AmericanPacific
BORATES LIMITED

**ASX Announcement**

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**13 October 2021**

# ABR ADVANCING VALUE ENGINEERING PROGRAM FOR FORT CADY INTEGRATED BORON FACILITY

## HIGHLIGHTS

- **Value engineering program advancing and targeting completion of updated Bankable Feasibility Study (BFS) in Q2, CY2022**
- **Program work streams designed to enhance development plan include:**
  - **Boric acid head-grade test works aimed at increasing head-grade to plant to minimise pre-production capex, improve economics and reduce risk;**
  - **Enhancement of mine plan with a view to mining the entirety of the ore body that will increase available boron and result in a longer mine life and/or increase in scale;**
  - **Evaluation of economics for potential lithium production targeting recycling waste stream using Direct Lithium Extraction technologies;**
  - **Production matched to size of off the shelf equipment to optimise production and capex;**
  - **Removal of solvent extraction in the flow sheet; and**
  - **Ongoing consideration of positive environmental and sustainability initiatives for reduced life-cycle cost to make the facility more competitive longer-term**
- **Initial engineering completed for Small-Scale Boron Facility with first production targeted for 2H CY2022**

American Pacific Borates Limited (ASX:ABR) (**ABR** or the **Company**) is pleased to provide an update on its value engineering program for its flagship Fort Cady Integrated Boron Facility (the **Facility**) located in Southern California.

**Commenting on the progress, ABR CEO, Mr Henri Tausch, said:**

*"Over the past few months, the team has made positive progress on value engineering activities for the Fort Cady Integrated Boron Facility which will ultimately deliver stronger project economics and reduce production risk. Our current progress will see the Company deliver an updated BFS in Q2, CY2022 that we expect to be very well received by US and Australian capital markets.*

*Couple this with North American boron market supply constraints increasing, ABR stakeholders have an amazing opportunity ahead as one of very few potential new sources of boron globally. Our focus continues to be on initial production of boron specialty advanced materials in 2H, CY2022 from our Small-Scale Boron Facility, then meaningful production from the broader Facility following that."*

**Fort Cady Integrated Boron Facility Development Plan**

Various value engineering work streams continue that are designed to enhance the development plan for the Facility. The initiatives include:

- Boric acid head-grade

  Test-works have commenced with a view to seeking to increase boric acid head-grade from the mine by heating the injection fluid to enable a higher saturation point of boric acid in the solution retrieved from the mine to be processed. An increased head-grade could reduce capex and opex associated with the mine and process plant.

- Enhancing mine plan

  Perhaps the most significant initiative currently underway is the review of the mine plan that aims to mine the entirety of the ore body. This would have the effect of substantially increasing contained boric acid that could potentially result in a longer mine life and/or an increase in scale. The table below was included in the Company's Initial Public Offering prospectus dated 30 May 2017.

**Table 1: Historic Mineral Resource Estimates for the Fort Cady Boron Project[1]**

| Company | $B_2O_3$ Cut-Off (%) | Tonnes (Mt) | $B_2O_3$ Grade (%) | Li (ppm) |
|---|---|---|---|---|
| **Duval (1982)** | 3 | 192 | 5.7 | NA |
| | 5 | 115 | 7.4 | NA |
| | 7 | 69 | 9.0 | NA |
| **Geosolutions (1990)** | 3 | 266 | 5.3 | NA |
| | 5 | 115 | 7.1 | NA |
| | 7 | 43 | 9.4 | NA |
| **PT GMT Indonesia (2015)** | 3 | 183 | 5.1 | 297 |
| | 5 | 80 | 6.7 | 313 |
| | 7 | 30 | 7.9 | 328 |

Notes:

1. The estimates are historical estimates and are not reported in accordance with the guidelines of the JORC Code (2012). A competent person has not completed sufficient work to classify these estimates as Mineral Resources or Ore Reserves in accordance with the guidelines of the JORC Code (2012). It is uncertain that following evaluation and/or further exploration work that the estimates will be able to be reported as Mineral Resources or Ore Reserves in accordance with JORC Code (2012). The full source details of the above estimates are contained in the Bibliography of the 2017 Prospectus.

The 1990 Geosolutions mineral resource estimate is the most consistent with the current JORC Code compliant MRE. The table below presents contained boric acid under each cut-off grade assumption against the existing MRE, importantly showing a significant increase in contained boric acid between 5% and 3% cut-off grades.

