



11 OCTOBER 2019

## URQUHART BAUXITE DEVELOPMENT OPTIONS UPDATE

Metallica Minerals Limited (**Metallica**; ASX: MLM) has previously announced that Metallica and its Joint Venture ("JV") partner (Ozore Resources Pty Ltd) were continuing to progress studies and designs to identify potential infrastructure development sites for building a barge-loading and/or ship-loading facility on an area adjacent to tenements currently 100% owned and controlled by the JV parties (refer to ASX Release dated 6 August 2019).

### Summary

Following studies by Wave International ("Wave") and other consultants working for the JV, Metallica is pleased to announce that three alternative logistics solutions to ship bauxite from the project have been identified. Wave were engaged due to their recent experience in the successful development and commissioning of a similar Bauxite project in Far North Queensland, and further extensive experience in bauxite and bulk materials handling.

Further regulatory approvals are required for all three alternatives and these are planned to be advanced, subject to a positive outcome from an updated Pre-Feasibility Study ("PFS") for the project which will determine a selected development option and targeted to be complete by about the end of December 2019.

The three potential logistic options identified are as follows (see Figure 2 for details):

- Option 1: A shiploader to be constructed adjacent to the Urquhart Heavy Mineral Sands ("HMS") Mining Lease ("ML") owned by the JV, with a conveyor crossing over Roberts Creek from the Urquhart Bauxite ML to the HMS ML.
- Option 2: A shiploader to be constructed adjacent to the Urquhart HMS ML owned by the JV. A 17-kilometre haul road would also be constructed from the Urquhart Bauxite resources and tenement through the HMS ML area, leading to the shiploader.
- Option 3: A barge-loading facility to be constructed, which requires a jetty (about 750 metres in length) to be located adjacent to the Urquhart Bauxite ML.

### Shiploader option analysis

Using a shiploader, as proposed in options 1 and 2, has the following major benefits:

- The ability to load bauxite directly onto an Ultramax vessel or potentially, a Panamax vessel (>70,000 tonnes per shipment), subject to marine studies confirming that the suitability of tides and other marine factors make the site suitable for a shiploader
- Low estimated operating costs for the shiploader fixed infrastructure (estimated by Wave as being several dollars per tonne shipped), as no transshipment is required. However, the capital cost ("CAPEX") is higher for these options compared to Option 3

- Very simple bauxite production and transportation system, with only a mine stockpile, a proven conveyor structure with minimal transfer chutes, plus low labour and operating costs
- The low operating costs improve the economic attractiveness of Area B in the Urquhart Bauxite project, which contains lower grade bauxite
- The low-cost shiploader facility may also make selling the overburden sand on the ML an attractive option to explore. This is subject to sampling and quality assessment of this sand, regulatory approvals and an economic analysis.

The infrastructure construction CAPEX for the options at present is preliminary and is estimated to range from a low of A\$13-16m to a high of A\$27m, depending on the option selected (excluding mining fleet, environmental bonds, contingency, and associated costs).

### **Summary shiploader finding**

The most attractive potential option for further investigation at this stage appears to be Option 1 – the shiploader conveyor combination. See Figure 3 and 4 for diagrams of the shiploader configuration.

However, as noted above, further studies are still underway, and Metallica will work to finalise the solution and release an updated PFS by about the end of December 2019.

### **Further shiploader analysis steps**

A key component of the future shiploader options analysis will be working towards a funding solution as well as various Government, traditional owner and stakeholder approvals, and agreements for the substantial CAPEX required for construction.

Options to be explored to fund the shiploader and other CAPEX include the following:

- Northern Australian Infrastructure Fund (“NAIF”)
- Design, Construct and Operate partner funding, with a \$/tonne payment by the JV
- Offtake partners
- Debt and equity.

In due course, the Company will also explore the potential to maximise the use and life of the proposed ship-loading facility once the Urquhart Bauxite resources are exhausted, given the strategic proximity to sand deposits and extensive and undeveloped bauxite deposits (held by third parties).

