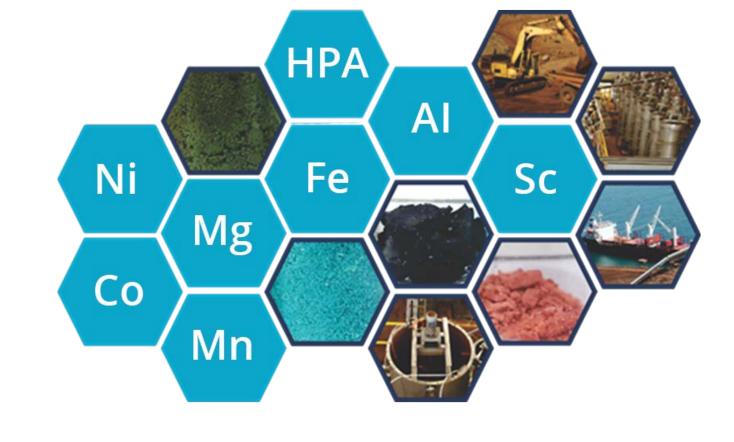


NWR Communications Virtual Small Cap Resources Conference

May 2020

ASX: PM1





Developing innovative processing technologies to produce nickel sulphate, cobalt sulphate and High Purity Alumina

## **Corporate Overview**



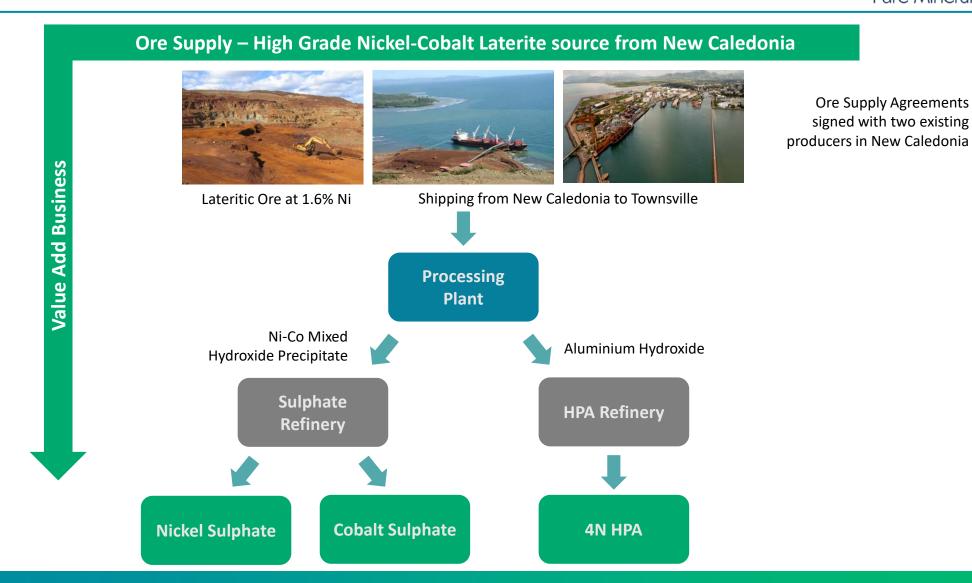
Pro Forma Capital Structure				
Shares	628.2 million			
Options (3 ¢, 21 May 2022) Options (3 ¢, 21 Dec 2023)	40 million 30 million			
Share Price	\$0.014			
Market Capitalisation	\$8.8 million			
Pro Forma Cash (31 Mar 2020)	\$1.36 million			
Federal Government Grant R&D Facility	\$2.55 million \$0.58 million			

Board & Management				
Eddie King	Non-Executive Chairman			
John Downie	Managing Director			
Andrew Matheson	Non-Executive Director			
Cameron McLean	Non-Executive Director			



