Webinar Presentation: ION's Battery Recycling PFS

Iondrive Limited (ASX: ION) (Iondrive or the Company) is pleased to provide a copy of the presentation being provided at a Webinar commencing today at 12pm AEDT. At the webinar, the Company's CEO, Dr Ebbe Dommisse, will present the Company's latest developments following the finalisation of the PFS activities for its DES battery recycling technology.

Authorised for release by the Board of Iondrive Limited.

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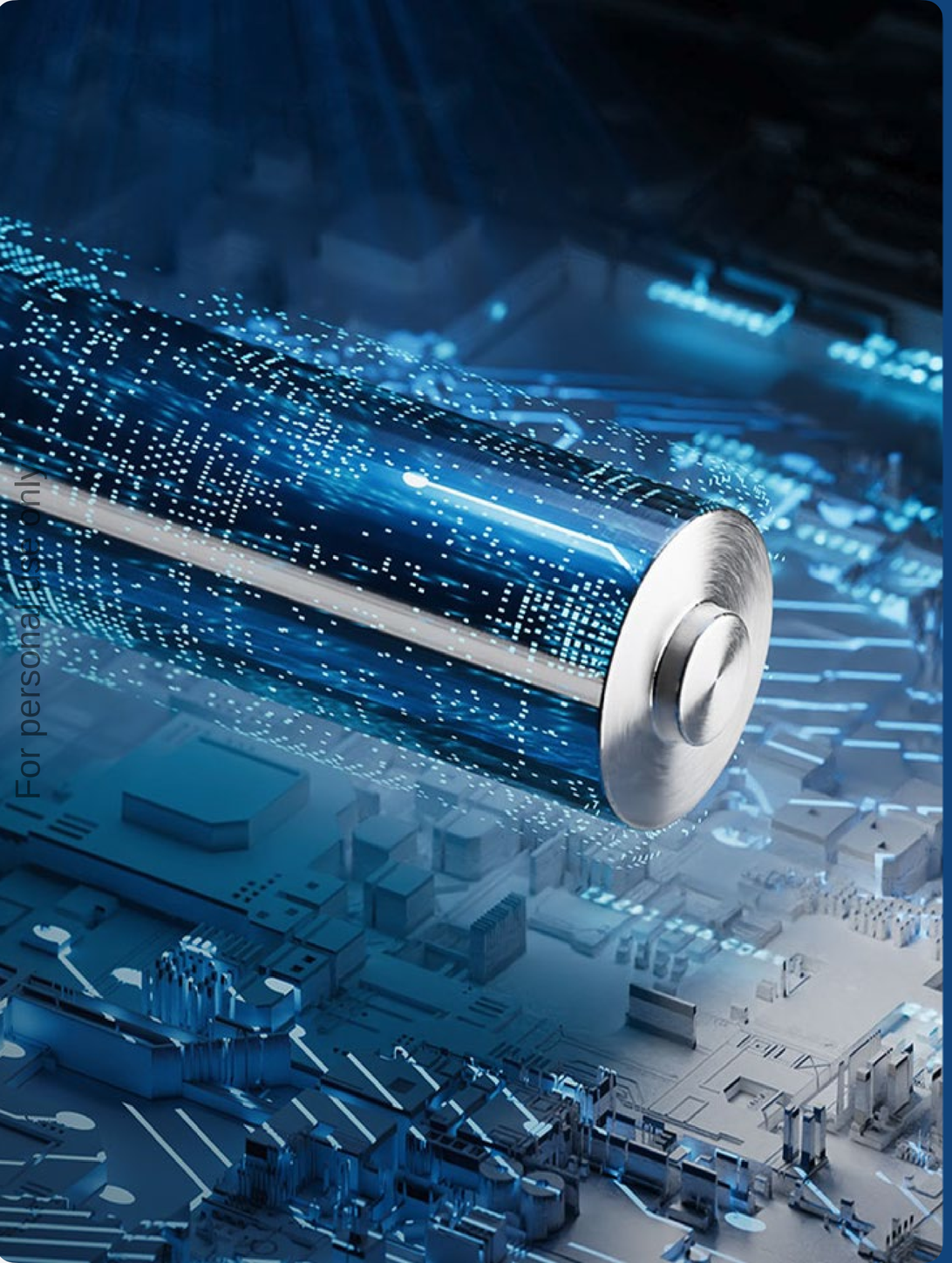
Iondrive Limited: Company Profile

Iondrive is an emerging leader in battery recycling technology, listed on the Australian Securities Exchange (ASX ticker "ION"). The company's primary focus is on developing and commercialising innovative solutions for lithium battery recycling. Iondrive's Hydrometallurgical Battery Recycling project employs a patented, environmentally safe solvent to gently separate critical components from used batteries, providing a safer and more efficient alternative to traditional methods.

