and access to the project site
- Will deliver significant CO2 emissions reductions to the Woodman Point water treatment facility and **demonstrate potential long-term use** for waste biogas produced from water treatment operations
- Primero Group appointed as EPC contractor. Working at full capacity on completion of detailed design & procurement works following early engagement under our **Early Contractor Involvement** strategy
- Civil site works commence & receipt of first equipment packages March 2021
- Site installation and construction activities anticipated to start from mid-2021 & maintain our target completion date of 4Q 2021



Project Summary

• Location	Woodman Point WWTP (WA)
• Feedstock Type	Biogas
• Feedstock Vol.	~2 million Nm³/year
• Hydrogen	100 tpa (99.99% purity)
• Graphite	~380 tpa (90 - 95% TGC)
• Site Area	~4,000 m²
• Reactor Design	Pressurised Fluidised Bed
• Heating	Electrical Heating

Hazer Commercial Demonstration Project

Site access granted March 2021 building on strong progress since taking FID decision in July 2020 despite challenging operating environment

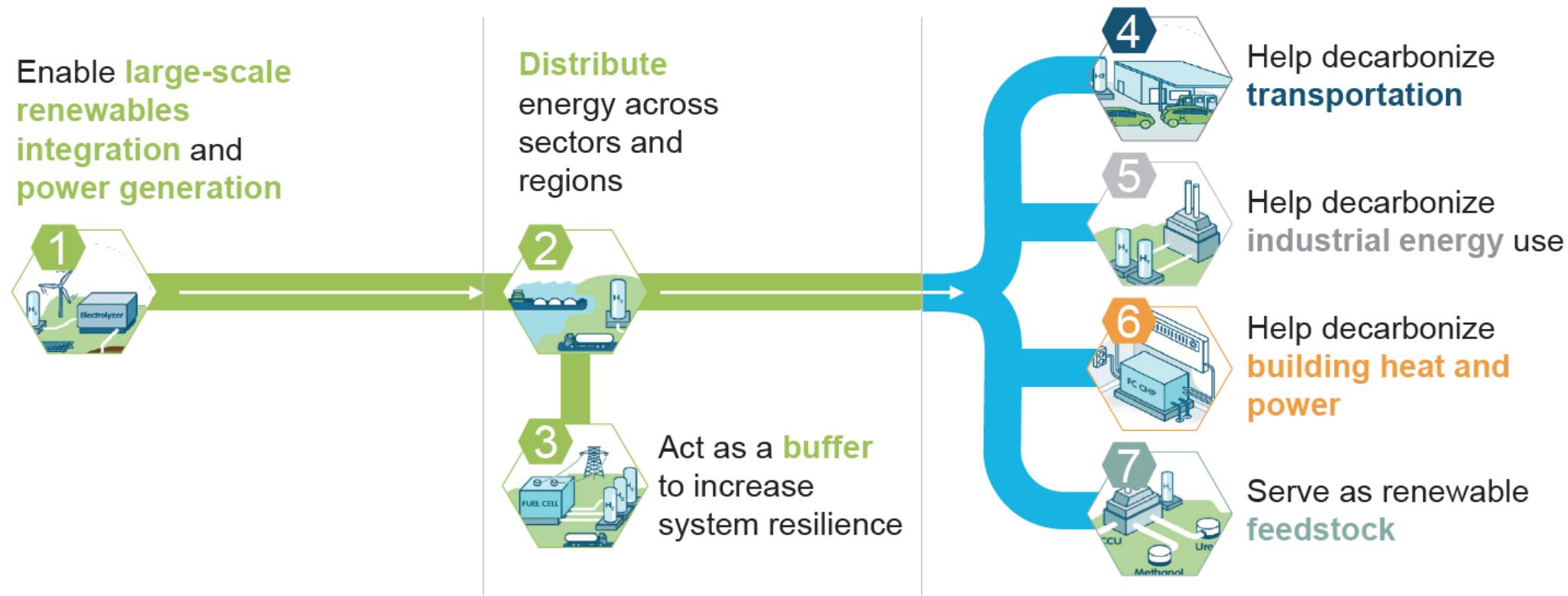
- Access to project site granted 15 March 2021
- All permitting activities completed to allow mobilisation
- Mobilisation of equipment, site clearing and civil earthworks to commence this week.



