



# Developing Energy Materials for a Net Zero Future

ASX: **VLX** *(proposed)*

TSXV: **VLX**

MARCH 2024

# Forward-Looking Statement



**Neither the TSX Venture Exchange nor its regulation services provider (as that term is defined in the policies of the TSX Venture Exchange) accepts responsibility for the adequacy or accuracy of this Presentation.**

*“This Presentation includes certain forward-looking statements or information. All statements other than statements of historical fact included in this release, including, without limitation, statements relating to the potential mineralization and geological merits of the and properties and other future plans, objectives or expectations of the Company are forward-looking statements that involve various risks and uncertainties.*

*There can be no assurance that such statements will prove to be accurate and actual results and future events could differ materially from those anticipated in such statements. Important factors that could cause actual results to differ materially from the Company's plans or expectations include risks relating to the actual results of current exploration activities, fluctuating gold prices, possibility of equipment breakdowns and delays, exploration cost overruns, availability of capital and financing, general economic, market or business conditions, regulatory changes, timeliness of government or regulatory approvals and other risks detailed herein and from time to time in the filings made by the Company with securities regulators.*

*The Company expressly disclaims any intention or obligation to update or revise any forward-looking statements whether as a result of new information, future events or otherwise except as otherwise required by applicable securities legislation.”*

The planning, execution and monitoring of quality control programs on the Company's projects are under the supervision of Michael Griffiths, BSc Dip Ed, FAusIMM, GAICD, Velox's VP Exploration. Mr. Griffiths is the qualified person as defined by National Instrument 43-101. Velox utilizes an industry standard QA/QC protocol with respect to sampling procedures. Blanks and certified reference standards are inserted into the sample stream to monitor laboratory performance and duplicates of pulps and bulk rejects are also used to monitor laboratory performance. Mr. Griffiths has reviewed and approved the contents of this Presentation.

**Additional information and public documents about Velox can be viewed at the Company's website [www.veloxenergymaterials.com.au](http://www.veloxenergymaterials.com.au) or at [www.sedar.com](http://www.sedar.com)**

# Corporate Snapshot



**VLX**

**254.5M**

**TSX-V ticker**

**Shares**

**ASX ticker - proposed**

**66.34M**

**22.4M**

**Warrants**

(C\$0.05-C\$0.10,  
Jan-Dec '25)

**Employee Options**

(C\$0.05-C\$0.125,  
Feb '24 – Jan '29)

**C\$11.4M**

**C\$2.08M**

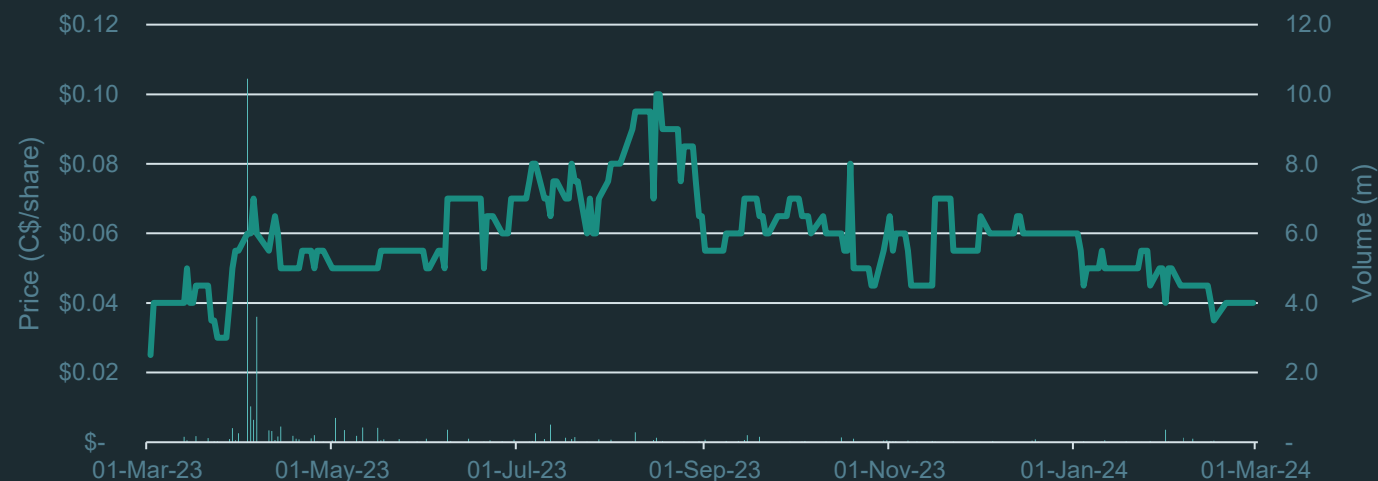
**Market Cap**

(as at 1 March 2024)

**Cash**

(as at 31 December 2023  
unaudited)

VLX Share Price Performance



# Leadership Team



## Board of Directors



**Simon Coyle**  
President & CEO

Extensive experience in operational management positions across gold, iron ore, manganese and lithium

Former Head of Port and Operational Development, and General Manager of Operations for Pilbara Minerals' hard-rock lithium operation, Pilgangoora

Successfully led the development and expansion of the Pilgangoora operation to become a major producer of spodumene concentrate



**Mark Connelly**  
Non-Executive Director

Extensive experience and involvement in exploration, development and mining projects, including

- merger of Papillon Resources with B2 Gold Corp, and
- merger of Adamus Resources with Endeavour Mining

Currently Non-Executive Chairman and Non-Executive Director across multiple ASX listed mining companies



**Nicole Morcombe**  
Non-Executive Director

Finance professional with a background in economics, finance and accounting with over 15 years experience in financial markets

Extensive advisory and capital markets experience specialising in the Global Materials and Energy sectors identifying, advising and financing early-stage and pre-development companies

Co-founder of Kotai Energy



**Mike Griffiths**  
Non-Executive Director,  
VP Exploration

Qualified geologist, Fellow of AusIMM, and a graduate of the Australian Institute of Company Directors

Over 35 years of experience covering all facets of the minerals and energy sector

20 years' experience in Africa with roles ranging from Geologist to Managing Director of a producing copper company

## Management

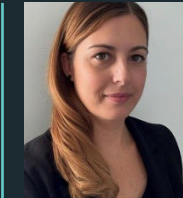


**Silfia Morton**  
Chief Financial Officer

Chartered Accountant with a Masters Degree in Commerce

Specialising in financial management, financial reporting and risk compliance and management

Chief Financial Officer and Company Secretary for a number of ASX listed and unlisted public companies



**Karien Slabbert**  
Company Secretary

Over 14 years' experience in the legal industry, with a background in litigation, commercial and corporate law

Strong business acumen and skills ranging from risk management, compliance, strategy development and sound corporate governance practices

Experience working with regulators and boards of both listed and unlisted companies

# Leading Energy Materials Projects within Velox

## VANADIUM

- **Large** NI 43-101 Mineral Resource of **206.2Mt @ 0.33% V<sub>2</sub>O<sub>5</sub>**  
**Contiguous shallow** orebody
- Targeting the development of a **low-cost, low strip** ratio operation
- **Underexplored 1,246km<sup>2</sup>** tenement package with favourable geology

## HYDROGEN

- Developing a **green closed loop circuit** for hydrogen regeneration
- **High-pressure release of hydrogen** without mechanical compression
- Led by **world renowned** Hydrogen Storage **experts** at Curtin University

## LITHIUM

- **Multiple pegmatites** identified in historic drilling, never assayed for lithium
- Located in **Quebec**, one of the best lithium addresses globally
- Existing and accessible **infrastructure**

**Lake Pierre Lithium Project**  
Quebec, Canada



**North Queensland Vanadium Project**  
Queensland, Australia

**Head Office**  
Perth, Australia



**Kotai Hydrogen Project**  
Perth, Australia

Velox is focused on developing energy materials for storage solutions that will enable the transition to