In addition to its battery recycling initiatives, Iondrive holds exclusive worldwide licenses from the University of Adelaide for next-generation battery technologies, including an enhanced performance non-flammable lithium-ion based battery and a low-cost, high cycle life water-based battery.

While the main emphasis is on battery technology, Iondrive also maintains a portfolio of exploration projects in South Korea, focusing on lithium. Backed by a first-class technical team, Iondrive is dedicated to advancing sustainable battery technologies and contributing to the circular economy in both Europe and Australia.



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INVESTOR WEBINAR:

Pre-Feasibility Study – Greener and Cheaper Battery Recycling Technology

November 2024

Disclaimer

Forward looking statements

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ASX Announcements

The Company recommends that this presentation is read in conjunction with its relevant ASX Announcements – in particular the announcement of 1 November 2024

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Agenda

01 Background

02 PFS Update

03 Technology De-risking

04 Commercial De-risking

05 Conclusions & Next Steps

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01

Background

Powering the Future of Sustainable Battery Recycling

Huge Market Opportunity

- Global battery recycling demand is forecast to grow 25% annually, reaching 11 million tonnes of black mass by 2040.
- EU regulatory tailwinds, including the Batteries Regulation, will drive demand for recycled materials, requiring 25% of critical minerals to be sourced from recycling by 2030.

Innovative, Green Technology

- Iondrive's patented Deep Eutectic Solvent (DES) process offers an environmentally friendly solution to extract critical minerals from lithium-ion batteries.
- The DES process minimises toxic waste, reducing both environmental impact and operating costs, compared to traditional methods.

Positive Trial Results & De-Risking

- Large-scale trials at the University of Adelaide and independent validation by IMO Perth show high recovery rates with scalable results, confirming the DES process's commercial potential.
- Pre-Feasibility Study completed October 2024.

