

*Developing the Townsville Energy  
Chemicals Hub – “TECH Project”  
Battery Minerals Refinery*

**Investor Presentation**

September 2019



Pure Minerals Limited

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**COMPETENT PERSON STATEMENT:** Information in this presentation relating to the processing and metallurgy is based on technical data compiled by Mr Boyd Willis, an Independent Consultant trading as Boyd Willis Hydromet Consulting. Mr Willis is a Fellow and Chartered Professional of The Australasian Institute of Mining and Metallurgy (AusIMM). Mr Willis has sufficient experience which is relevant to metal recovery from the style of mineralisation and type of deposits in New Caledonia where the ore will be sourced (from third parties pursuant to an ore supply agreement) and to the activity which they are undertaking to qualify as a Competent Person under the 2012 Edition of the 'Australasian Code for reporting of Exploration Results, Mineral Resources and Ore Reserves'. This includes over 21 years of experience in metal recovery from Laterite ores. Mr Willis consents to the inclusion of the technical data in the form and context in which it appears.



# Townsville Energy Chemical Hub – “TECH Project”

- Criticism of the Australian Resources Sector is the lack of downstream processing
- TECH Project will reverse this trend by processing external ore sources to produce value-added chemicals for the emerging battery sector

## New Caledonia:

Importation of  
600ktpa high  
grade Ni-Co ore



**Townsville:**  
New modern refinery  
supported by  
infrastructure and rich  
history of nickel  
production



Source: Company



## EV Market:

25,000tpa Ni sulphate  
+ 3,000tpa Co sulphate  
+ Valuable co-products



# A Value-Add Business Opportunity for Australia

- **“New Kid on the Block”** – very low market capitalisation compared with other ASX listed nickel-cobalt peers with transaction only recently completed to acquire QPM
- **Grade is King** – processing high grade material from New Caledonia delivers QPM a competitive advantage
- **Townsville** – great opportunity to utilise existing infrastructure and decades of experience to re-establish a value-add mineral processing business
- **Rapid Growth Potential to Deliver Shareholder Value** – not your typical resources marathon with years of exploration – the next 18 months (approximately) through to FID will be a sprint



# The Story So Far



Pure Minerals Limited

100 % Acquisition Complete  
on May 2019



QUEENSLAND  
PACIFIC METALS

**Secured** a binding Ore Supply Agreement two established New Caledonian mining Companies

**Entered** Agreement with Direct Nickel (DNI) to utilise revolutionary **DNI Process™** for nickel and cobalt extraction

**Entered CSIRO Pilot Plant** – to produce high purity nickel & cobalt sulphate from **DNI Process™**

**Plans** to build processing plant – Townsville Energy Chemical Hub Project (**TECH Project**)  
Land Conditionally Committed





# Townsville – The Ideal Location

- **Long Term History** – through Queensland Nickel Refinery, over 50 million wet tonnes in New Caledonia Ni-Co feed has been imported and processed in Townsville over 30 years
- **Infrastructure** – Port, road, rail, power and water
- **Politics** – political alignment to create industry in Townsville and North Queensland in general
- **Skilled Labour** – Skilled labour workforce available regionally
- **Established Industrial Region** – Strong engineering support and long term history of industrial activity
- **Future Battery Hub** – Imperium3 is planning to construct a battery factory in Townsville
- **Logistics** – close proximity to New Caledonia minimising ocean freight costs
- **Acid Supply** – Sulphuric acid produced in Townsville (Sun Metals refinery) and Nitric acid produced in Gladstone



Figure: Port of Townsville

# New Caledonia – Superior Quality Ni Province

- New Caledonia hosts the **best quality limonite** within the Asia Pacific region
  - New Caledonia hosts the world's largest laterite Ore Reserves, estimated to contain:
    - 700kt of Cobalt
    - 7Mt of Nickel
    - 140 Mt of Iron
    - 15Mt of Magnesia
- (Source: <https://minerals.usgs.gov>)
- Australia is a long term, approved trading partner with New Caledonia
    - Ore supplied to Queensland Nickel since 1989
  - Townsville
    - ~2,100km from New Caledonia
    - Well positioned to process ore