- Continued progress in Q1 2021 on detailed engineering and procurement.
- Engineering & procurement activities continue on schedule to deliver 4Q 2021 commissioning.

WHAT IS THE HYDROGEN ECONOMY?

Hydrogen is a key fuel in the transition to a low carbon economy



Source - Hydrogen Council, November 2019

Global Hydrogen Market Gathering Pace

Momentum along the global value chain

At the beginning of 2021¹

30
countries

200
projects

80
USD bn

70
USD bn

75
countries

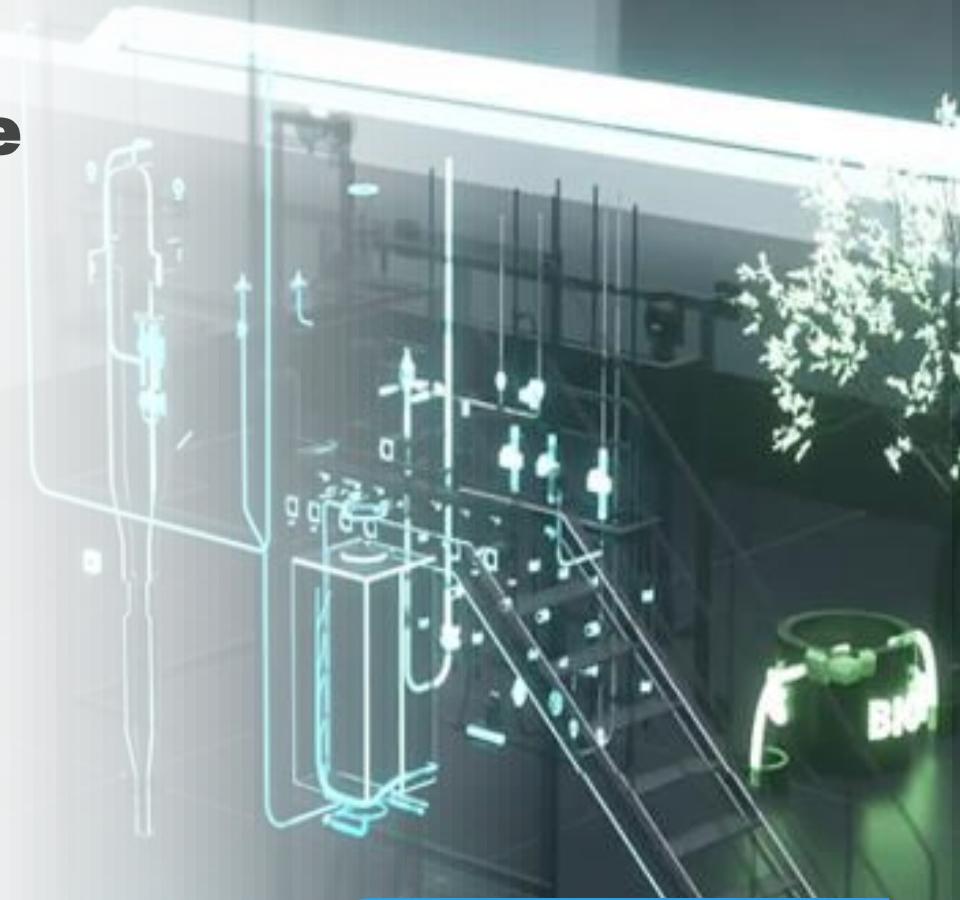
> 30 countries have released **hydrogen roadmaps**