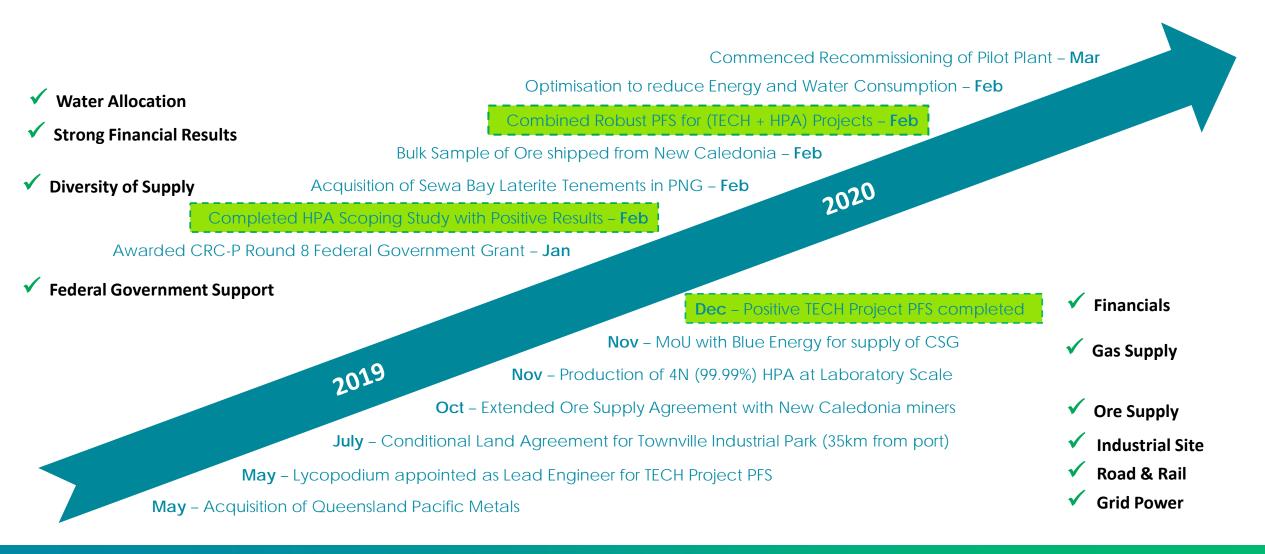
## The PM1 Proposition – Townsville Energy Chemicals Hub (TECH)





### Achievements over the last twelve months





## Updated PFS - Base Case EBITDA of AUD 261m

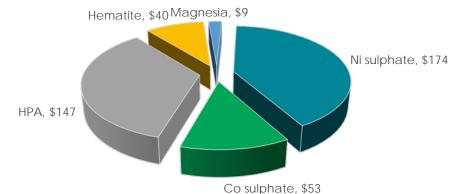


Key Physical Outputs				
	Annual Production (t)			
Nickel Sulphate	26,400 t			
Cobalt Sulphate	3,100 t			
High Purity Alumina (4N) HPA	4,000 t			
Hematite	327,700 t			
Magnesia	20,100 t			

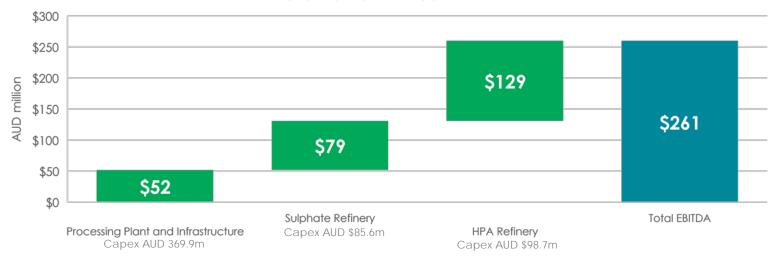
Capital and Operating Costs				
	Assumed 0.68 AUD:USD			
Capex (excluding contingency)	AUD 554m			
Contingency	AUD 96m			
Operating Expenditure	AUD 163m/a			

Key Metric	Units	Base Case	Spot Case
Nickel Price	US\$/lb	7.00	5.70
Nickel Sulphate Premium	US\$/Ib	2.00	2.00
Cobalt Price	US\$/lb	25.00	14.15
HPA Price	US\$/t	25,000	20,000
EBITDA	AUD (m)	261	211
Post Tax NPV	AUD (m)	1,470	1,080
Post Tax IRR	%	30.7	24.9
Capital Payback	Years	3.5	4.25