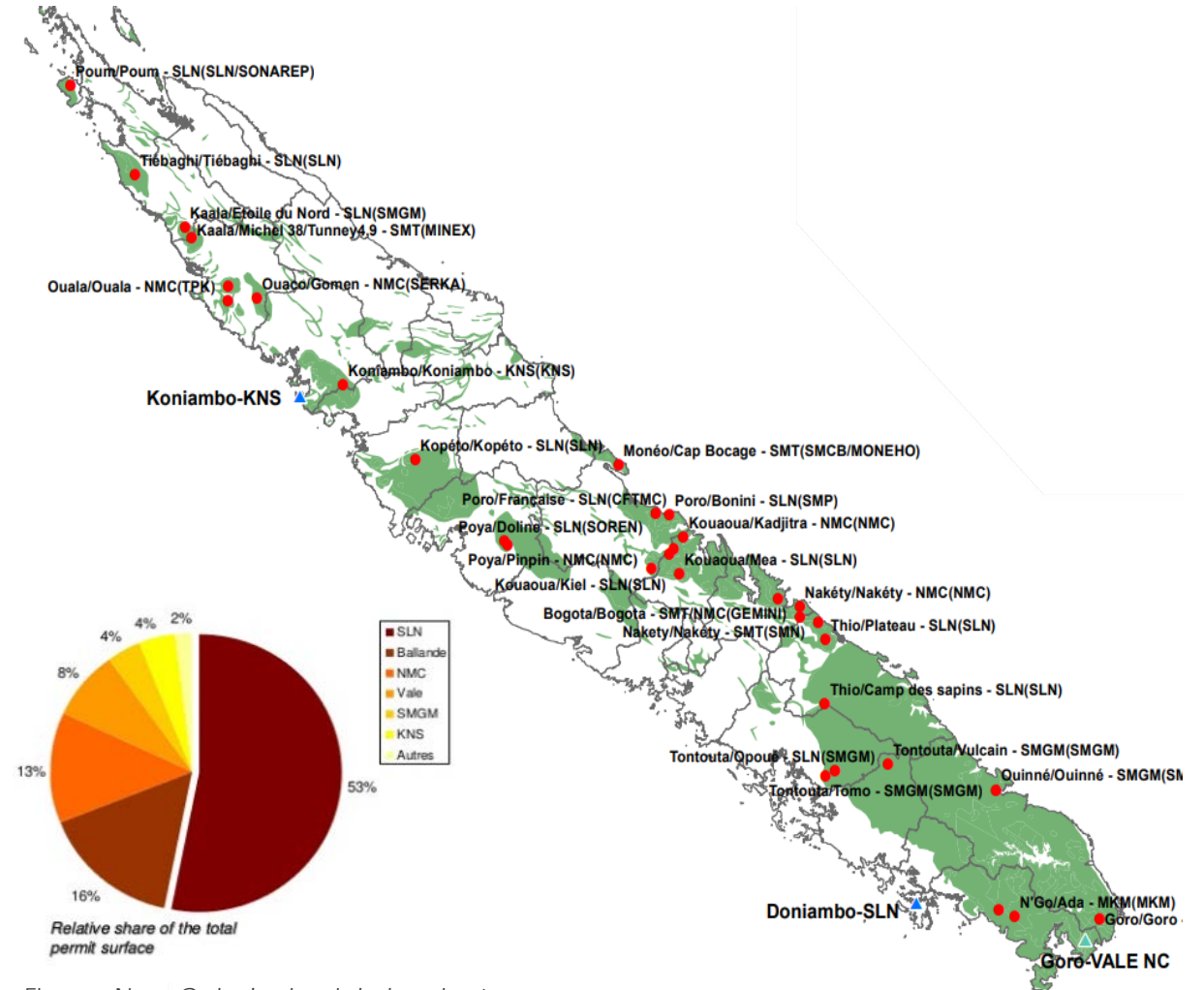


Figure: New Caledonia nickel projects



# QPM Project Partners

- Ore supply partners Societe des Mines de la Tontouta ("SMT") & Societe Miniere Georges Montagnat S.A.R.L ("SMGM")
  - Initially supplying 600,000tpa – can be scaled up in the future
  - Hold 20% of the tenure in New Caledonia that comprises nickel projects
  - Well established mining companies that have been operating for decades
  - SMT and SMGM supplied Queensland Nickel Refinery from 1989 – 2016
  - High grade reliable supply – no mining/exploration risk
- Expected ore grade to be delivered to QPM 1.6% Ni / 0.018% Co\*