**net zero.**



# Vanadium

## A Critical Mineral for Grid Power Storage

North Queensland Vanadium Project is a large scale **100%-owned Vanadium project** targeting low-cost production in Queensland's North West Minerals Province



# North Queensland Vanadium Project (NQVP)



## Significant Existing Mineral Resources

- NI 43-101 compliant Cambridge Vanadium Mineral Resource:
- 61.33 Mt @ 0.34%  $V_2O_5$  Indicated
- 144.87 Mt @ 0.33%  $V_2O_5$  Inferred
- **206.2 Mt @ 0.33%  $V_2O_5$  Total**

## Targeting Low-cost, Low Strip Ratio Production

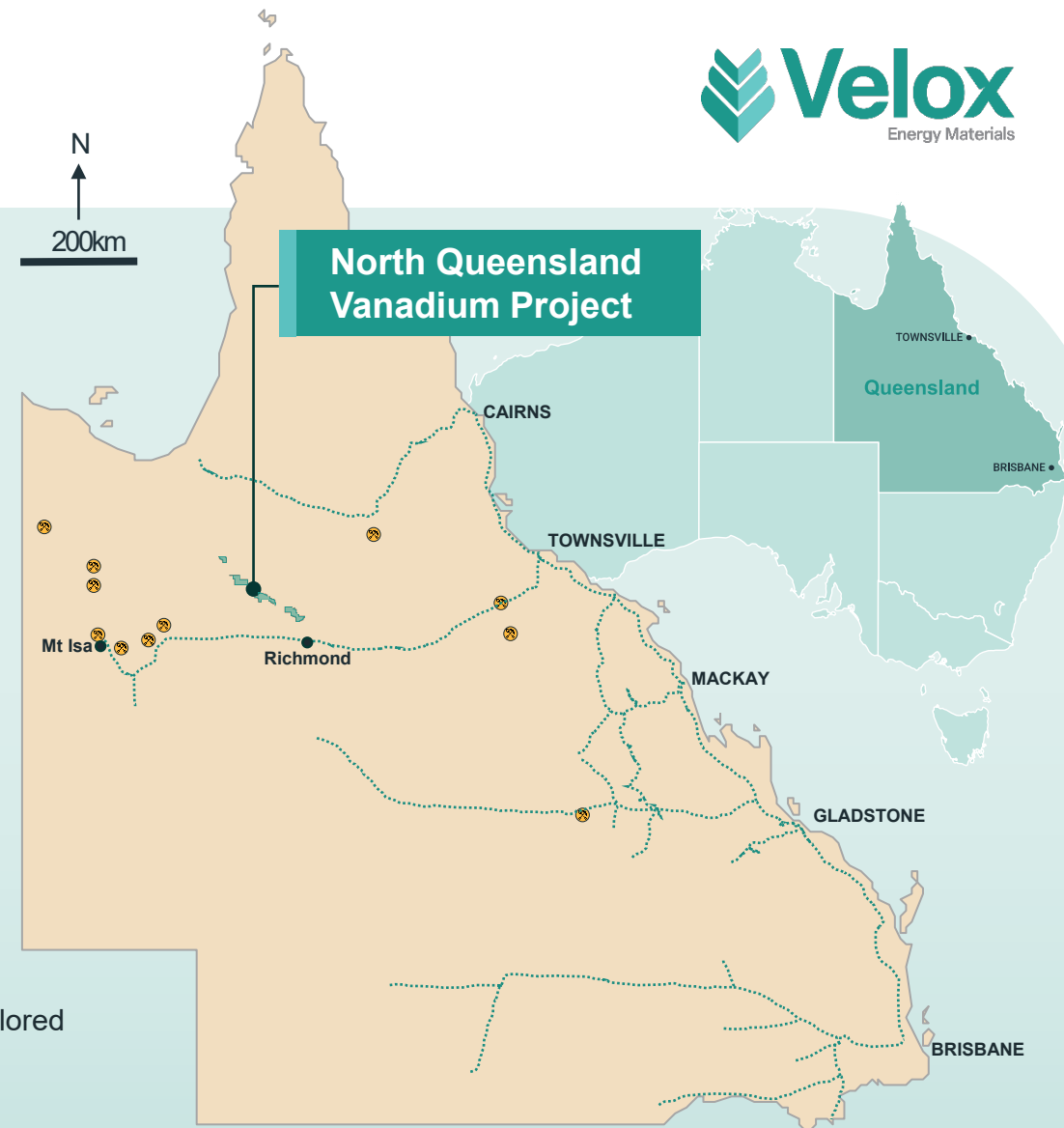
- **Oxide** mineralisation is **shallow dipping, outcropping** within oxide profile
- Targeting development of a **low strip ratio (<1:1)** free dig operation
- Significant OPEX and CAPEX **cost advantage** over hardrock magnetite deposits

## Premier Location

- Mid-way between **Mt Isa** and the **Port of Townsville** with **access to rail, road, power and port**. Townsville is planned to become a vanadium beneficiation hub

## Exploration Upside

- Large holding comprising **1,246km<sup>2</sup>** with only **~15%** of total holding having been explored
- Mineralisation is concentrated within the Toolebuc Formation sediments
- **Targeting high-grade mineralisation** at Flinders River, Runnymede & Silver Hills
- Potential for economic secondary commodities, **Mo and REE**



# Regional Overview

## Resource and Advanced Prospects

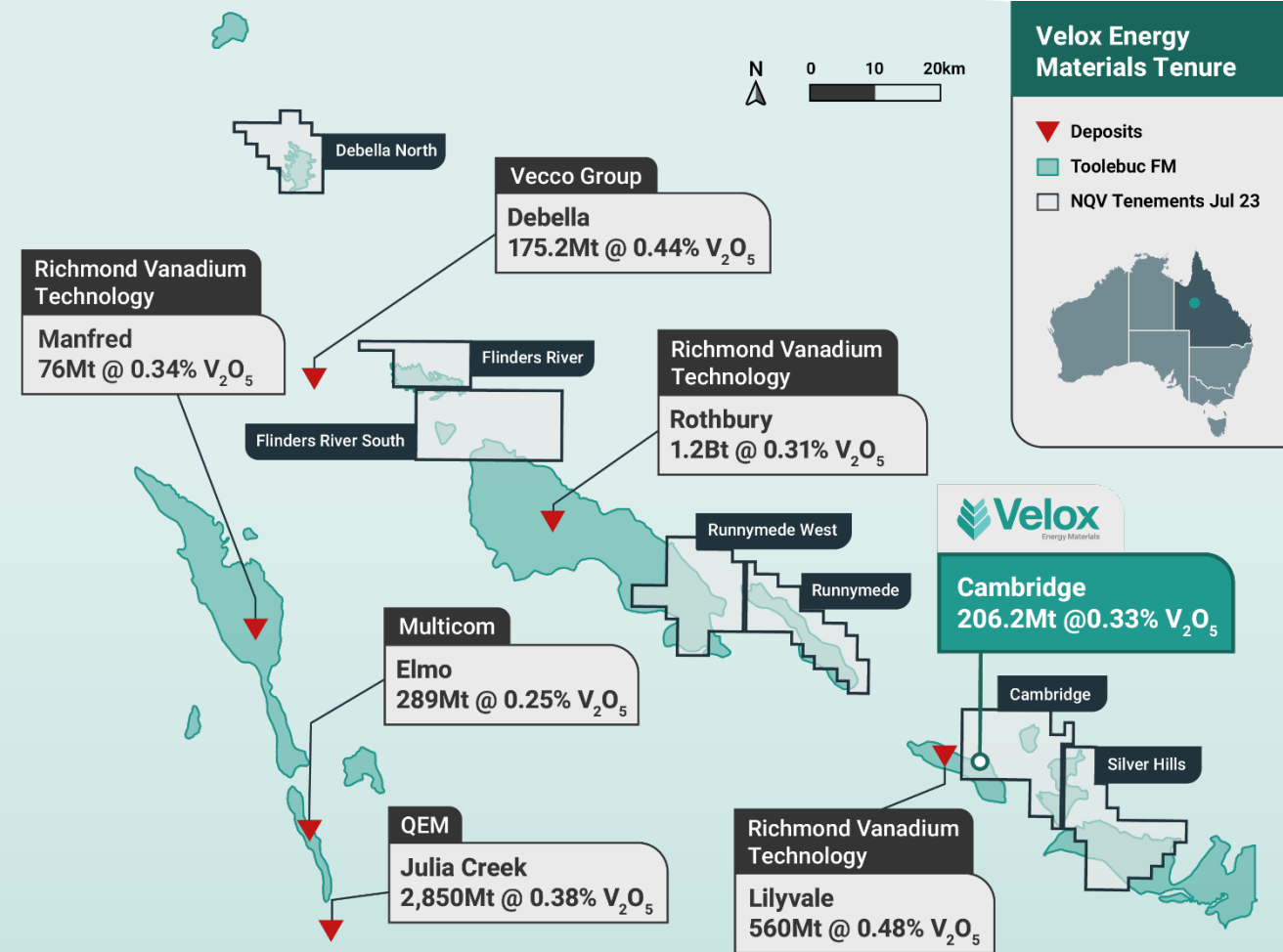
- **Cambridge Mineral Resource**
  - Recently drilled with results pending
- **Flinders River Exploration Target** – open to the north, south and east
- **Runnymede Prospect** – historic drilling confirmed