#### Revenue Split in AUD million



#### Incremental Annual EBITDA

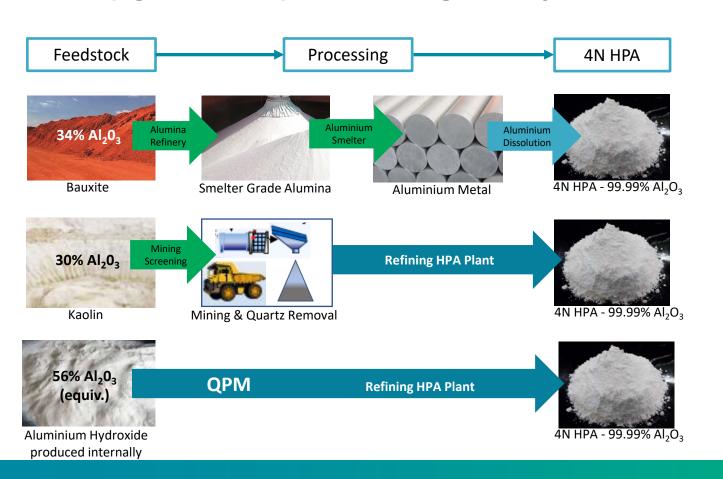


For further information regarding the Updated PFS, please refer to the Company's ASX announcement on 7 April 2020\*

### **HPA**: Best in the Business



# Project Economics Significantly Boosted with Aluminum Hydroxide Co-Product Upgraded to produce High Purity Alumina HPA (4N) in lowest cost quartile



CRU<sup>1</sup> forecast 272,000 tpa of HPA demand by 2028 (i.e. 30% CAGR<sup>2</sup> demand growth by 2028)

- Future LED<sup>3</sup> markets will require higher quality HPA
- LIB<sup>4</sup>'s separators demand 187,000 tpa by 2028
- LED's demand forecast 85,000 tpa by 2028
- Significant supply deficit forecast

<sup>&</sup>lt;sup>1</sup> Commodity Research Unit (CRU) market analysts

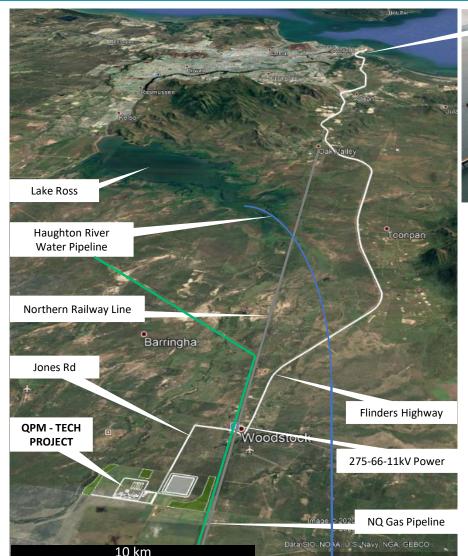
<sup>&</sup>lt;sup>2</sup> Compound Annual Growth Rate (CAGR)

<sup>&</sup>lt;sup>3</sup> Light Emitting Diode (LED)

<sup>&</sup>lt;sup>4</sup> Lithium-Ion Batteries (LIB)