**Table 2: Table Comparing Contained Boric Acid for the 1990 Geosolutions Historic Mineral Resource Estimate and the 2018 JORC Code Compliant MRE for the Cady Boron Project**

| $B_2O_3$ Cut-Off | Boric Acid Cut-Off | Tonnes (M) | $B_2O_3$ Grade | Boric Acid Grade | Contained Boric Acid (M tonnes) |
|---|---|---|---|---|---|
| **Geosolutions 1990** | | | | | |
| 3% | 5.3% | 266 | 5.3% | 9.4% | 25.1 |
| 5% | 8.9% | 115 | 7.1% | 12.6% | 14.5 |
| 7% | 12.5% | 69 | 9.4% | 16.7% | 11.5 |
| **Terra Modelling Services 2018** | | | | | |
| 5% | 8.9% | 120.44 | 6.51% | 11.57% | 13.9 |

- Lithium production

  Opportunity to use Direct Lithium Extraction (**DLE**) technologies is being considered to remove Lithium from the process liquid waste stream that is ultimately recycled.

- Production matched to equipment capacity

  A resizing of initial production is being considered with a view to matching production to the capacity of off the shelf equipment. This is expected to optimise capex and production.

- Removal of solvent extraction in flow sheet

  The Company and its consultants are working on enhancing the flow sheet to remove the process step of solvent extraction. This is expected to reduce capex, land take and water consumption which may enable increased scale to ultimately take advantage of limited new boron supply globally.

- ESG initiatives

  An important consideration is ensuring ESG initiatives are positively incorporated into the design of the Facility. Work continues to be progressed with respect to environmental and sustainability initiatives designed to reduce life-cycle cost to make the facility more competitive long-term

The Company is currently targeting completion of an updated BFS in Q2, CY2022 after which time the Company expects to move swiftly into construction related activities designed to deliver meaningful production from the orebody in order to benefit from a tightness in North American supply of boron. Very few potential new sources of boron are visible, further complicating the ongoing supply/demand dynamic for the growing boron market and its derivative products.

**Small-Scale Boron Facility**

Initial engineering including material and energy balances, along with process flow have been completed. Detailed engineering is ongoing for process instrumentation, control, and mechanical design. Long lead equipment items have already been ordered in order to meet the start-up production schedule.

Importantly the Company remains on track for initial production of boron specialty advanced materials in 2H CY2022 from its Small-Scale Boron Facility.

**- ENDS -**

**Authorised for release by:** Henri Tausch, CEO.

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**Forward Looking Statements**

This announcement contains 'forward-looking information' that is based on the Company's expectations, estimates and projections as of the date on which the statements were made. This forward-looking information includes, among other things, statements with respect to the Company's business strategy, plans, development, objectives, performance, outlook, growth, cash flow, projections, targets and expectations, mineral reserves and resources, results of exploration and related expenses. Generally, this forward-looking information can be identified by the use of forward-looking terminology such as 'outlook', 'anticipate', 'project', 'target', 'potential', 'likely', 'believe', 'estimate', 'expect', 'intend', 'may', 'would', 'could', 'should', 'scheduled', 'will', 'plan', 'forecast', 'evolve' and similar expressions. Persons reading this announcement are cautioned that such statements are only predictions, and that the Company's actual future results or performance may be materially different. Forward-looking information is subject to known and unknown risks, uncertainties and other factors that may cause the Company's actual results, level of activity, performance or achievements to be materially different from those expressed or implied by such forward-looking information.

## About American Pacific Borates Limited (to be renamed 5E Advanced Materials, Inc.)

American Pacific Borates Limited is an ASX listed company focused on advancing its 100% owned Fort Cady Integrated Boron Facility located in Southern California, USA.

The Company is seeking to become a fully integrated producer of Boron specialty products and advanced materials. It is targeting Boron applications in the field of clean energy transition, electric transportation and food security amongst other high-performance, high-tech and high-margin applications.

The global shift from fossil based systems of energy production to renewable energy is increasingly important to investors, consumers and governments. The emergence of renewable energy, the onset of electrification and improvements in energy storage are all key drivers of clean energy transition. Boron is a key component in energy transition because it is highly versatile in chemical reactions and can be applied in processes for storing chemical and electrical energy, amongst other applications.