New Caledonia Exports to Townsville	2008	2009	2010	2011	2012	2013	2014	2015	2016
Ore Tonnes Imported (t)	1,555,050	1,533,045	2,299,359	2,199,043	1,786,082	1,583,080	2,015,711	996,038	78,975
Contained Ni (t)	16,409	16,1680	23,202	22,338	18,290	16,144	20,190	9,962	865
Contained Co (t)	1,746	1,679	2,651	2,518	1,946	1,764	2,441	1,119	86
Ni Grade %	1.62%	1.62%	1.55%	1.56%	1.58%	1.57%	1.54%	1.54%	1.68%
Co Grade %	0.17%	0.17%	0.18%	0.18%	0.17%	0.17%	0.19%	0.17%	0.17%

Source: New Caledonia mines department

\* PM1 ASX Announcement on 21 January 2019





# Processing: Stage 1 DNi Process™

- Produces intermediate product – mixed hydroxide precipitate (“MHP”)
- Nitric acid leaching under atmospheric conditions
- Stainless steel plant construction – lowers capex, easy to source
- DNi Process™ recycles nitric acid (~95%), lowering opex
- Ability to extract co-products (iron, magnesia, alumina)
- Reduced residue footprint due to high product extraction and addition of few neutralising agents compared with other nickel processes
- Favourable licensing terms agreed with Direct Nickel for use of DNi Process™



Figure: Direct Nickel pilot plant in Western Australia



# Processing: Stage 2 CSIRO Process

- Nickel sulphate and cobalt sulphate currently sell for a premium to the underlying metal price (15-25%)
- In partnership with CSIRO, QPM has successfully produced battery chemicals from a MHP generated by the DNI Process™