## Regional

- Silver Hills Prospect - wide spaced historic drill data
- Over 76km of mapped Toolebuc Fm – vanadium host rock
- Over 300km<sup>2</sup> of Toolebuc outcrop
- 100km<sup>2</sup> Toolebuc Fm in Runnymede - undrilled

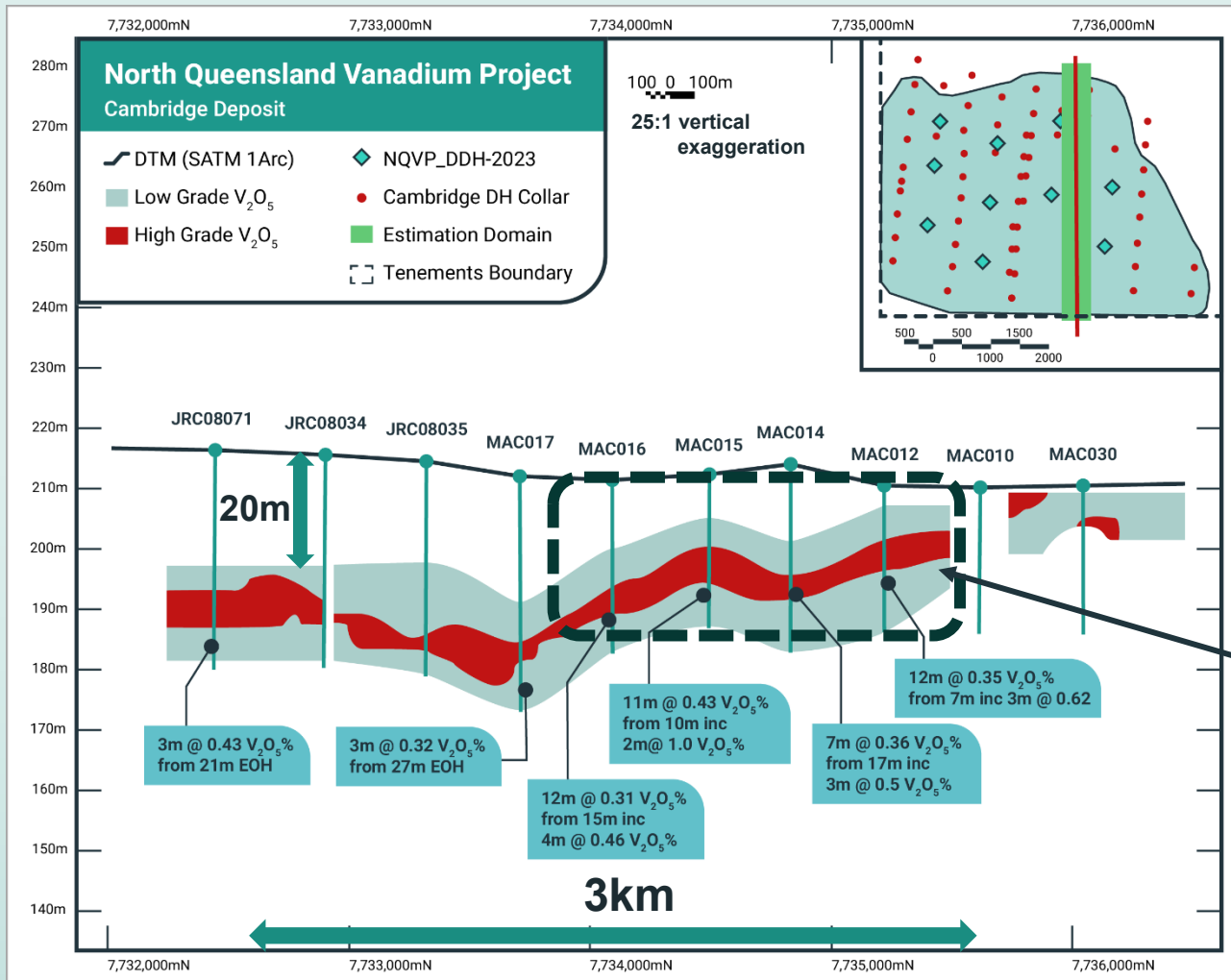
## Established Mineral Resources in Area

- Cambridge Vanadium Oxide Deposit – 206.2 Mt @ 0.33% V<sub>2</sub>O<sub>5</sub>
- Lilyvale Vanadium Oxide Deposit – 560 Mt @ 0.48% V<sub>2</sub>O<sub>5</sub>
- Rothbury Vanadium Oxide Deposit – 1.2 Bt @ 0.31% V<sub>2</sub>O<sub>5</sub>
- Debella Vanadium Oxide Deposit – 175.2 Mt @ 0.44% V<sub>2</sub>O<sub>5</sub>





# Cambridge Vanadium Deposit – Shallow, gently dipping oxide material



- Mineralisation outcrops on northern edge and dips shallowly to the south
- Mineralised zone generally contains a **higher-grade middle layer** with grades including:
  - MAC015 – **2m @ 1.0%  $V_2O_5$**  from 10m
  - MAC012 – **3m @ 0.62%  $V_2O_5$**  from 7m
- Focus will be optimising a mine development plan with low (<1:1) strip ratio and **higher average grade**