Global access to mined Boron is rare and the Company's production is underpinned by an even more rare and large colemanite deposit. Colemanite is a conventional Boron mineral that has been used to commercially produce Boron for broad applications for centuries. The Fort Cady colemanite ore deposit is the largest known contained traditional Borate occurrence in the world not owned by the two major Borate producers Rio Tinto and Eti Maden. The JORC compliant Mineral Resource Estimate and Reserve comprises 13.93Mt of contained Boric Acid.

As part of the commercialisation strategy, the Company will produce Boric Acid, Boron specialty products and advanced materials (and SOP as a by-product credit) from Mannheim furnaces. SOP is a high value specialty fertiliser prized for its low chloride potassium and sulfur content. Large target markets exist on ABR's doorstep in California and Arizona (collectively known as the bread basket of the United States)

The Company is currently working through a process to ensure a strong listing on NASDAQ having appointed a US Advisory Board and completing various activities including strengthening its executive management team, focusing on a larger initial mining operation to deliver stronger earlier EBITDA and progressing discussions with US based investment banks, potential US partners and debt capital markets advisors.

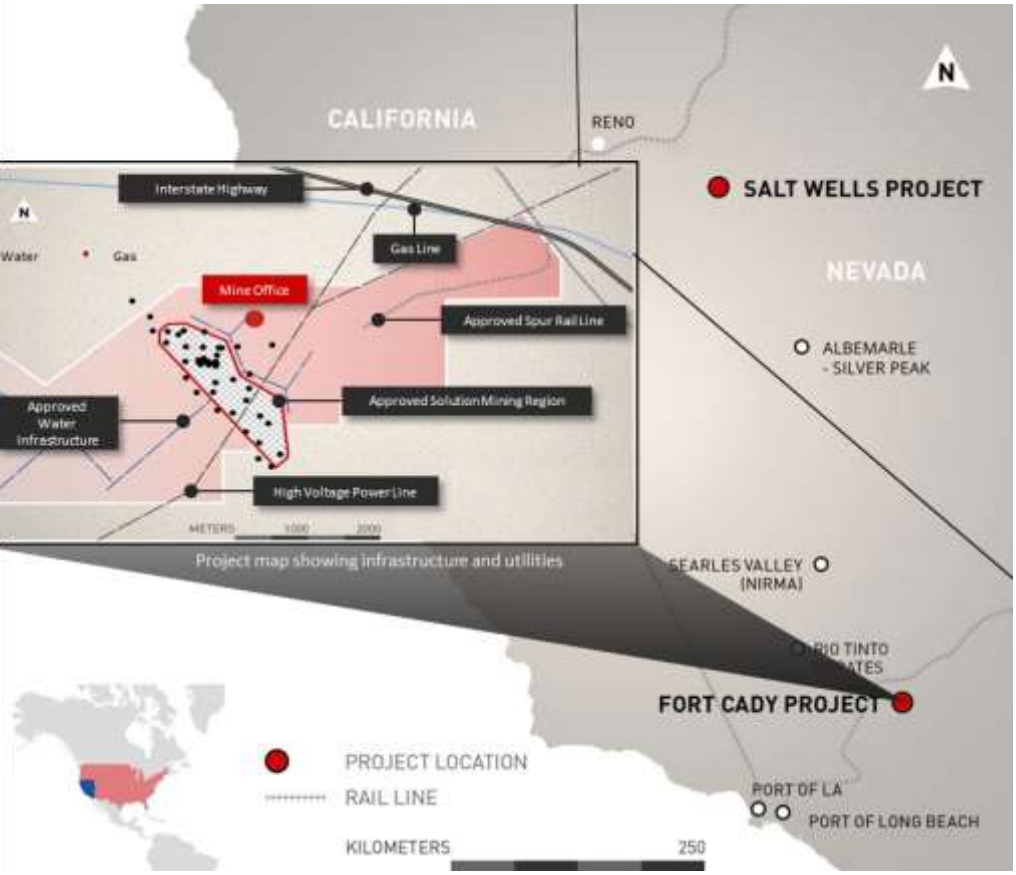


**Figure 1: Location of the Fort Cady and Salt Wells Projects in the USA**