Figure: Battery chemicals produced from MHP

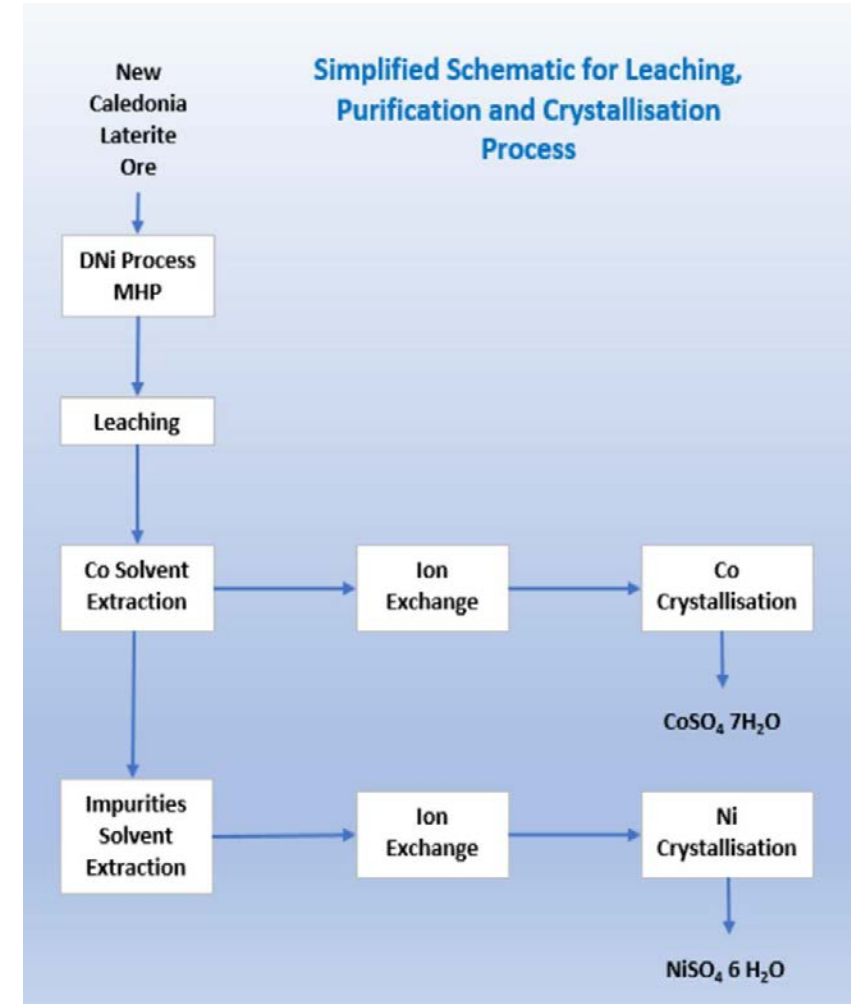
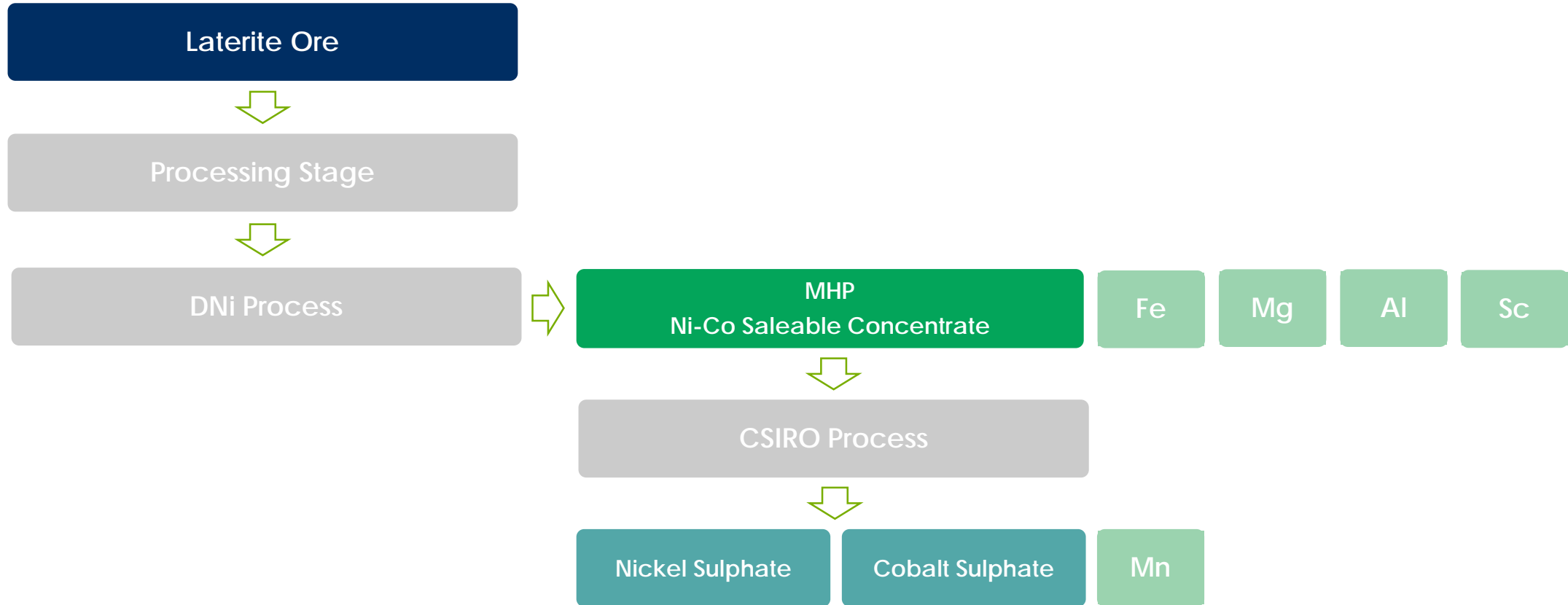


Figure: CSIRO Process Flowsheet



# What will we produce?



## DNi Technology advantages:

- 95% acid used is recyclable
- Atmospheric leaching
- Ability to extract all payable metals



# TECH Project Scoping Study Highlights

- Pre-Feasibility has commenced on back of positive Scoping Study
- Completion expected September 2019

Scoping Study Results	
Nickel Sulphate	25,000tpa (5,678t contained nickel)
Cobalt Sulphate	3,000tpa (639t contained cobalt)
Co-Products	221,000tpa hematite 8,700tpa alumina
Processing	Stage 1: Direct Nickel (DNI™ Process) to produce intermediate MHP product Stage 2: CSIRO Process to upgrade MHP to battery chemicals
Capex	US\$297M (includes 20% contingency)
Opex	\$108M pa \$0.93/lb nickel (after co-product credits)