**Low strip ratio focus area**

# August 2023 Drill Program - Cambridge Vanadium Deposit

## Recent Activity – 100mm Core

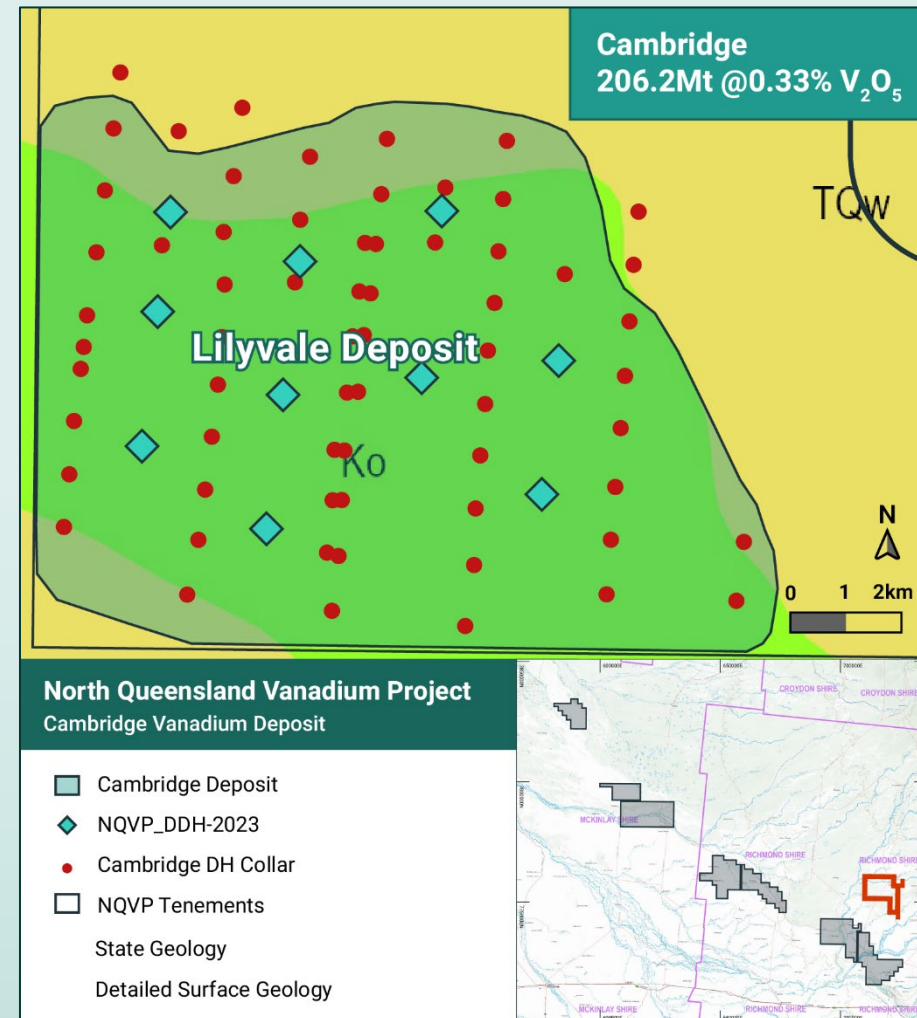
Ten-hole, multi-use program completed to provide sufficient sample for:

- Baseline metallurgical testwork, to enable flow sheet design
- Overburden and footwall studies
- Additional multi-element data
- Basic geotechnical data for mining studies
- Comprehensive stratigraphic data from detailed geological logging
- Downhole geophysical gamma and density logging
- Detailed mineralogy studies
- Water monitoring

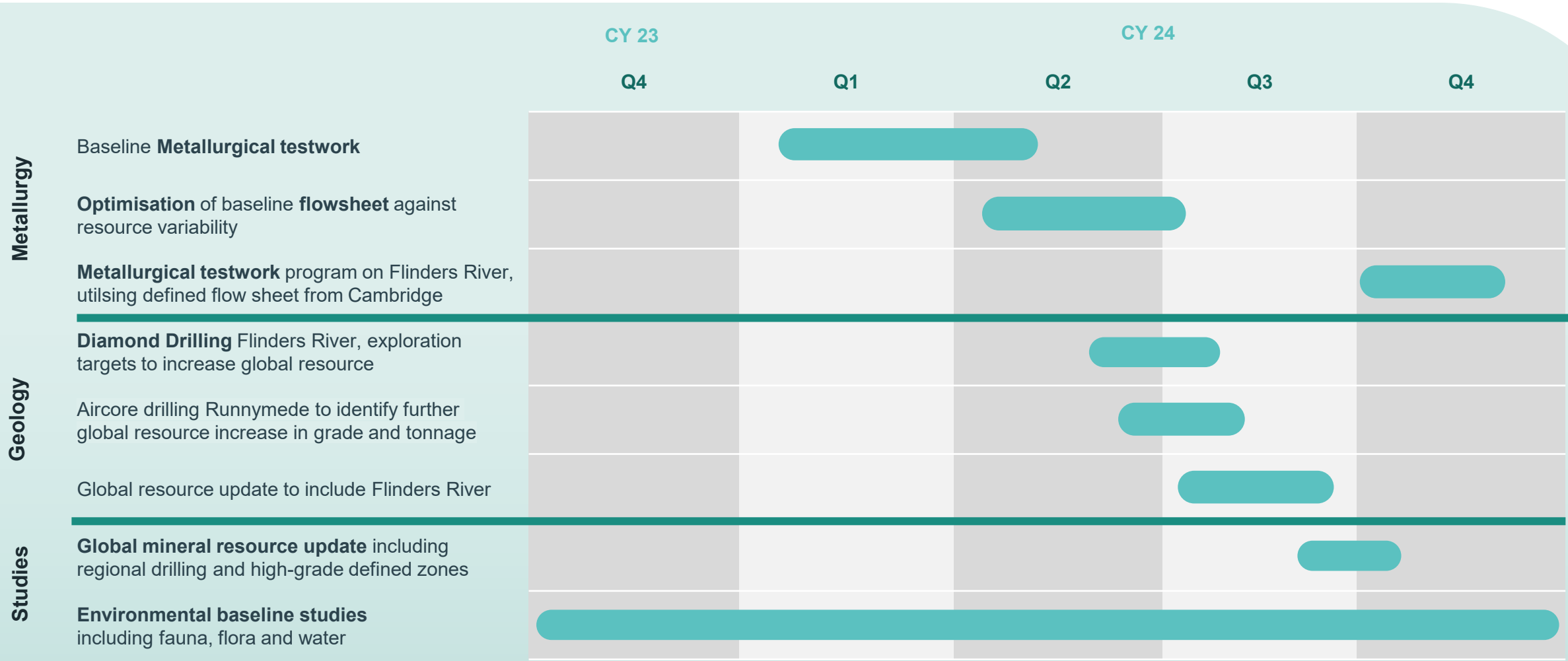
## Expected Outcomes

The drill results will be used to inform the following:

- Optimising a **low-strip ratio** mine plan
- Focus on the **higher grade** middle layer, targeting  $>0.45\% \text{V}_2\text{O}_5$



# Vanadium Project Timeline



# The Potential of Vanadium & Vanadium Redox Flow Batteries (VRFBs)



Elevated by governments as a **critical mineral** with an essential function in energy technologies



VRFB **grid scale electricity storage** and complimentary to large renewables



**Store and discharge** energy on an **industrial scale**. **Deep duration** storage and **complete drain**



**Long Life** span +20 years. **Recycled and restorable**



**Safe and non-flammable**



**Queensland Government** is accelerating the development of the Vanadium Industry

# Queensland Government Capitalising on New Economy Minerals

## Common User Demonstration Facility

- **\$75m committed**
- Industrial hub to trial production and support the development and extraction of Critical Minerals
- **First Priority Vanadium**