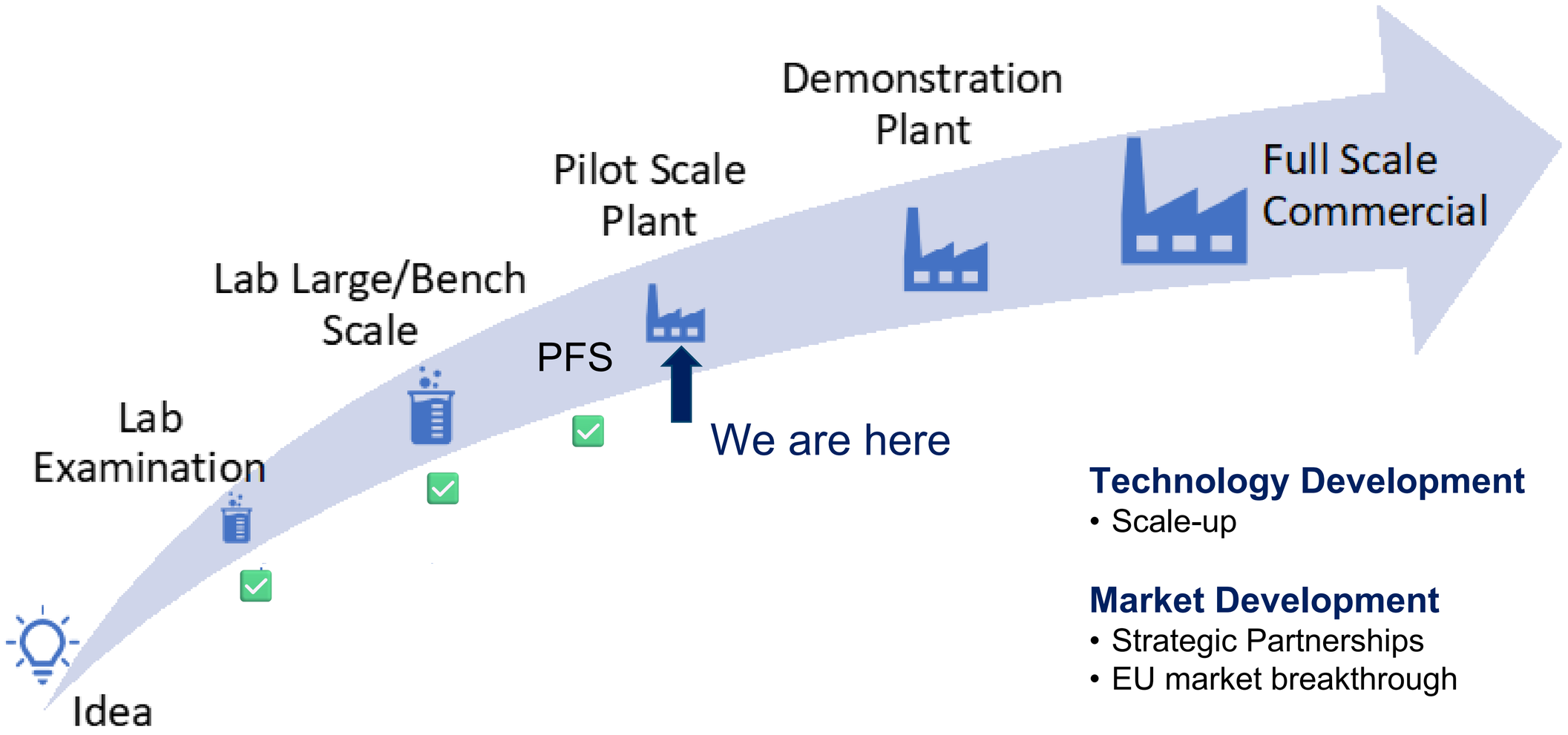
Strong Industry Partnerships

- Collaboration with PEM RWTH Aachen University to commercialise recycling technology in Europe, aligning with EU regulatory demands for battery recycling and sustainable practices.

Well-Funded for Growth with Strong Support from Key Investors

- Iondrive is well-capitalised with $3M in the bank (30 Sept + RDTI received Oct) and strong backing from cornerstone investors, Strata Investment Holdings and Ilwella Pty Ltd, positioning the company to prepare for the Pilot Plant stage.

Commercialisation Pathway



Technology Development
- Scale-up

Market Development
- Strategic Partnerships
- EU market breakthrough

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02

PFS Update

DES Development Pathway

PFS OBJECTIVES

- **Techno-Economic Evaluation**: Technical Feasibility and Economic Viability of DES process
- **Decision Point:** Go/No Go gate for progressing to Pilot Plant stage

PFS De-risking Activities

Complete In Progress Pending

Iondrive has **completed** the Pre-feasibility Study on Schedule in **October 2024.** The PFS is a **Techno-Economic Evaluation** focusing on technological, commercial, and executional de-risking strategies. These de-risking activities ensure a strong foundation for successfully executing the commercialisation pathway for our recycling technology.

Technology

- ✅ Process Technology Review (**Lycopodium**)
- ✅ Large-scale bench trials and 3'rd party validation trials (**IMO**)
- ✅ High-level process engineering design of 10,000 tpa black mass plant (**Wood**)
- ✅ Value Engineering + Solvent Recovery (**Koch Modular**)
- ✅ Cost estimation – Capex/Opex (**Wood**)

Commercial

- ✅ Market Research Study (**Rho Motion**)
- 🟢 Economic Modelling
- ✅ Benchmarking 10,000 tpa plant (**PEM**)
- ✅ Cost driver deltas
- ✅ Competitor Analysis (**PEM**)

Execution

- 🟢 Stage-gate project execution model + ISO56000 Innovation Management System
- 🟢 Team & Staff

Strategic Partnerships

- 🟢 Strategic industry partnerships in EU
- 🟡 Technology partnerships - equipment & engineering
- 🟢 MOUs & LOIs for consortium participation
- 🟡 Explore supply and off-take agreements* (Consortia)

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03

Technology De-Risking

Large-scale Trials

Battery Minerals	Total Recovery			
	Pretreated Black Mass	Raw Black Mass	IMO[1] pCAM	UoA pCAM
Lithium	89.1%	82.9%	NA	NA
Nickel	100.0%	88.5%	98.3%	97.6%
Cobalt	98.6%	96.5%	98.6%	97.6%
Manganese	98.4%	94.4%	84.6%	87.7%

Full Scale Commercial

Key Insights

- New Pre-treatment process – Removes impurities very well & improves Robustness for mixed black mass
- Very high Total Recoveries vs. Conventional hydromet processes
- [1] Independent 3'd party validation (IMO, Perth)
- <2% Solvent Losses – highlighting efficiencies
- Proof that the Chemistry Scales – supporting commercial development

Engineering Studies

Wood Concept Study[a]

- Designed for 18,000 tpa raw black mass, yielding 10,000 tpa treated black mass with battery-grade materials.
- Utilises inputs from large-scale bench trials to develop a Process Flowsheet targeting 99% purity (excl. pre-treatment stage).
- Capex and Opex estimations are within ±50%, indicating competitive positioning.
- Noted advantage: "*Iondrive showing the competition tail lights*," according to Wood.