Source: PM1 ASX Announcement on 21 January 2019

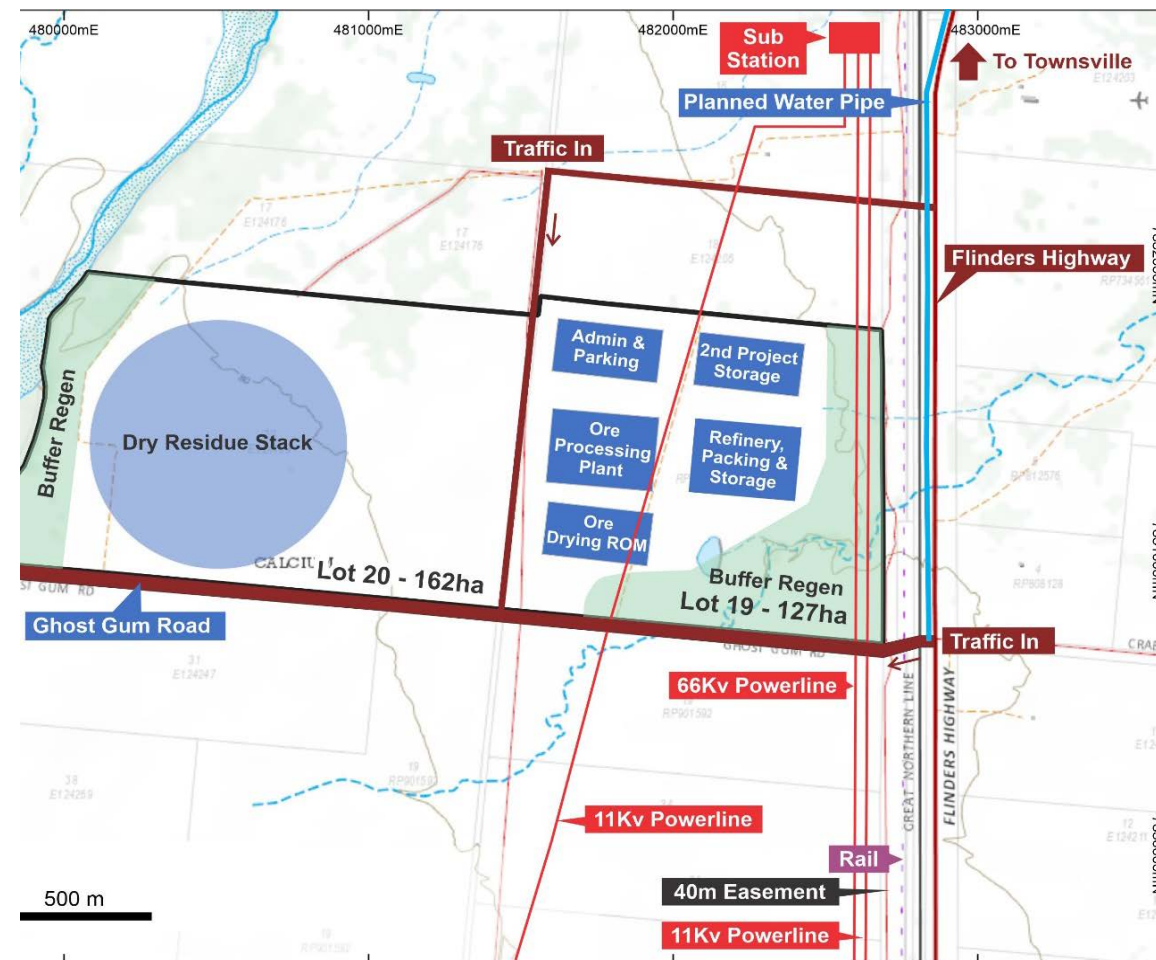


Figure: TECH Project layout



# Forward Work Program

- Fast track to construction and production
- Near term focus is completion of Pre-Feasibility Study – Lycopodium has been appointed and has commenced