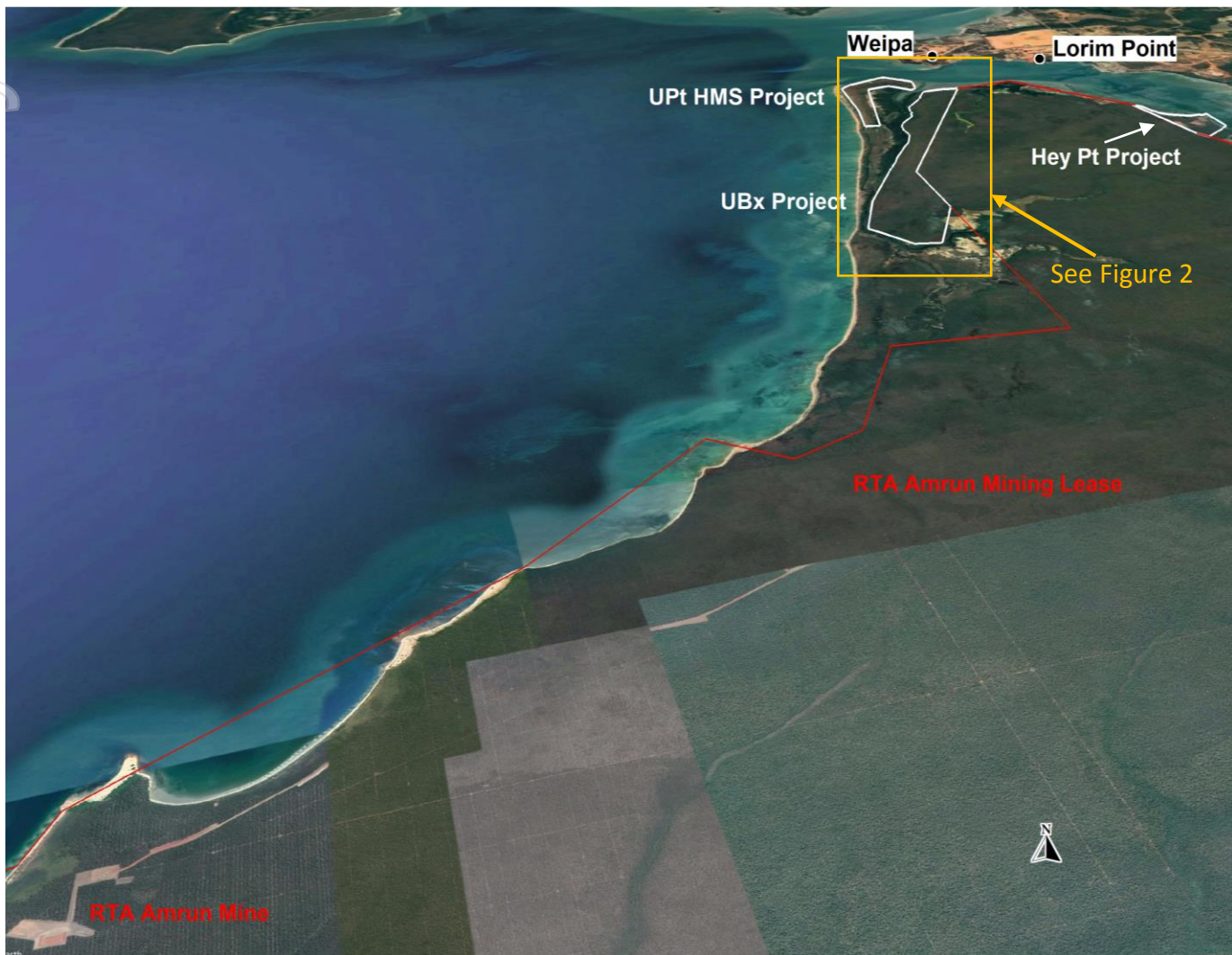


Figure 1: Regional map of Western Cape York





Figure 2: Three options for Metallica / JV

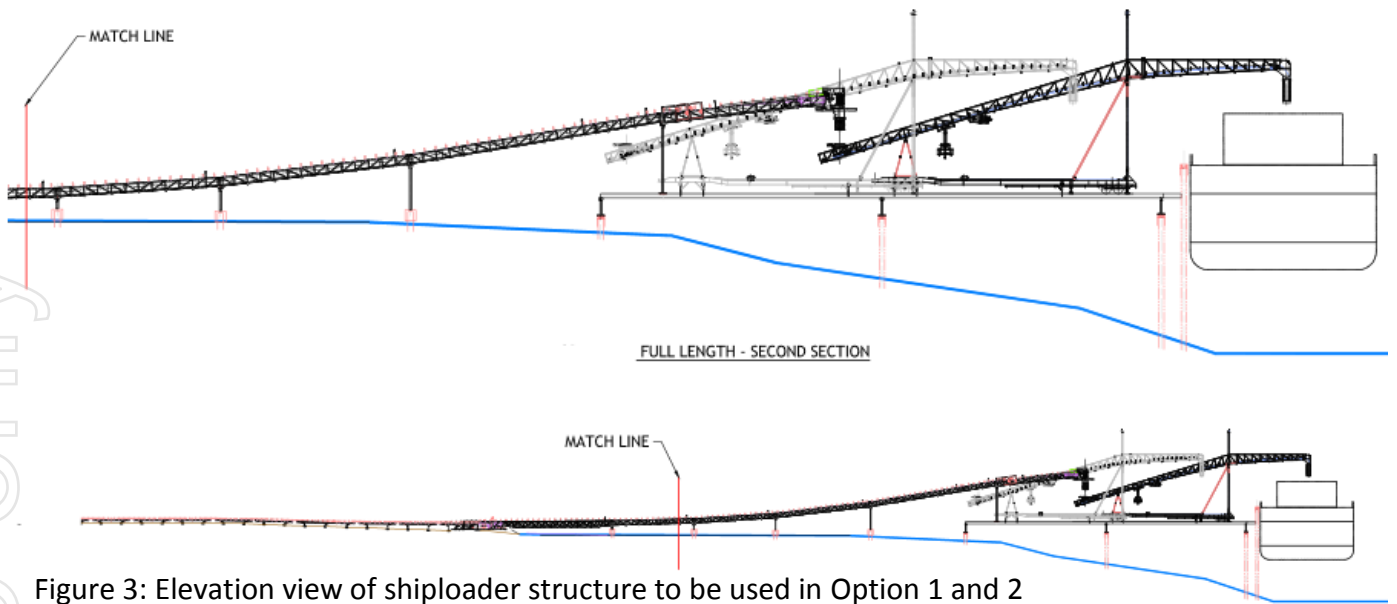


Figure 3: Elevation view of shiploader structure to be used in Option 1 and 2



Figure 4: Plan view of shiploader design and graphic moored ship envisaged for Option 1 and 2

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