## Copperstring 2032

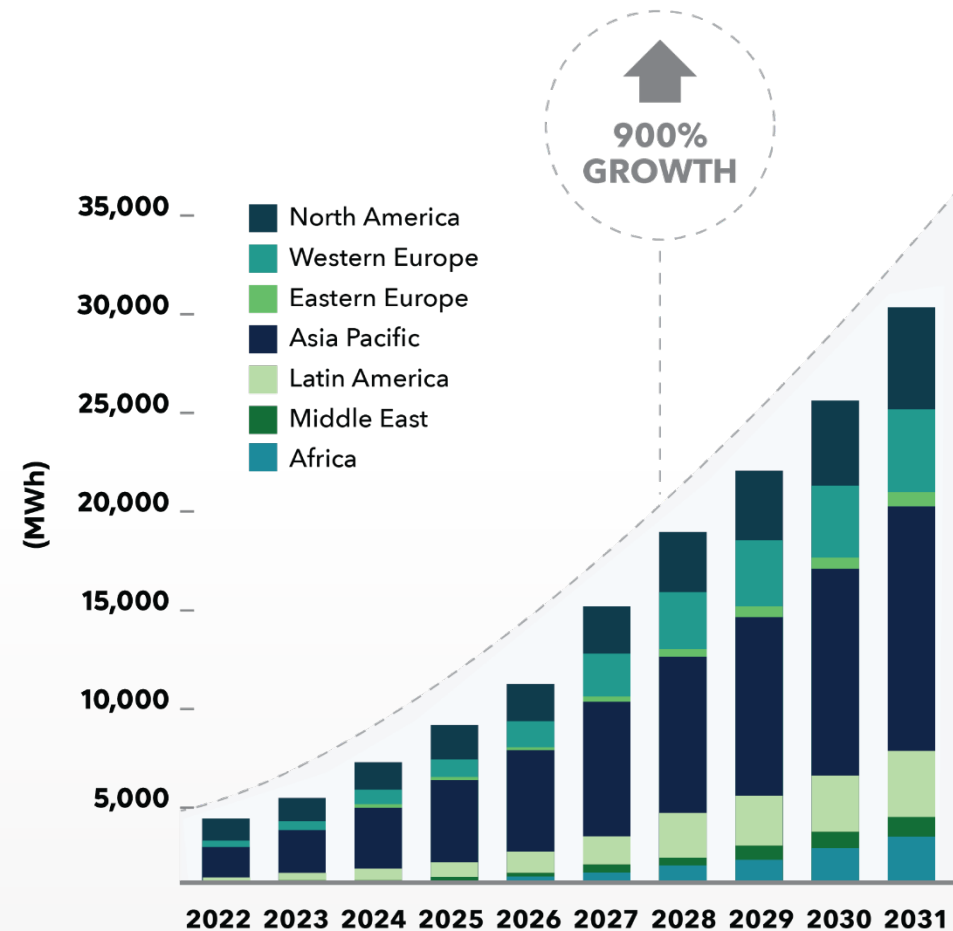
- **\$5bn investment**
- A 1,100 km high-voltage electricity transmission line
- Provides **energy certainty** to the region's burgeoning critical minerals sector

## Battery Manufacturing Facility

- **Funding** provided through the **Industry Partnership Program**
- Australia's first commercial vanadium flow battery electrolyte facility
- Nameplate production of 9 megalitres of electrolyte per annum

## National Battery Testing Centre

- **\$15m invested, leveraging to total \$50m**
- An essential part of ramping up battery manufacturing in Queensland
- Ensure the state is a **significant part of the supply chain** domestically and internationally



Source: Guidehouse Insights



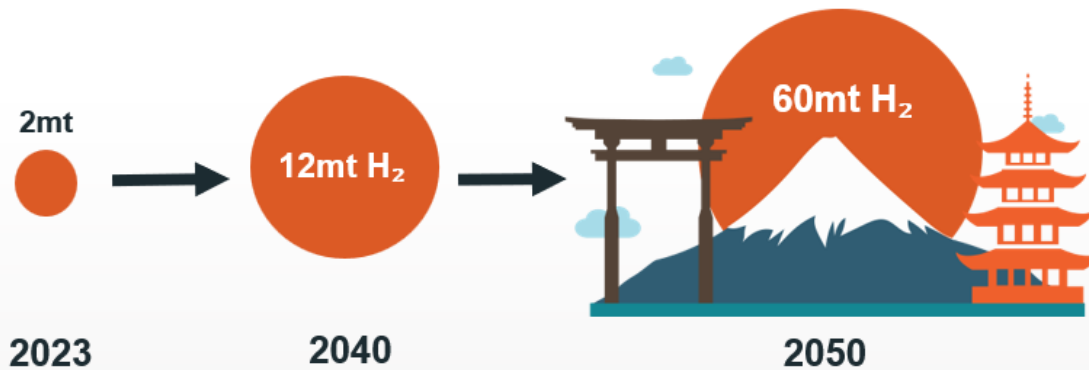
# Kotai Hydrogen Project

Partnering with hydrogen storage experts for the development of a **recyclable solid state hydrogen carrier** for the safe storage, transport and generation of hydrogen at high pressure

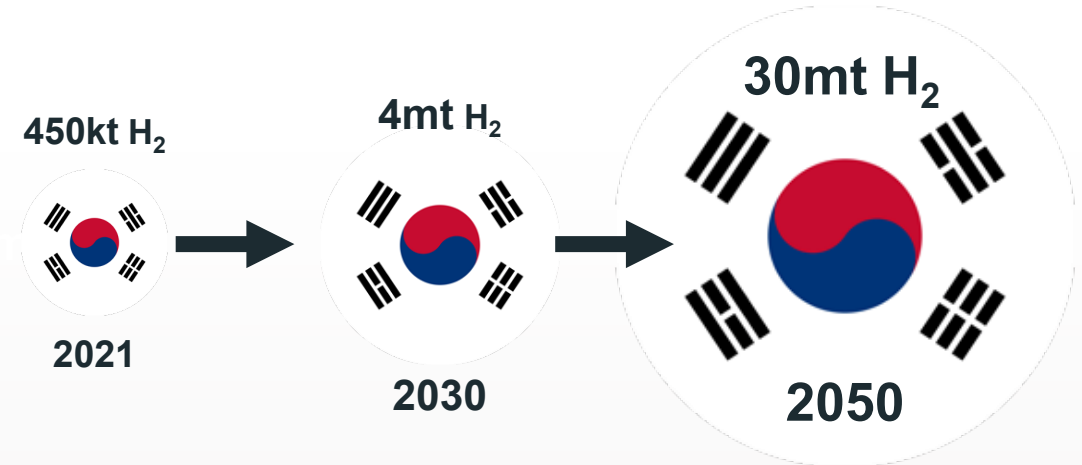
# Hydrogen Growth and Key Markets

Japan and Korea will be key future importers

Japan has ambitious emissions targets – Carbon Neutral by 2050 and 46% reduction in greenhouse gases by 2030



Korea is targeting carbon neutrality by 2050, and plans to source a third of its energy from hydrogen by 2050



## JAPAN:

Expected investment **US\$110bn** over 15 years  
Annual Revenue from H<sub>2</sub> in 2050 **US\$2.5 trillion**

## KOREA:

Majors including, Hyundai, SK, POSCO, Hanwha and Hyosung have committed **A\$46bn out of \$82bn** public-private investment into H<sub>2</sub> economy by 2030

# Hydrogen | Kotai Hydrogen Project

**The project is designed to advance a breakthrough hydrogen transport technology into commercial reality**

The fundamental science has been established by the team in precursor projects, which require further investment to integrate the science, engineering, and commercial aspects on a larger scale

The project involves the research, development and deployment of a new technology to export hydrogen as a powder. The powder is a salt called sodium borohydride that releases hydrogen when added to water

The project will focus on electrochemical production of sodium borohydride powder from sodium borate and various technical challenges to provide a circular hydrogen export value chain





# Sodium Borohydride as a Hydrogen Carrier

- »» A proven solid state H<sub>2</sub> rich storage
- »» Transportable inert powder
- »» Can be dissolved in water to release H<sub>2</sub>
- »» H<sub>2</sub> release process occurs at ambient temperature
- »» Generates hydrogen at high pressure