## Ideal Infrastructure Setting



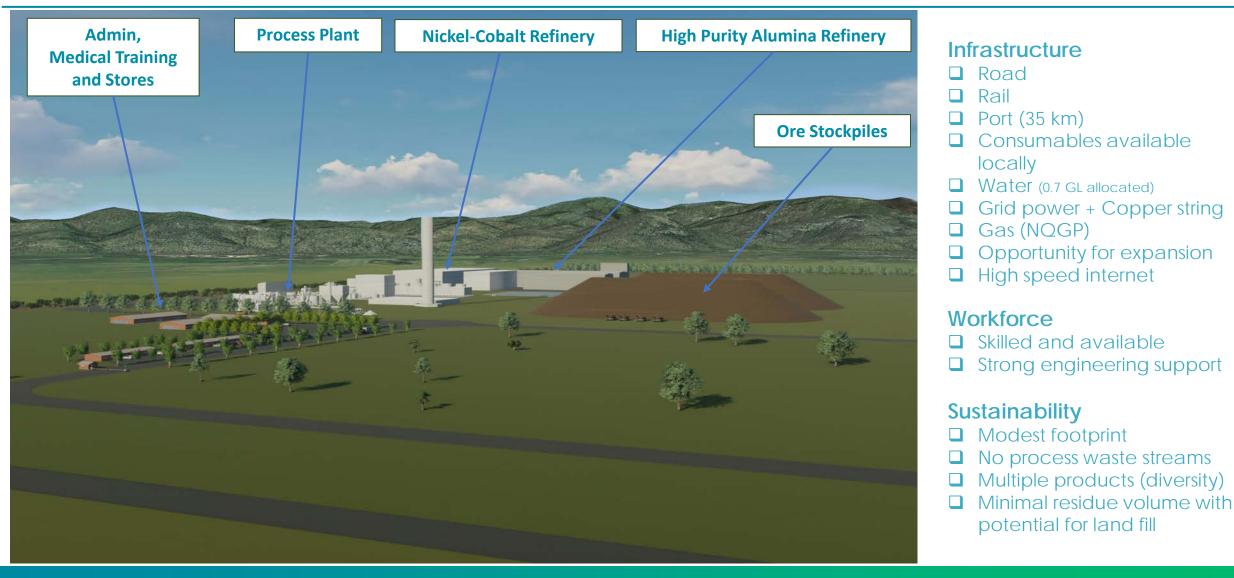




- Selected project site provisionally allocated to QPM is within the northern section of the **Townsville Industrial Precinct**. (Lot 19 and 20 covers approximately 290 ha)
- Existing Haughton River **Water** Pipeline (DN900 mm and duplication DN 1,800 mm)
- Northern Queensland CSG gas pipeline (35 PJ/annum capacity)
- □ 275kV, 66kV and 11kV **electric** transmission lines, including **fibre optic** communications cable
- Existing Ross River 140 MW solar array and new Edify 400MW solar array
- Road access to Flinders **Highway** (road train route direct to **Townsville Port**)
- Environment gently undulating grazing land, sparsely wooded in the west and eastern margins and bounded to the east by the Flinders Highway and the Northern **Railway** line
- Zoning Council passed planning scheme amendment to **heavy industrial zoning** in Jan 2020 subject to Queensland Government Approvals

## TECH Project located at the Lansdown Industrial Center





## **TECH Project Summary**



#### High Grade Ore Supply

- ✓ Secured high grade 15 year ore supply agreement with two major New Caledonia mining companies
- ✓ High grades 1.6% Ni 0.18% Co 46.6% Fe 1.7% Al
- ✓ Consistent quality and tonnage, supplied Queensland Nickel Refinery for 38 years, low mining/exploration risk

#### Robust Financials PFS Complete

- √ 4.25 years payback, generating annual EBITDA of A\$611 million at current commodity prices
- ✓ 26,400 tpa Ni Sulphate + 3,100tpa Co Sulphate + 4,000 tpa High Purity Alumina and valuable co-products
- ✓ DNi process<sup>TM</sup> CSIRO refinery technology lower capex and opex compared to HPAL

# Clean Technology Near Term Production

- ✓ All leach reagent recycled, only 20% (w/w)of ore left as dry stackable residue for land fill, no water discharge, clean gas and renewable energy
- ✓ Ore supply secured feasibility and approvals work to commence in respect to construction of the processing plant
- ✓ Construction of the processing plant can potentially be commenced within 18 months

# Townsville site secured at Lansdown Park

- ✓ Extensive infrastructure network including Port, Rail and Road and multiuser opportunities
- ✓ Long term history of handling and processing imported ore from New Caledonia/Philippines/Indonesia
- ✓ Skilled labour and engineering support

#### Battery Market Fundamentals

- ✓ Strong fundamentals for battery chemicals (Nickel Sulphate, Cobalt Sulphate and High Purity Alumina)
- ✓ Electric Vehicle batteries is a new high growth market.
- ✓ Majority of world's cobalt comes from DRC QPM offers supply from a stable jurisdiction

## Experienced Management

- ✓ Combined 75+ years nickel laterite experience and experience in New Caledonia
- ✓ Extensive expertise with dealing with off-takers for nickel and cobalt
- ✓ Strong project development knowledge