Koch Modular Concept Study[b]

- Specific focus on Solvent Recoveries
- Developed a Process Flowsheet to +99% purities (if required)
- Confirmed technically feasible Process Configuration
- Capex estimations (±50%)

Full Scale
Commercial

[a] *Wood PFS Report (internal report)*

[b] *Koch Modular PFS Report (internal report)*

Conclusions

- Chemistry Scales
- Higher metals recoveries than conventional hydromet
- High solvent recoveries with environmentally acceptable solvents
- Technically Feasible
- Capex and Opex highly competitive
- Now an engineering challenge to design a commercially viable process

- <u>Next Steps:</u>
  - Pilot Plant to progress:
    - TRL 4 to TRL 6
    - Batch to Continuous Integrated process
    - Reflective of commercial operation
  - Wood Concept Study for Pretreatment Process

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04

Commercial De-Risking

PEM Benchmarking Study[c]

Objectives

- Evaluation of ION's DES process economics with a similar-sized conventional hydromet LiB recycling process in EU
- Comparison of Capex and Opex (WOOD Study vs PEM's database), and Revenues

Results[d]

Item	ION DES	ION DES +30%[1]	Competition	ION 2035
Revenue	€7,158/t	€7,158/t	€6,489/t	€15,132/t
Opex[2]	€4,096/t	€4,981/t	€4,667/t	€4,096/t
EBITDA[2]	€3,061/t	€2,177/t	€1,822/t	€11,036/t
Capex	€10,144/t	€12,911/t	€20,218/t	€10,144/t

- Normalised to €/tonne black mass
- [1] Assuming a +30% increase[d] in Capex and Opex to allow for Pretreatment Plant
- [2] Excluding cost of black mass
- ION's DES Process very competitive on Capex and parity on Opex for Pretreatment Process included
- DES Process' Sales Revenue higher than competition (product mix)

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[c] *PEM Aachen University PFS Report (internal report)*

[d] *ION internal economic modelling to be updated with 3'd party independent modelling*

Conclusions

- **Commercial Competitiveness**: Capex is 36% lower than competitors, with Opex at parity.
- **Profitability**: The DES process is more cost-effective than EU competitors, with profitability expected to grow as commodity prices rise.

Next Steps:

- Independent third-party economic modelling to assess NPVs and IRRs across scenarios.
- Develop future pricing models using Benchmark Minerals Intelligence for both product and black mass pricing.

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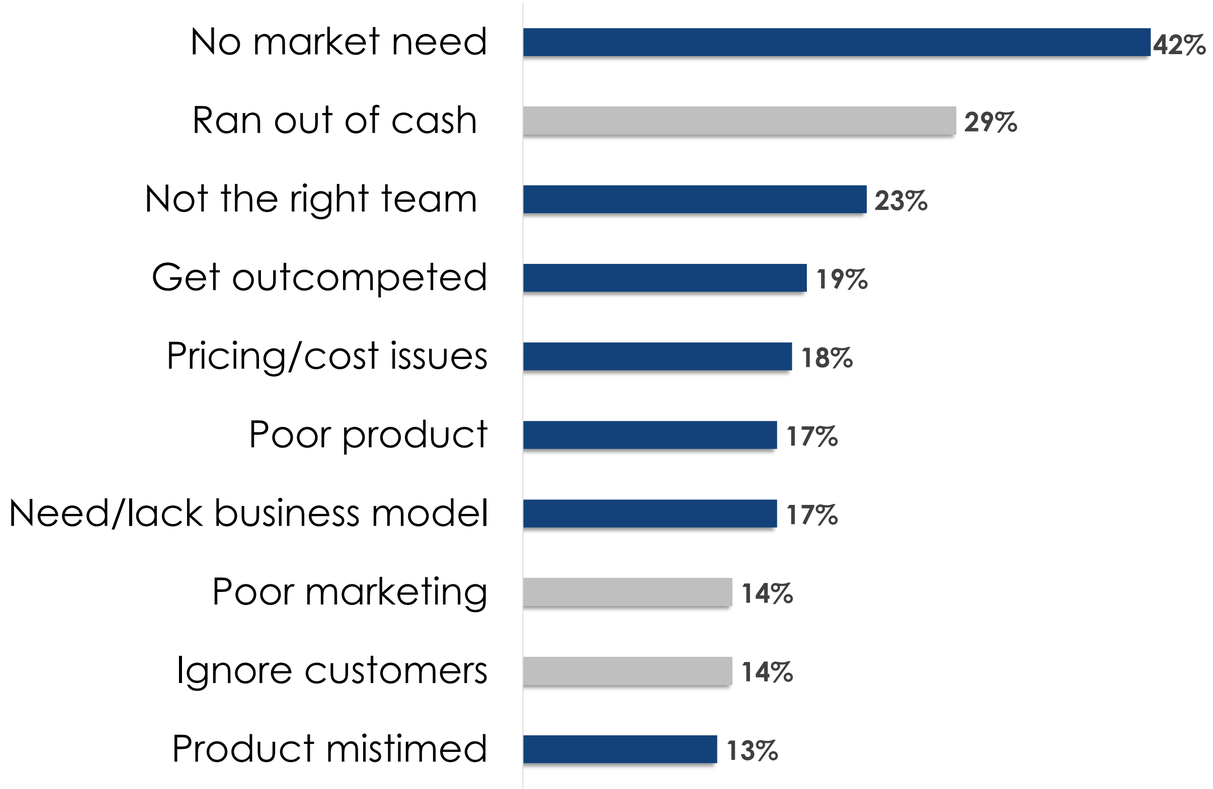
05

