



**BPH GLOBAL LTD**  
**ACN 009 104 330**

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Company Announcements Platform  
Australian Securities Exchange

### **Temasek Polytechnic (Singapore) R&D agreement – Critical mineral identification and extraction**

#### **Highlights**

- **Critical Mineral extraction: Phycomining techniques to unlock essential minerals**
- **Initial focus on determining the presence of arsenic, zinc and aluminium**
- **Search for mineral content to focus on arsenic, zinc and aluminium**
- **R&D program undertaken by Temasek Polytechnic, overseen by Company's R&D consultant**
- **Precipitation and fermentation techniques to be trialled**

The Board of BPH Global Ltd (ASX: BP8) (**Company**), is pleased to advise the execution of an outsourcing research and development consultancy agreement with TP Innovation Holdings Pte Ltd (**TPIH**) on behalf of Temasek Polytechnic in Singapore. Pursuant to the agreement, the Company's wholly owned, Singapore-based subsidiary Stemcell United Pte Ltd (**BP8 Singapore**) has engaged TPIH to provide R&D services to the BP8 Group (**Consulting Agreement**).

In its announcement to the market earlier this week regarding the [renewed agreement with Gaia Mariculture Pte Ltd \(Gaia\)](#), the Company foreshadowed the outsourcing of certain R&D activities to third party R&D services providers under the supervision and oversight of Gaia (**Gaia Consulting Agreement**). The potential services to be outsourced includes the study of the efficacy of deploying phycomining techniques in metal recovery. Under the supervision and oversight of Gaia, TPIH will, pursuant to the Consulting Agreement, conduct a feasibility study on the efficacy of deploying phycomining techniques in metal recovery.

#### **The Company's objectives and business model**

A core R&D goal of the Company is to develop the technology and expertise to locate, separate and extract critical minerals from seaweed by deploying phycomining techniques. In doing so, the Company will also seek to confirm that seaweeds grown in polluted waters will contain higher concentrations of minerals than those grown in pristine waters. To achieve these outcomes the BP8 Group will cultivate seaweed and/or acquire seaweed grown in polluted waters and provide those seaweeds to TPIH to enable the R&D work to be done.

## Critical minerals

A critical mineral is a metallic or non-metallic element that has two characteristics:

- it is essential for the functioning of our modern technologies, economies or national security and
- there is a risk that its supply chains could be disrupted.

Critical minerals are used to manufacture advanced technologies including mobile phones, computers, fibre-optic cables, semi-conductors, banknotes, and defence, aerospace and medical applications. Many are used in low-emission technologies such as electric vehicles, wind turbines, solar panels, and rechargeable batteries.

Risks to critical mineral supply chains can come about when mineral production or processing is dominated by individual countries or companies that could limit availability. Other risks include market immaturity, political decisions, social unrest, natural disasters, mine accidents, geological scarcity, pandemics, and war.

### Arsenic, zinc & aluminium - the Company's initial focus

The Company has noted that individual countries develop their own lists of critical minerals based on the relative importance of particular minerals to their industrial needs and strategic assessment of supply risks. In addition, assessments of mineral criticality are likely to reflect market and political conditions at a particular point in time and are, therefore subject to change. In addition, the Company ability to extract certain critical minerals will be dependent on the specific mineral content of the seaweed cultivated or purchased by the Company.

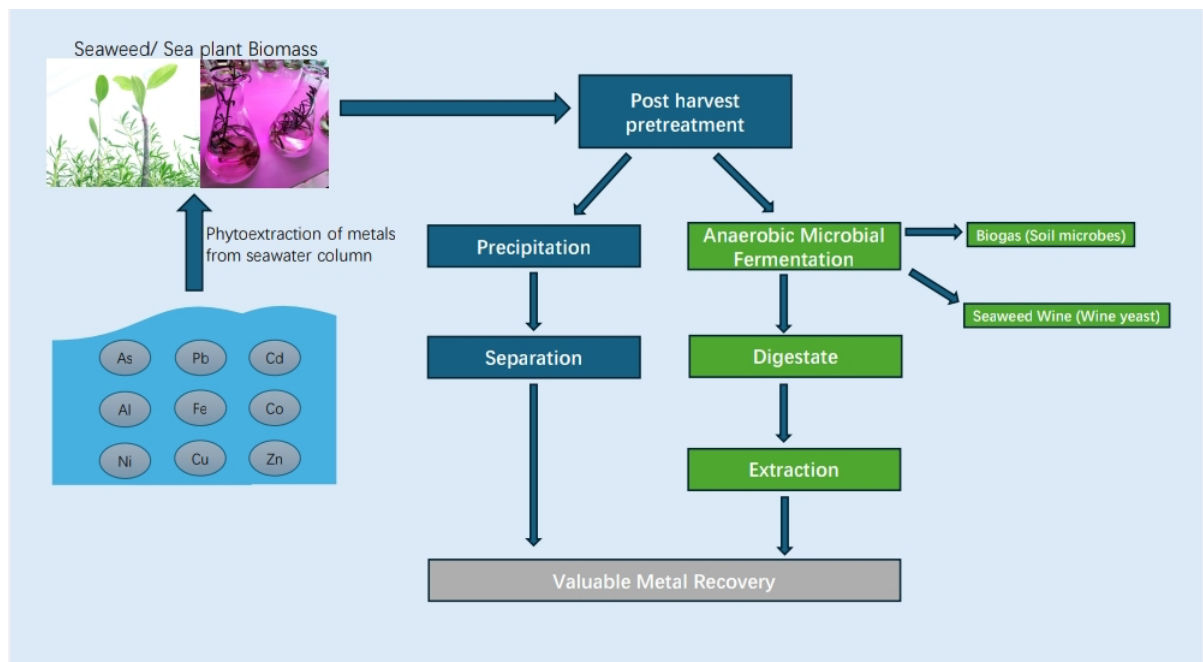
With these factors in mind, and accepting that certain minerals may not be present in certain batches of seaweed, the Company has decided to focus on the extraction of arsenic, zinc and aluminium.