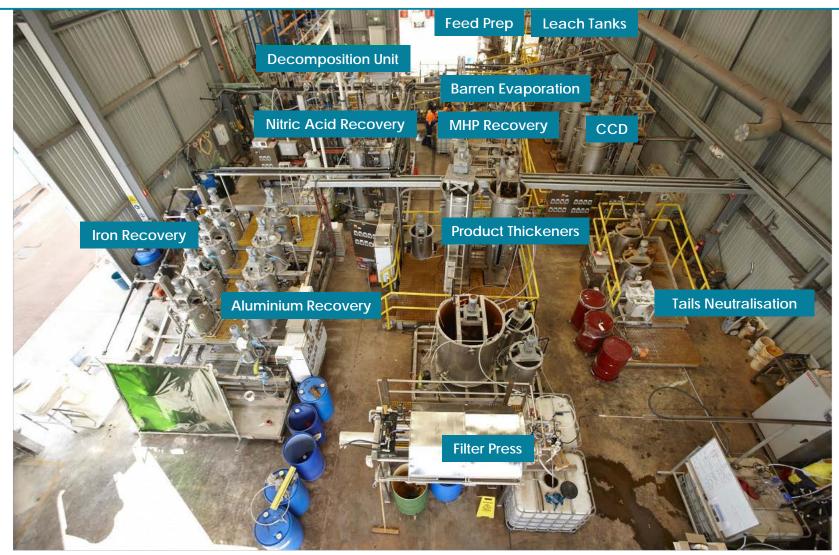
## **TECH Project Timetable**



ACTIVITY	TIMETABLE-FINANCIAL YEARS								
	2019/20	2020/21			2021/22				
Pilot Plant	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Refurbishment									
Operations									
Definitive Feasibility Study									
Permitting and Approvals									
Marketing - Offtake									
Project Funding									
Final Investment Decision									
Construction									

## FY21 Q2: Pilot Plant processing bulk ore sample





**Diversified Products** 

- Mixed Hydroxide Precipitate (feedstock to the Ni-Co Sulphate Refinery)
- Aluminium Hydroxide Precipitate (feedstock for HPA Refinery)
- ☐ Hematite (high purity Iron oxide)
- Magnesium Oxide (highly reactive)
- Potential for Manganese, Chromite and Scandium.
- Residue (dry stackable, potential engineered land fill)

Figure: CSIRO DNi Process™ pilot plant in Western Australia

## Appendix: DNi Process™ vs High Pressure Acid Leach (HPAL)



	DNi Process™	HPAL			
Ore Feed	Full lateritic ore profile	Limonitic ore (typically or low Mg saprolite <sup>1</sup> )			
Ore Preparation	Ore drying	No drying required			
Pressure	1 atmosphere	Up to 44 atmospheres			
Temperature	100°C	250°C			
Plant Materials	304-series stainless steel (leach tanks with Teflon coating to prevent abrasion)	Titanium-lined autoclaves and piping			
Acid Consumption	25-80 kg of nitric acid (68%) per tonne of dry ore processed <sup>2</sup> 95% of the nitric acid is recycled	250-500 kg of sulphuric acid (98%) per tonne of ore processed			
Waste Materials	Environmentally inert dry nitrogen-rich residue, contributing to mine rehabilitation as a fertiliser	Tailings about 3x the volume of the DNi Process requiring neutralisation, containment and indefinite monitoring			
Product	Mixed (Ni-Co) Hydroxide Product	Mixed (Ni-Co) Hydroxide Product			
By-Products	Hematite, Magnesia, Aluminium Hydroxide, Manganese, Scandium	Ammonium Sulphate, Scandium			
Technology	Scalable Yet to be proven at commercial scale	High capacity required to reach economic threshold Works, but with a number of commercial failures <sup>3</sup>			

- 1. Mg content contributes to high acid consumption
- 2. While nitric acid is significantly more expensive than sulphuric acid, the DNi Process<sup>TM</sup> includes the ability to recycle up to 95% of the nitric acid
- 3. Failures: Bulong, Cawse and significant technical difficulties encountered at Ambatovy, Goro and Ravensthorpe Source: Direct Nickel, Pure Minerals, Terra Studio

### **Disclaimer**



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\*PM1 confirms that it is not aware of any new information or data that materially affects the information included in the relevant market announcement and, in the case of estimates of mineral resources or ore reserves, that all material assumptions and technical parameters underpinning the estimates in the relevant market announcement continue to apply and have not materially changed



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