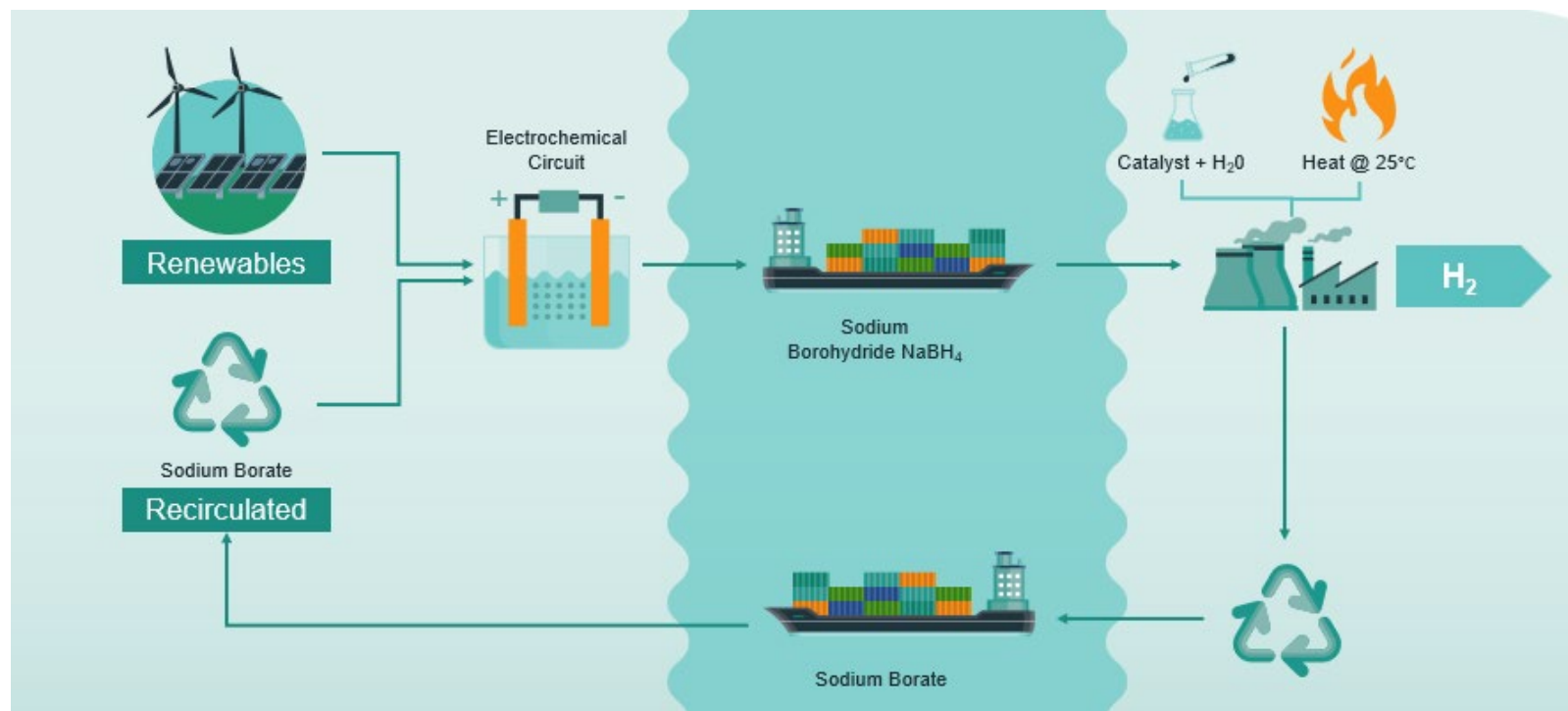
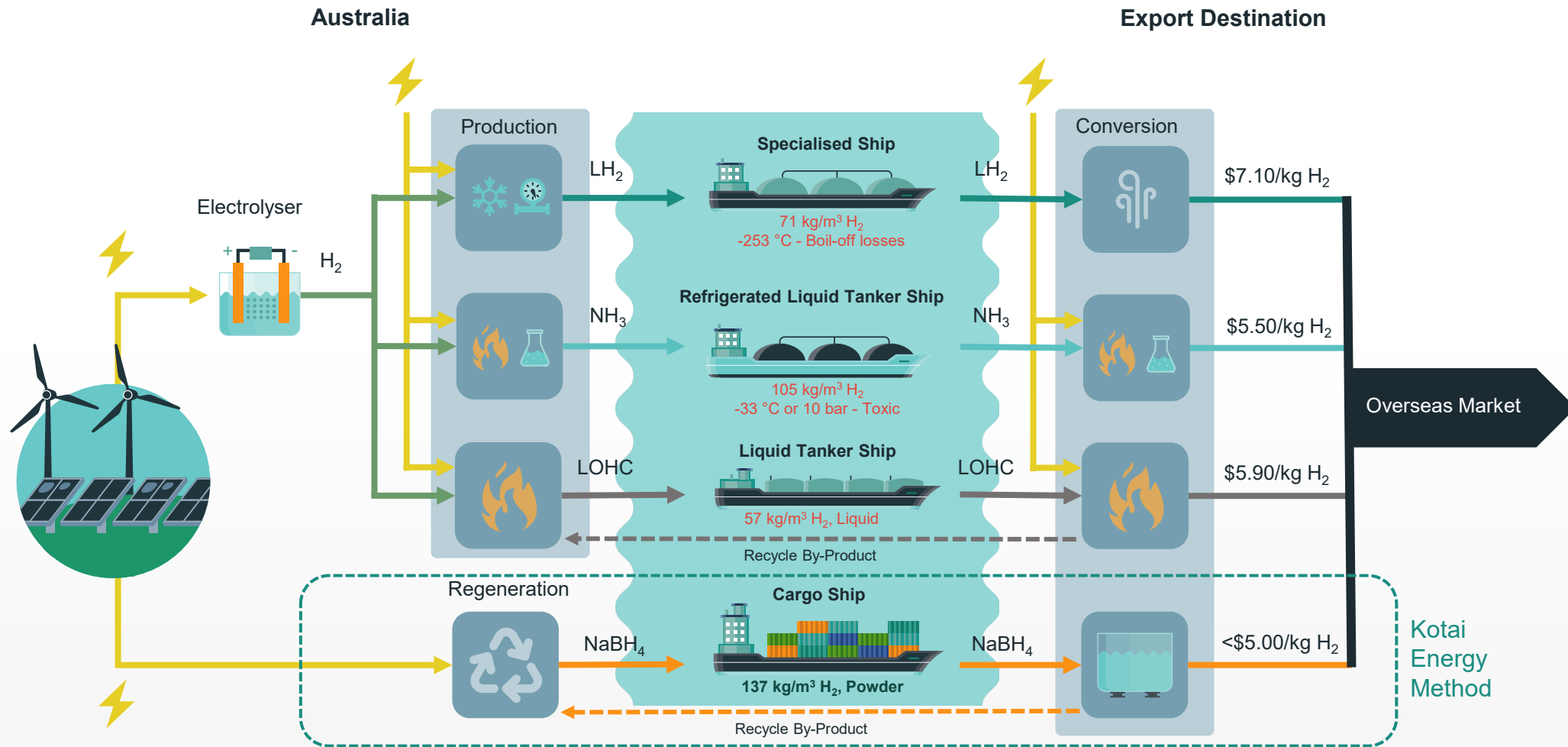


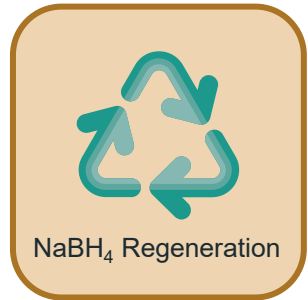
Figure 1: Comparison of different methods of hydrogen export, costs are in USD from 'The Future of Hydrogen' report prepared by the IEA. Production of hydrogen through electrolysis uses 54 kWh per kg H<sub>2</sub> at \$0.0685 USD per kWh. The theoretical cost for NaBH<sub>4</sub> is calculated using the same parameters but assuming electrochemical regeneration at 80% efficiency

# Favourable Comparison

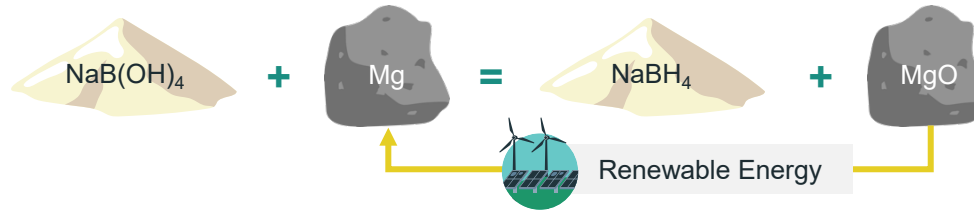
The Kotai Energy Method is cheaper, safer and regenerative