>200 **hydrogen projects** across industry value chain
85% global projects originating in Europe, Asia and Australia

Announced industry investment of **USD 80 bn** considered
'mature'² from a **potential USD 300 bn through to 2030**

Governments worldwide committed >USD 70 billion in public
funding and are considering policy implications

75 countries have net zero carbon ambitions, representing over
half of global GDP



'Morgan Stanley forecast
the global hydrogen
market of \$150 billion
USD in 2020 to grow to
\$600 bn USD by 2050'³

1. Source: Hydrogen Insights Feb 2021 - McKinsey Hydrogen Council Report

2. Classed as in planning, passed FID or associated with project under construction, commissioned or operational

3. Source: Financial Times 8 March 2021 'The Race to Scale-Up Green Hydrogen'

Business Development

Significant increase in interest in the Hazer technology from international companies across a wide range of applications

- Strong relationship with Chiyoda provides excellent engagement with potential Japanese customers; hope to see this translate to first Feasibility Studies in 2021
- Interest in Hazer Process is coming from a diverse range of end-users driven by a desire to de-carbonise operations
- Potential applications/collaborations include:
 - Supply of hydrogen for transport
 - Waste to hydrogen
 - Low-emission hydrogen to de-carbonise heavy industry
 - Use of low-emission hydrogen to create “green” products
- Hydrogen market is still emerging with no clear, deep price signals yet for clean H2

Key focus in 2021:

- Taking knowledge gained from the CDP design to larger scale Hazer Plants
- Target a range of capacities to suit various end-use scenarios (indicatively 1,000 – 2,500 – 5,000 tpa H2 capacity)
- Collaborate with range of engineering specialists to pursue optimisation & cost outs



Hazer R&D program

Remains core activity for Hazer with potential high impact programs developed in 2020, continuing in to 2021

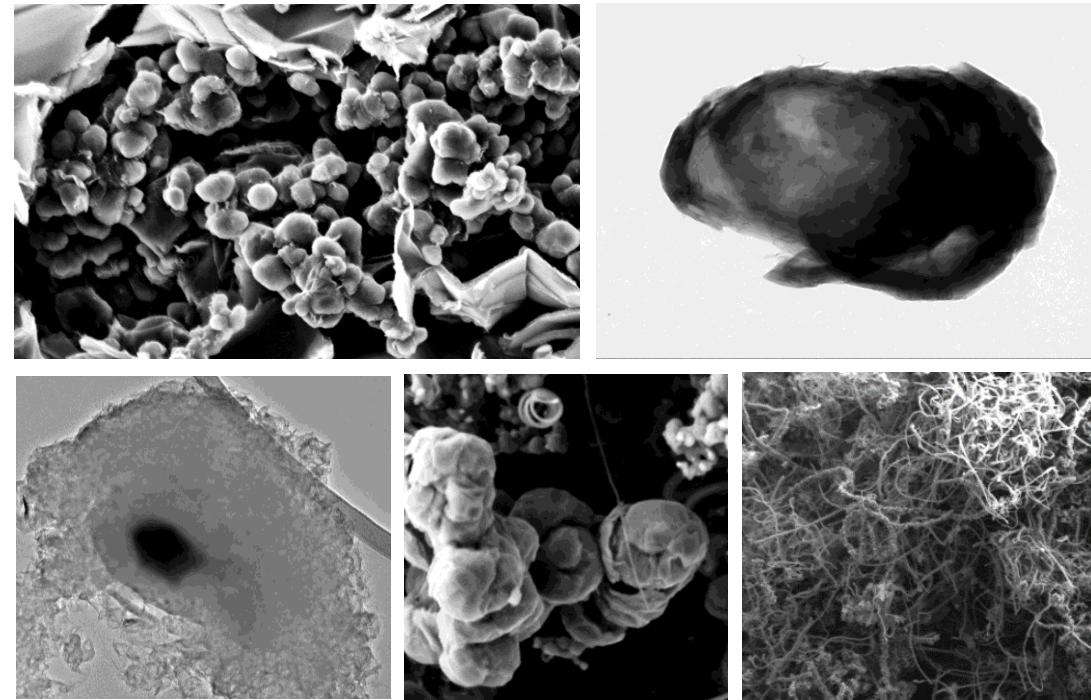
- Innovative Manufacturing CRC joined in Oct 2019; continuing previous USyd research collaboration
- R&D activities focus on two pathways:
 - Catalyst & reaction development
 - Test and optimise different catalyst materials (both natural and synthetic iron oxides)
 - Graphite characterisation, functionalisation, application testing and purification
 - Test potential applications for Hazer graphite
 - Develop methods to functionalise graphite to enhance various properties
- Key emerging R&D themes:
 - Trialling a process to purify Hazer graphite to 99%+ purity without thermal or acid-based method; achieved at small-scale in lab - now assessing how to scale to pilot stage
 - Investigating methods to separate the different graphite morphologies to optimise value of carbon product
- R&D, by its nature, is uncertain and long-term undertaking; Hazer has developed a strong platform to support the long-term growth of our business and add value to technology