### The Phycomining techniques to be deployed by TPIH

Phycomining, also known as Phytomining, is the general term used to describe the concept of mining metals using plants and seaweeds. The Company's assumption for its R&D program is that seaweeds grown in contaminated soils will contain higher concentrations of metal compounds compared to seaweeds grown in pristine waters. Mineral rich seaweeds can be harvested and the metals extracted for use in various industries and industrial processes or sold into the minerals markets.

To achieve energy cost savings for the metal recovery process, the Company has instructed TPIH to use two non-thermal intensive techniques in providing the R&D services:

- **Precipitation:** is a method whereby chemicals are added to interact with the soluble metals to form insoluble compounds, so that these can be removed via mechanical filtration.
- **Fermentation (Anaerobic Digestion):** transforms seaweed biomass to an intermediate liquid product from which essential minerals (and nutraceuticals) can be extracted.



### The phycoming services to be provided by TPIH

The scope of the work to be undertaken by TPIH is defined in the Consultancy Agreement as:

- The conduct of a feasibility study on the efficacy of deploying Phycoming techniques based on the use of aquatic hyperaccumulator biomasses to bioaccumulate higher concentrations of metals in seaweed cultivated in seawater; to compare the concentration of metals in seaweed between cultivars from polluted and non-polluted sites; and consider different techniques to recover valuable metals from the seaweed biomass.
- So as to achieve energy cost savings for the metal recovery process, two non-thermal intensive techniques will be used: precipitation and fermentation.
- Subsequently, further developmental work in the refinement of these identified techniques will be considered in preparing the next steps to take to improve process efficiency and/or yield of extracted minerals.
- TPIH will also:
  - **Precipitation:** In relation to the precipitation method:
    - perform seaweed processing analysis to ascertain the metals content of one selected seaweed species;
    - perform necessary pre-treatment and precipitation of metals (from seaweeds); and
    - ascertain the metallic content of the precipitated solids.
  - **Fermentation:** In relation to the fermentation method:
    - perform seaweed fermentation using a suitable yeast strain/consortium for seaweed fermentation at 200-1000 ml scale. Suitable natural ingredients may be incorporated (if necessary) into part of the fermentation process;
    - conduct analytical tests on the fermentation product including colour, clarity, alcohol content, antioxidant content, heavy metals content and pH; and
    - conduct extraction of metals from the digestate after fermentation process.
- TPIH will review preliminary experimentation outcomes with the Company and adjust experimental methods accordingly.
- TPIH will provide the Company with the following deliverables:
  - Monthly updates on project progress in end January, February, March, April and May 2025; and

- A Final Report which will include the study design, experimental results and the discussion/interpretation of the results.

Seaweed to be used by TPIH in providing the R&D services will be provided by Gaia on behalf of BP8 Singapore.

### **Other material terms of the TPIH Consultancy Agreement**

Other material terms of the Consultancy agreement:

- The term of the Consulting Agreement is six months from the effective date (2 January 2025) ending on 30 June 2025.
- The term of the Agreement may be extended for a further period of two (2) months with the agreement of the parties.
- The Consulting Agreement can be terminated by either party on the giving of thirty (30) days' notice.
- In consideration of TPIH providing the the R&D services, BP8 Singapore will pay TPIH SGD\$9,750 + GST (**Project Fee**). The Project Fee is payable in two instalments: (i) SGD\$4,875 + GST on the commencement date; and (ii) SGD\$4,875 + GST at the end of the term (30 June).
- All Project intellectual property is the property of BP8 Singapore.
- The Company grants TPIH and its affiliates and/or subsidiaries an irrevocable, non-exclusive, royalty-free, perpetual, worldwide licence to use the Project Intellectual Property owned by the Company for non-commercial purposes including, but not limited to, the undertaking of any collaborative projects with any third party.
- The credit term is fourteen (14) days from the date of the invoice issued by TPIH. For any late payment, TPIH reserves its rights to charge an interest rate of 8.5% per annum on the total invoice value.
- Party (the "Terminating Party") shall be entitled to terminate the Agreement by giving the other party thirty (30) days written notice to the other Party upon the occurrence of a material breach of the Consulting Agreement or an insolvency event occurs.

### **About Temasek Polytechnic**

Temasek Polytechnic is a leading institution of higher learning located in Tampines, Singapore. Established in 1990, the campus of Temasek Polytechnic sits on a 30 hectare plot near the Bedok Reservoir in the eastern part of Singapore. The institute has approximately 15,000 full-time students and more than 1,200 academic and administrative staff. Temasek Polytechnic offers 37 full-time diploma courses in the areas of applied sciences, business, design, engineering, humanities & social sciences, and informatics & IT.

For further information, please visit our website at [www.bp8global.com](http://www.bp8global.com) or contact:

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This announcement has been approved for release by the Board of Directors.