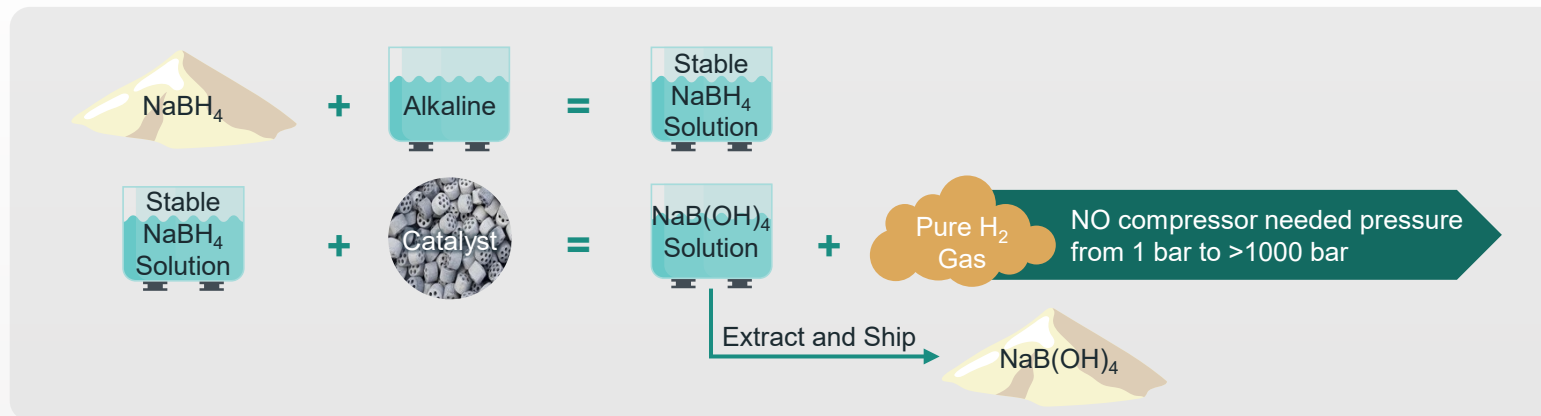
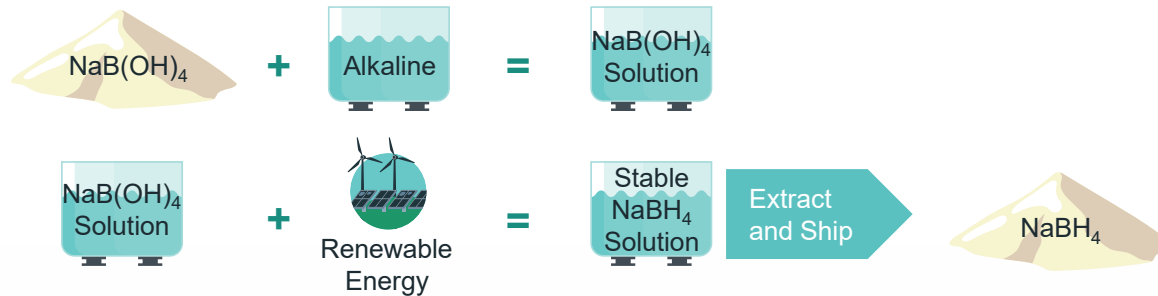
# Project Achievements to date



## Option 1 Thermochemical



## Option 2 Electrochemical



### Option 1: Thermochemical

- High yields (+99%)
- Pure NaBH<sub>4</sub> powder extracted and dried
- Screening of a raft of metals and conversion agents
- Screening over processing conditions

### Option 2: Electrochemical

- NaBH<sub>4</sub> produced
- Screening of catalysts and processing conditions
- Optimising for higher yields and electrical efficiency

### Hydrogen Generation

- High yields (+99%)
- Screening of catalysts and processing conditions
- High pressure evolved up to 1000 bar
- Multiple H<sub>2</sub> generation / NaBH<sub>4</sub> regeneration cycles undertaken

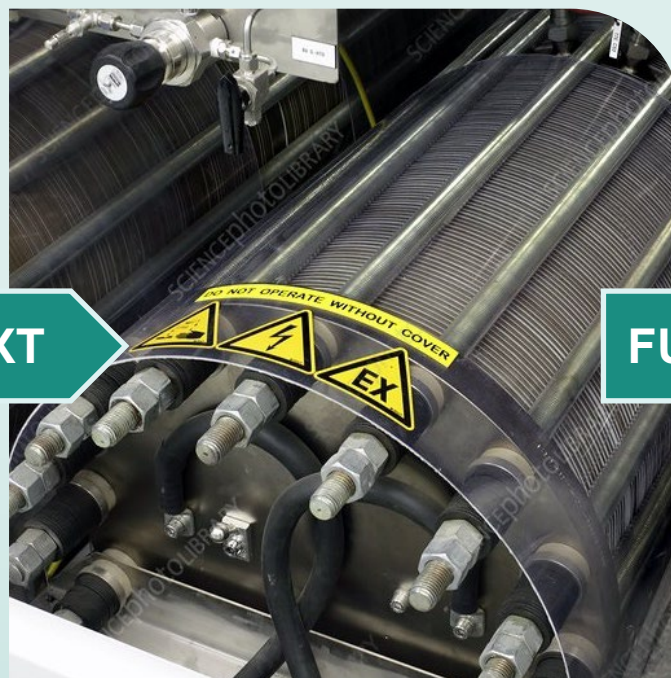
# Pathway to Commercialisation

## Current Project Stage



GRAM-SCALE

NEXT



KG-SCALE

FUTURE



TONNE-SCALE

# High Pressure Release of Hydrogen

## » High pressure release of hydrogen

With the addition of a catalyst, hydrogen can be **chemically compressed** during the H<sub>2</sub> generation phase with pressure levels up to **1,000 bar** possible

## » On-site, high pressure hydrogen

Process can generate high pressures on-site, for example, a vehicle fueling station could generate high pressure hydrogen requiring only a closed chamber

## » Utilising a recyclable catalyst

Using a catalyst that is readily available and doesn't deteriorate



# Key Future Milestones

## Milestone 1



Optimisation of electrochemistry at increasing scale

## Milestone 2



NaBH<sub>4</sub> processing

## Milestone 3



High pressure hydrogen generation

## Milestone 4



Design a pilot-scale production plant (Facility 1)

## Milestone 5



Design a pilot-scale plant for hydrogen gas release

## Milestone 6



Construct and commission the two facilities in the pilot-scale

## Milestone 7



Optimise the pilot-scale facilities

# Funding Model & Technical Team

## Technical Team

### Prof Craig Buckley

The Australian expert on the International Energy Agency Hydrogen Implementing Agreement Technology Collaboration Program (TCP) Task 40 (Energy storage conversion based on hydrogen); Australian Executive Committee member on the IEA Hydrogen TCP

### Ass. Prof Mark Paskervicius

Senior Research Fellow in the Fuels and Energy Technology Institute, focused on renewable energy storage and developing new materials for solid-state hydrogen storage

### Dr Peter O Conghaile

Research Fellow at the Faculty of Science and Engineering Curtin University specialising in bioelectrochemistry. Dr O Conghaile is an electrochemist with a focus on fuel cell and sensor applications

## Funding Model

### Grant 1

Total Funding: \$1.85M  
Duration: 4 Years  
Remaining: 6 Months



Australian Government  
Australian Research Council



### Grant 2

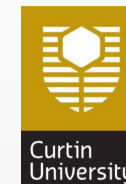
Total Funding: \$1.7M  
Duration: 5 Years  
Remaining: 4 Years