Hazer Graphite

Unique and versatile graphitic product

- **Graphite market is a complex, technical and opaque market;** product qualification and acceptance processes typically 2-4 years (especially for higher value products)
- **Customers typically want to evidence of production in larger volumes** before engaging to co-develop graphite products under long term supply agreements
- **Actively engaged with a range of potential customers** across multiple uses; executed [20+] Material Transfer Agreements to allow testing Hazer materials by end users
- **Potential to produce unique products** for specialty applications being investigated by R&D Team
- **Range of potential value for Hazer graphite product is very wide** – ~\$200 - \$1,000+ per tonne
- **Producing a larger quantity of consistent graphite via the Hazer CDP** (est. 375 tpa graphite production) is key to taking customer engagement to the next step



Applications being considered:

- Energy storage (Li-ion battery anodes, conductive additives)
- Refractory additives
- Composite additives (concrete, polymers etc)
- Water purification medium (various contaminants)

Strong Financial Position

Fully funded to deliver the Hazer CDP, accelerate the development of commercial scale options & pursue innovative R&D through diverse range of funding sources

- Strengthened balance sheet and diversified funding sources over 2020
- Funded grants (State & Federal), debt, equity and strategic investment
- **\$28.78 M cash balance at 31 Dec 2020 plus;**
 - \$7.7M undrawn ARENA Grant Funding ¹
 - \$4M undrawn senior secured debt ¹
 - \$4M investment from AP Ventures to be received in 2021 post FIRB approval
- **Fully funded to deliver the CDP and planned core activities.**
- **Using financial strength to build company capability;** reduce risk in the execution of our project and deepen our engineering capability to work with customer enquiries and develop commercial scale plant designs
- Strong financial position allows us to **invest in R&D** such as pilot trials of innovative graphite purification techniques

Note: 1. Subject to achievement of agreed milestones and conditions precedent.

Hazer Outlook

Strongly positioned to capture the huge opportunities offered by the growth in the hydrogen economy and rapid push to de-carbonise heavy industry and transport



First larger-scale, fully integrated deployment of the Hazer Process underway with the Hazer Commercial Demonstration Project to be delivered in 2021



Development of plans for Commercial Scale Hazer Projects a key focus in 2021 in collaboration with potential international partners as global focus on starting a hydrogen eco-system accelerates



Strong R&D platform aimed at supporting process development and optimising value of Hazer graphite



Strong balance sheet able to fund the Hazer CDP, our R&D program and accelerate international business development



Investors and governments world-wide mobilising resources to support low-carbon transition as part of a green recovery from Covid-19 economic shock – opportunity to access these funding sources to support commercial scale Hazer plant