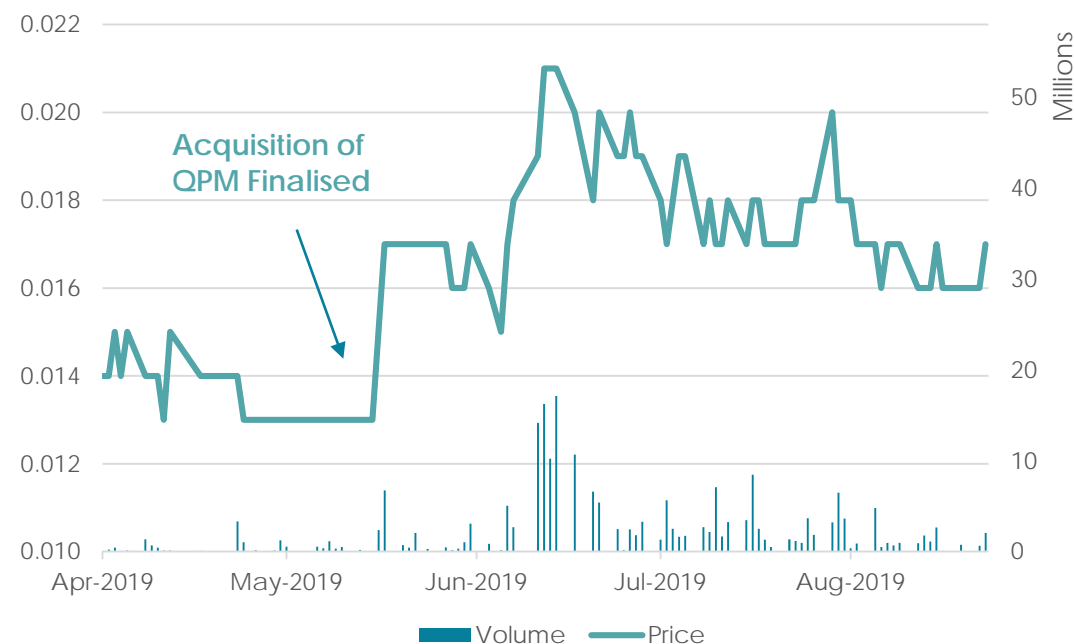
Pathway to Production	2018	2019				2020				2021	
	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Ore Supply Logistics											
Concept/Scoping Study											
Pre-Feasibility Study											
Metallurgical Test Work											
Environmental and Permitting											
Definitive Feasibility Study											
Offtake Partnering											
Funding											
Project Construction											



# Corporate Overview

## Board

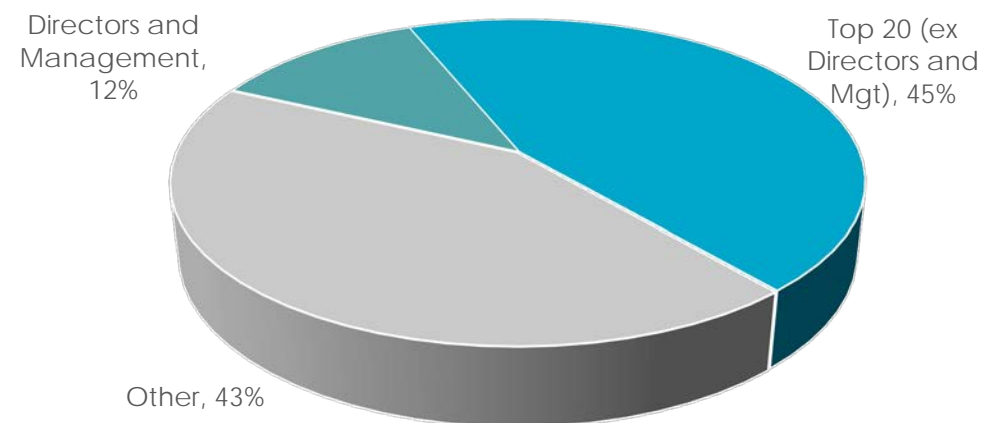
Non Exec Chairman	Eddie King
Managing Director	John Downie
Non Exec Director	Cameron Mclean



## Proforma Capital Structure / Share Price

Shares on issue	471.2M
Share Price (23 August 2019)	1.7c
Cash balance	\$2.3M
Market Cap	\$8.0M
Deferred Consideration Shares (subject to performance milestones)	333.3
3c Options	181.3M

## Shareholders



# Nickel Market



## BHP Group and Western Areas forecast big future for nickel as price continues climbing

By Lorna Nicholas - August 21, 2019



Miners such as BHP and Western Areas are poised to take advantage mounting demand for nickel.