PFS Conclusions

Strategic Industry Partnerships – De-Risking Strategy

We are forming strategic partnerships to DE -RISK commercialisation (PEM Motion)

TOP 10 REASONS FOR STARTUP FAILURE



DE-RISK INVESTMENT DECISIONS

- Market Competitiveness
- Technology Innovation
- Product Scalability
- Team Experience
- Customer Demands
- Regulatory Requirements

PEM MOTION

PEM Motion, LinkedIn, August 2024

PFS CONCLUSIONS – Greener and Cheaper

TECHNOLOGY

- DES Process shown to be **Technically Feasible**
- **Compelling Environmental Value Proposition**

ISO 56,000 Dashboard	Score
Feasibility (Technology)	High
Viability (Commercial)	High
Desirability (Market)	High

COMMERCIAL

- Benchmarking showed that DES process is **Commercially Viable** and **Competitive (**Capex + Opex vs competition)
- **Increasing Profitability** over time with commodity price increases

MARKET

- Rho Motion Study highlighted the **Attractiveness of the EU Market** for novel process for battery recycling
- PEM Competitor Analysis showed detailed landscape of competitors in EU and concluded that **advantage for early mover** to **capture market share** before anticipated consolidation
- Industry Partnerships with PEM and TNO underlining the attractiveness of DES Technology in EU to **secure early mover advantage**
- PEM Consortium the **breakthrough to establish foothold in EU market**

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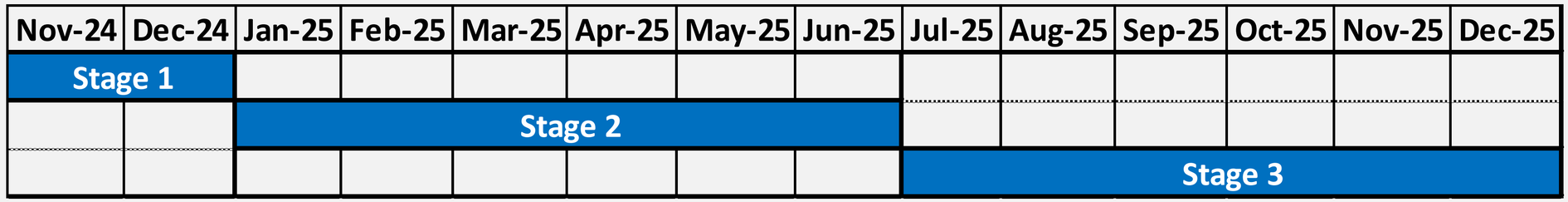
Next Steps

- Proceeding to Pilot Plant stage
- Wood Concept Study for Pretreatment Process
- Independent Economic Modelling to develop NPVs and IRRs to evaluate Business Case(s) for scenarios
- Pursuing non-dilutive Funding grants etc in AUS + EU (noting that backed by strong investor support)

Pilot Plant Development Schedule



Stage 1: Pilot Plant preparatory experiments
Stage 2: Pilot plant semi-continuous unit operations
Stage 3: Integrated continuous Pilot Plant