Alan Finkel, Australian Chief Scientist, advice on hydrogen: “be ambitious and be patient” (November 2020)



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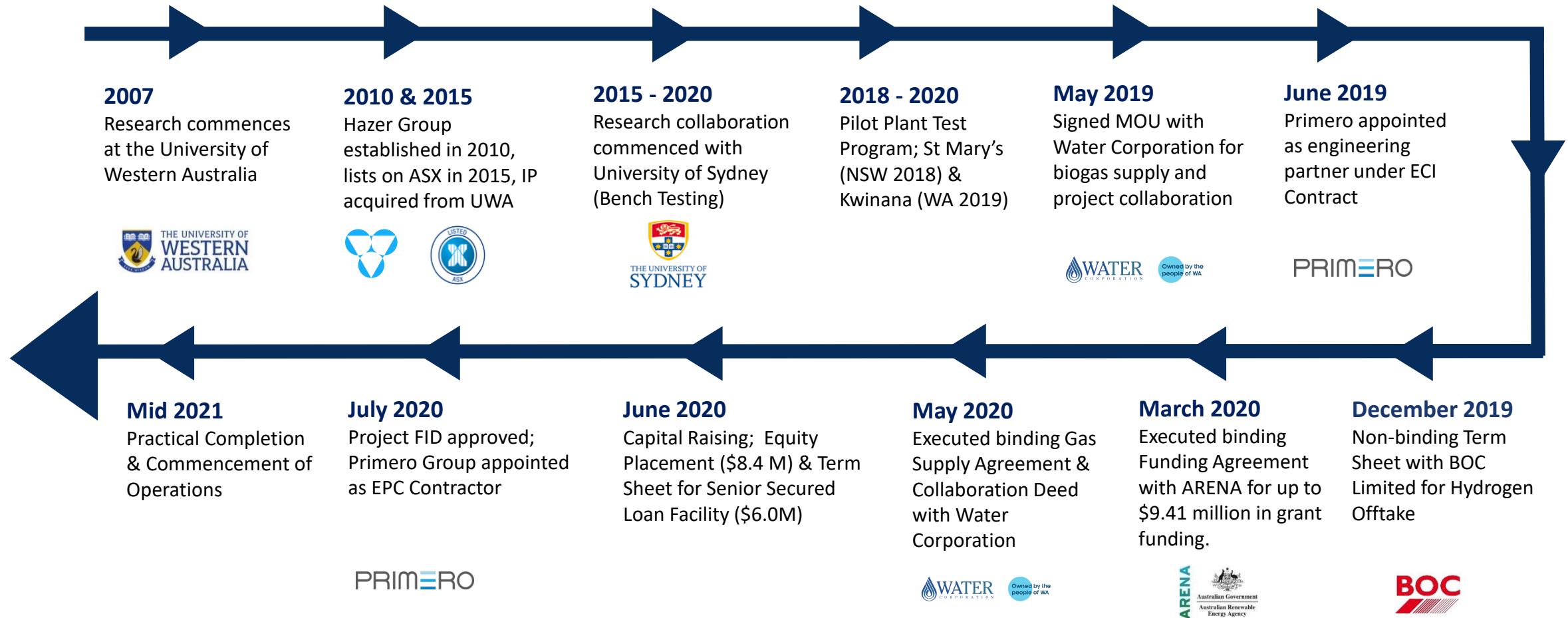
Hydrogen

Hydrogen



Appendix – Hazer Development History

Advancing towards commercial production, backed by extensive research & pilot testing



Appendix – References

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10. Government of Netherlands, 'Government Strategy on Hydrogen', April 2020 <https://www.government.nl/documents/publications/2020/04/06/government-strategy-on-hydrogen>
11. 'The Northern Netherlands Hydrogen Investment Plan 2020' <https://www.mijntoekomstiswaterstof.nl/app/uploads/2020/10/investment-plan-hydrogen-northern-netherlands-2020.pdf>