

# Pure Minerals Ltd

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## Pure Minerals continues Townsville Energy Chemicals Hub development to enhance downstream processing in Australia

Pure Minerals Ltd (ASX:PM1) is progressing development of its "TECH Project", or the Townsville Energy Chemicals Hub, to counter the lack of downstream processing in Australia's resources industry.

The proposed operation will process externally sourced lateritic nickel and cobalt ore and produce value-added chemicals for the emerging battery sector.

PFS based on positive scoping study

A pre-feasibility study, based on positive results from a scoping study completed in January, is currently evaluating a potential processing operation that would produce about 25,400 tonnes a year of battery-grade nickel sulphate and 3,000 tonnes a year of cobalt sulphate over a 25-year mine life.

The PFS is being undertaken by Lycopodium with PM1's wholly owned subsidiary Queensland Pacific Metals Pty Ltd (QPM) progressing works outside of Lycopodium's scope.

Development is being fast-tracked into construction and production, with the PFS due to be complete this quarter.

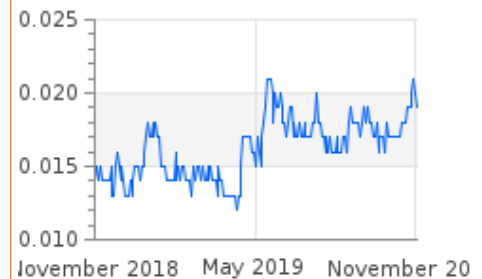
The scoping study informing current work was based on a throughput of 600,000 wet tonnes per annum and estimated a project capital expenditure, including a 20% contingency, of US\$297 million, as well as annual operating expenses of \$108 million or 93 cents per pound of nickel.

To provide context for the estimated opex, in early September 2019 the nickel price was US\$8.51 a pound and the scoping study estimates a US\$2 per pound premium for nickel sulphate.

**Price:** 0.019

**Market Cap:** \$8.95 m

### 1 Year Share Price Graph



### Share Information

**Code:** PM1

**Listing:** ASX

**52 week High Low**  
**0.023 0.012**

**Sector:** General mining & base metals

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

### Company Synopsis:

*Pure Minerals Ltd (ASX:PM1), through its wholly owned subsidiary Queensland Pacific Metals Pty Ltd (QPM), is focused on developing a modern battery metals refinery in northern Queensland. The refinery, dubbed the Townsville Energy Chemicals Hub or TECH, will process imported, high grade Ni-Co laterite ore from New Caledonia to produce nickel sulphate, cobalt sulphate and other valuable co-products.*

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## Ore shipped from New Caledonia

The project involves shipping nickel and cobalt ore from New Caladonia to Townsville and then processing it through two stages to produce battery-grade nickel and cobalt sulphate.

The relatively short seaborne distance will assist to minimise ocean freight costs and provides the project with a competitive advantage over other potential locations, particularly in Asia.

New Caledonia is an island off the coast of Townsville known for its nickel laterite mining operations and deposits and had previously supplied the Queensland Nickel Refinery.

The island hosts the best quality limonite within the Asia-Pacific region as well as hosting the world's largest laterite ore reserves.

These reserves are estimated to contain 700,000 tonnes of cobalt, 7 million tonnes of nickel, 140 million tonnes of iron and 15 million tonnes of magnesia.

Once ore has been shipped, two stages of processing will be undertaken to produce the desired end products, with stage one known as the Direct Nickel (DNi) process and stage two the CSIRO process.

## Townsville an ideal location

The company believes its chosen site in Townsville is the ideal location for TECH, as it has a long-term 30-year history through the Queensland Nickel Refinery of more than 50 million wet tonnes of New Caledonian nickel-cobalt being imported and processed.

Infrastructure in the region, including port, road, rail power and water are all available as well as a skilled regional labour workforce.

Townsville sits in an established industrial region, with strong engineering support, a history of industrial activity and an industry-positive political alignment in Townsville and North Queensland in general.

Acid supply for processing is near the proposed site, with sulphuric acid produced in Townsville at the Sun Metals refinery and nitric acid produced in Gladstone.

Direct Nickel's patented DNi process to be used

The DNi process is a modern processing technology that utilises nitric acid to digest a range of lateritic ore-hosted minerals at atmospheric pressure.

PM1 has agreed to favourable licensing terms with Direct Nickel for use of its DNi process.

The primary product of DNi is a nickel-cobalt hydroxide precipitate, which is a commonly traded product.

Using DNi provides certain benefits including the ability to recycle about 95% of the nitric acid, lowering opex, and the ability to extract co-products such as iron, magnesia and alumina.

The process has a reduced residue footprint due to high product extraction and addition of fewer neutralising agents compared with other nickel processes.

The plant for DNi requires stainless steel for construction which is easy to source and lowers capex.

## Second-stage process developed with CSIRO

With increased demand for nickel and cobalt sulphate resulting from the emergence of the battery market, there is an economic rationale for mixed hydroxide precipitate (MHP) producers to upgrade this intermediate product to a product suitable for battery manufacturers.

The second-stage flowsheet was developed in partnership with CSIRO after the company successfully produced battery chemicals from a mixed hydroxide precipitate generated through the DN<sub>i</sub> process.

Nickel and cobalt sulphate currently sell for a premium of 15-25% to the underlying metal price.

## Plant to produce valuable by-products

It is planned for the refinery to process nickel-cobalt ore sourced from two third parties through an ore supply agreement.

The refinery would also produce other valuable co-products including hematite, alumina and magnesium oxide.

Expected ore grades are 1.6% nickel and 0.17% cobalt with a contract minimum of 1.4% nickel and 0.15% cobalt.

The company's ore supply partners Societe des Mines de la Tontouta (SMT) as well as Societe Miniere Georges Montagnat SARL (SMGM) will together initially supply 600,000 tonnes a year, which can be scaled up in the future.

The two partners together hold 20% of the tenure in New Caledonia that hosts nickel projects and are well established mining companies that have been operating for decades.

Both SMT and SMGM supplied Queensland Nickel Refinery from 1989 - 2016 and their involvement removes all mining and exploration risk to the project through its high-grade and reliable supply of ore.

Construction to continue until 2022

Work that will continue into 2020 includes environmental permitting, a definitive feasibility study, offtake partnering as well as project funding.

Construction is anticipated to begin in 2020 and will continue into 2022.

The conditionally chosen site for TECH is within the Lansdown industrial precinct, a currently rural-zoned area which the Townsville City Council is converting into a strategic high-impact industrial zone.

The council's key objectives with the Lansdown precinct are:

Best practice, lowemission, energy-efficient ecologically sensitive industrial development;

Innovative and dynamic enterprises that support job creation for Townsville;

Colocation of industrial uses, such as advanced manufacturing, processing and technology; and

Minimising adverse amenity impacts upon lands outside the precinct.

Relatively low market cap

Compared to other ASX-listed nickel-cobalt peers, PM1 has a very low market capitalisation of \$8 million and only recently completed its acquisition of subsidiary Queensland Pacific Metals.

The company has 471.2 million shares on issue and the last price at which its shares traded was 1.7 cents.

Cash on hand amounts to \$2.3 million and the company's ownership is comprised of 12% from directors and management, 45% to the top 20 holders excluding directors and management and the remaining 43% containing all other shareholders.

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