GlobH2E  
ARC Industrial Transformation Training Centre  
for the Global Hydrogen Economy



Australian Government  
Australian Research Council





# Lake Pierre Lithium Project

Exploring for LCT pegmatites in  
lithium rich Quebec





# Lake Pierre Lithium Project

## ▶▶▶ Pegmatites in known lithium region

- Pegmatites recorded in historic diamond drilling
- Never assayed for lithium
- Neighbouring properties contain LCT\* pegmatites

## ▶▶▶ Pilbara (Moolyella-style) mineralisation targets

- Granite stacked pegmatites of similar Archean age to Moolyella (Pilbara) are present
- Regional scale structures are visible in aeromagnetics

## ▶▶▶ Close to infrastructure

- The project is located approximately 50km from the port city of Havre Saint Pierre
- It is situated in a mining region with a nearby Rio Tinto Iron & Titanium mine
- There is a newly established hydroelectricity plant approximately 30km from the project

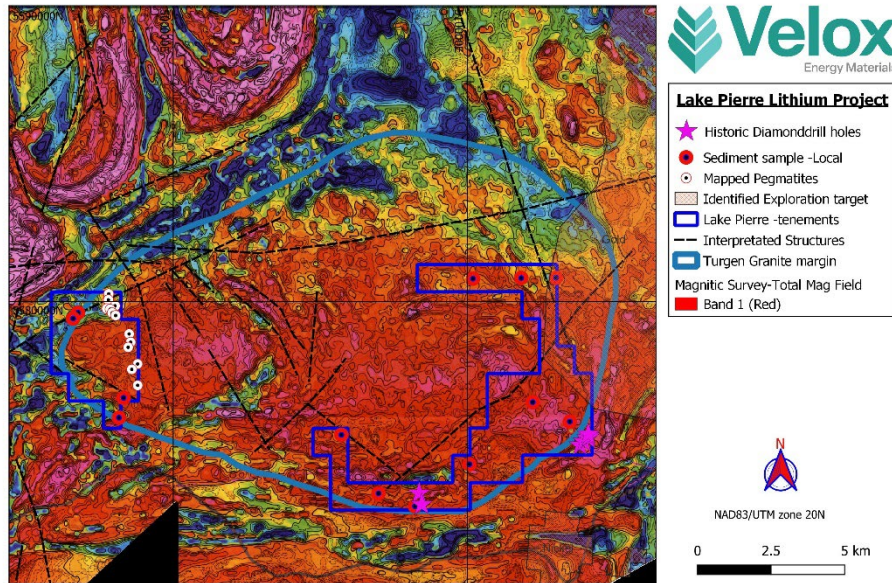
## ▶▶▶ Uranium Potential

- The Turgeon Granite has been known for a long time as a potential host for uranium deposits of Rössing type. There is an interpreted uranium high in the northeast part of the Lac Pierre claims that will be further investigated through 2024

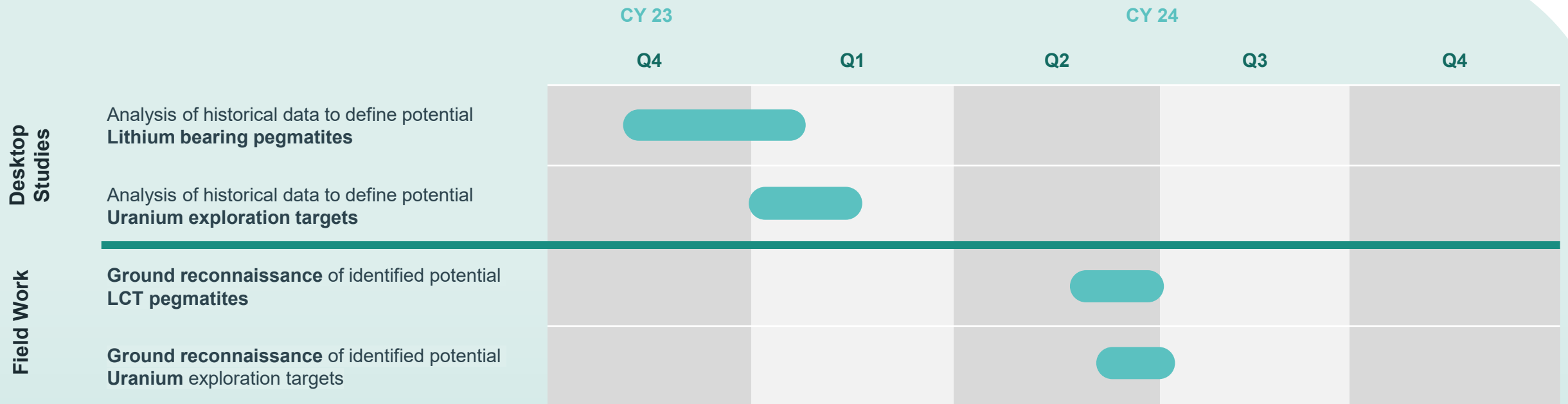


# Lake Pierre Lithium Project

- Historic drilling in south-west of the project area only
- High-resolution magnetics showing prominent Pilbara type granitic intrusions
- Strong north-west crustal structures visible in aeromagnetics
- Ground reconnaissance to occur during CY2024 to further enhance the potential of Lithium and Uranium within the permits



# Lake Pierre Project Timeline



# Our Environment, Social, Governance (ESG) Commitments



## Environment

- Developing projects supporting the global transition to a net-zero economy
- Support government emissions reduction targets
- Identify and implement sustainable mining practises and materials traceability
- Responsibly manage environmental risks, impacts and opportunities

## Social

- Contribute to local economic development through employment opportunities and engagement with local service providers
- Support community development initiatives through sponsorship
- Promote a diverse and inclusive workforce across all aspects of the business

## Governance

- Maintain and promote ethical and responsible business conduct
- Strengthen corporate governance and risk management processes
- Disclose corporate ESG performance accurately, transparently and in a timely manner aligned with international reporting standards

# Environment, Social, Governance (ESG) Planning



Velox Energy Materials will contribute to sustainable development by combining resources and innovation, we will advance the transition to a low-carbon future through transparent governance, genuine engagement and efficient use of resources

## PHASE 1 – Materiality

Objective: Assess sustainability landscape to define project scope and priorities

### Stakeholders and materiality

1. Project drivers and ambition
2. Stakeholder mapping
3. Materiality assessment

### ESG governance

1. Internal scoping and review of current policies and standards
2. Stakeholder inputs
3. Policy development

Stakeholder map & material topics

## PHASE 2 – Strategic Planning

Objective: Establish current level of sustainability activities at Velox and future state ambition

### Benchmarking

1. Analysis of key strategic elements including strategy, mission and values, and ensure alignment with key governance structures. Agreement of sustainability ambition
2. Review of peer ESG and sustainability performance
3. Assessment of relevant global frameworks

### Roadmap and strategy

1. Development of strategic ESG roadmap

Gap analysis & ESG roadmap

## PHASE 3 – Communications

Objective: Transparently communicate sustainability performance to stakeholders

### Communication delivery

1. Data identification, collection and reporting, including goal & target setting
2. Alignment with external bodies/standards
3. Production of appropriate sustainability communications including
  - ASX releases
  - Corporate presentations
  - Velox website
  - Annual Report
  - Sustainability Report

Communications on progress & performance

## Why Invest in Velox?



Leading diversified energy materials Company with projects that the potential to **disrupt established markets**



Globally significant vanadium project in **Tier 1 QLD location** targeting a low-cost mine development



Exposure to a **grant funded hydrogen research project** with large scale global hydrogen storage potential



Lithium and uranium exploration in Quebec with **identified pegmatites** with a favourable geological setting



Highly credentialed team with corporate and operational **battery materials experience**

**Velox Energy Materials is a diversified energy materials company focused on the global decarbonization initiative**



TSXV:**VLX**

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President & CEO

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