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## Nickel booms as supply deficit looms



Robert Guy  
Senior Writer

Aug 19, 2019 — 12:00am

One of Australia's leading nickel producers has warned that a failure by the industry to find new supplies may encourage end-users to look for alternatives as the threat of an Indonesian export ban and forecast deficits propelled the stainless steel input to a near five-year high of more than \$US16,000 a tonne.

Nickel prices have proved immune to the volatility that has hobbled global stockmarkets and many growth-sensitive commodities over the past two weeks, with speculation major producers Indonesia may bring forward a ban

## EV's will make nickel a once-in-a-generation investment opportunity, says BHP



Barry Fitzgerald  
Independent Journalist

More EVs and more nickel in each of them will drive nickel demand through the roof, says the head of BHP's Nickel West arm. His forecast is great news for those juniors with large nickel deposits awaiting development, such as the Jaguar project just acquired by Centaurus from Brazilian giant Vale. Plus, Venturex's \$100m debt deal sets it up to become one of the few ASX-listed copper producers.

The display of oomph at last week's Diggers & Dealers conference in Kalgoorlie was not restricted to the gold stocks.

The nickel stocks made sure of that, with none other than BHP leading the charge in a presentation by its Nickel West president, Eddy Haegel.

Australian  
Mining



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## Western Areas capitalises on growing nickel price

August 20, 2019 News Alex Gluyas



Western Areas has boosted its financial position in the 2019 financial year off the back of a higher nickel price and increased sales from the Forrester area. Cosmos open-pit. Image: Western Areas



# Investment Highlights

High Grade Ore Supply	<ul style="list-style-type: none"> <li>✓ Secured high grade Ni-Co ore supply agreement with two New Caledonia mining companies</li> <li>✓ Expected grades 1.6% Ni / 0.17% Co (Contract minimum 1.4% Ni, 0.15% Co)</li> <li>✓ Reliable source that previously supplied Queensland Nickel Refinery from 1989 until closure</li> <li>✓ Low mining/exploration risk</li> </ul>
Positive Scoping Study	<ul style="list-style-type: none"> <li>✓ 600ktpa processing plant</li> <li>✓ 25,000tpa Ni Sulphate + 3,000tpa Co Sulphate + valuable co-products</li> <li>✓ DNi™ process – lower capex and opex compared to HPAL</li> </ul>
Near Term Production	<ul style="list-style-type: none"> <li>✓ Ore supply secured – feasibility and approvals work to commence in respect to construction of the processing plant</li> <li>✓ Construction of the processing plant can potentially be commenced within 18 months</li> </ul>
Townsville Location	<ul style="list-style-type: none"> <li>✓ Extensive infrastructure network including Port, Rail and Road</li> <li>✓ Long term history of handling and processing imported ore from New Caledonia/Philippines/Indonesia</li> <li>✓ Skilled labour and engineering support</li> </ul>
Battery Market Fundamentals	<ul style="list-style-type: none"> <li>✓ Strong fundamentals for battery chemicals (Ni Sulphate / Co Sulphate)</li> <li>✓ Nickel resurgence</li> <li>✓ Majority of world's cobalt comes from DRC – QPM offers supply from a stable jurisdiction</li> </ul>
Experienced Management	<ul style="list-style-type: none"> <li>✓ Combined 75+ years nickel laterite experience and experience in New Caledonia</li> <li>✓ Extensive expertise with dealing with offtakers for nickel and cobalt</li> <li>✓ Strong project development knowledge</li> </ul>



# Contact Us

## John Downie

Managing Director

E: [jdownie@qpmetals.com.au](mailto:jdownie@qpmetals.com.au)

M: +61 (0) 408 329 262

W: [www.pureminerals.com.au](http://www.pureminerals.com.au)

## Victoria Humphries

NWR Communications

E: [victoria@nwrcommunications.com.au](mailto:victoria@nwrcommunications.com.au)

M: +61 (0) 431 151 676

