

## Clean and Green Nickel – Updated Life Cycle Assessment confirms TECH Project is Carbon Negative

### Highlights

- ✓ ISO-compliant Life Cycle Assessment undertaken by Minviro highlights QPM's TECH Project as not only net zero carbon - but significantly net Carbon Negative
- ✓ Based on planned waste gas sourcing strategy, production from the TECH project will far exceed the best environmental alternative for any nickel production globally.
- ✓ For every tonne of nickel in nickel sulfate produced, the TECH Project REDUCES greenhouse gas emissions by 14.9 kg CO<sub>2</sub> eq. /kg nickel in nickel sulfate.
- ✓ Annual reduction in Australia's greenhouse gas emissions as a result of the TECH Project is estimated at 238,000 tonnes CO<sub>2</sub>-equivalent, the equivalent of ~52,000 typical passenger vehicles.
- ✓ TECH Project will utilise waste mine gas from the Bowen Basin which would be either flared or directly emitted to the atmosphere as a fugitive emission of methane which has a Global Warming Potential factor of 25 times that of CO<sub>2</sub>.
- ✓ Dual benefits of capturing and consuming gas that would otherwise contribute significantly to Global Warming and manufacturing battery grade minerals to support the ongoing electrification of the automobile industry.
- ✓ The TECH Project has now established itself as a leader in sustainable nickel production with net negative carbon nickel production combined with minimal environmental footprint given no tailings dam or zero process liquids discharge.

Queensland Pacific Metals Ltd (ASX:QPM) (“QPM” or “the Company”) is pleased to publish the interim report of an updated Life Cycle Assessment (“LCA”) report for the TECH Project showing it to be the first ever truly net carbon neutral or net carbon negative battery grade nickel manufacturing plant. The report was undertaken by leading industry life cycle analysis specialists, Minviro and incorporates QPM’s currently anticipated energy strategy of sourcing gas from a combination of operating underground (80% of requirements) and open cut (20% of requirements) metallurgical coal mines. As part of the Definitive Feasibility Study for the TECH Project, QPM continues to work with its gas supply partners to finalise the long-term gas supply and transport agreements.

The updated LCA report is a follow-on from the previous report completed by Minviro in March 2021 (refer to ASX announcement 8 March 2021). The LCA report adopts a “cradle-to-gate” approach on the TECH Project and is fully compliant with the ISO Life Cycle Analysis Standard, meaning that the assessment of carbon emissions starts from the point of natural resource extraction to the end-gate. The TECH project LCA also includes all greenhouse gas emissions associated with electricity, ore mining and transport to site, as well as the supply and consumption of all reagents and utilities for the site. Whilst there will be direct CO<sub>2</sub> emissions and embodied CO<sub>2</sub> impacts from the Project, this will be more than offset by the mitigated environmental impact from its gas sourcing strategy.

The Minviro report completed earlier this year highlighted the opportunity for QPM to utilise gas from existing metallurgical coal mines to position the TECH Project. QPM worked closely with gas supply partners to provide Minviro with detailed supply and operating data in order to prepare the updated LCA report in accordance with ISO standard ISO-14040/14044:2006.

QPM is delighted with the outcome of the report which calculates that the TECH Project will not just be net zero carbon but will actually reduce Australia's carbon emissions by 14.9 kg CO<sub>2</sub> equivalent for every kg of nickel in nickel sulfate. This compares with the industry average, as calculated by the Nickel Institute, of 4.0 kg CO<sub>2</sub> / kg nickel sulfate.<sup>[1]</sup> Furthermore, if the nickel matte produced from carbon intensive processing methods becomes a feedstock for nickel sulfate, the industry average will only increase.

Based on the outcomes of the LCA report, QPM believes that the TECH Project boasts by far the best ESG credentials in the world for all nickel projects – existing and planned. These credentials include:

- Net negative carbon nickel production that will be achieved by repurposing a greenhouse-intensive waste gas for commercial use, rather than buying carbon credits in the open market or applying intercompany carbon credits;
- All electricity requirements will come from renewable sources;
- Western world labour standards (and mining laws for sustainable mining practice) with ore supply coming from New Caledonia (French law and performance standards) and with the operation of the TECH Project being under Australian law;
- Zero process liquids discharge;
- Minimal environmental footprint with project residue representing about 20% of original ore mass and a potential to reduce this footprint to zero; and
- "Industrial ecology" - maximising the value of ore that is mined - all major metals contained within the laterite ore will be extracted and refined into a commercial product rather than disposed as tailings.

The Minviro interim study will now be subject to critical review from an independent third party, in accordance with the ISO standards.

## Bowen Basin Carbon Emissions

The Bowen Basin contains some of the highest quality metallurgical (i.e. steel-making) coal mines in the world. However, the region does produce significant greenhouse gas emissions associated with either flaring of drained mine gas (from underground mines) or through the higher impact fugitive emissions of methane (from open cut mines), which is ~25 times worse than CO<sub>2</sub> from a global warming perspective. Advances in satellite analytics have allowed scientists to calculate methane emissions from operating coal mines.

Leading analytics company Kayrros estimates that fugitive emissions from the Bowen Basin at an average of 1.6 million tonnes of methane per annum. <sup>[2]</sup>

There are currently limited customers for gas produced from the Bowen Basin. Pipeline infrastructure exists (North Queensland Gas Pipeline which runs past the TECH project) which connects the Bowen Basin to Townsville. However, there are currently limited baseload customers and no export opportunity that would result in the commercial development of these gas resources.

QPM estimates the TECH Project will require approximately 10-12PJ of gas per annum, making it a significant baseload user. Based on the supply strategy being discussed with its gas partners, the Company anticipates that approximately 20% of the gas for the TECH project would come from capturing fugitive emissions of methane. Under the LCA ISO Standard, by using this gas, QPM is reducing the carbon equivalent emissions of the Bowen Basin by 700,000 tonnes per annum.

QPM Managing Director Dr Stephen Grocott commented,

*“For 20 years I have been working on mineral projects that attempt to minimise greenhouse gas emissions. Never have I been able to work on one which can, not just reduce, but reverse emissions. Offtakers are demanding strong ESG credentials for battery metal production and QPM ticks all the boxes. The TECH Project will be a global leader in sustainability with net carbon negative nickel production, minimal waste and environmental footprint and developed world labour laws. Our goal is to ensure that when our customers are buying our products, they will know that they are the cleanest and most environmentally attractive in the world.”*

[1] Summary Life Cycle Assessment Report: Nickel Sulphate Hexahydrate. Reference Year 2017. Published March 2021. Sphera Solutions, Inc.

[2] <https://www.kayrros.com/blog/methane-emissions-from-australias-bowen-basin/>

## ABOUT MINVIRO

Minviro ([www.minviro.com](http://www.minviro.com)) is a London based and globally recognized consultancy and technology company specialised in carrying out life cycle assessments in the technology metal space. The company provides quantitative environmental and climate impact data for mineral resource projects, battery manufacturers and OEMs to make environmentally informed decisions

*This announcement has been authorised for release by the Board.*



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