



31 March 2025

ASX Market Announcements

Via e-lodgment

HPMSM PROJECT UPDATE – ACTIVELY SEEKING A STRATEGIC PARTNER TO ADVANCE THE PROJECT INTO FULL SCALE PRODUCTION

Highlights

- Successfully manufactured HPMSM at RDG's owned and operated Micro Plant.
- Recent HPMSM samples have consistently met, or exceeded, Original Equipment Manufacturer (OEM) battery material specifications.
- Process optimisation is largely complete.
- Approximately 40kg of HPMSM samples produced, now available for OEM qualification processes.
- Developed a SysCAD model for a 50,000tpa HPMSM process plant (Train 1), with an accompanying schematic.
- Actively seeking a strategic partner to advance to full-scale production, targeting Australia's first HPMSM production facility.

Resource Development Group Limited (**ASX: RDG**) (**RDG** or the **Company**) is pleased to provide an update on the successful production of further samples of High Purity Manganese Sulphate Monohydrate (**HPMSM**) using its own proprietary technology to process ore from its 100% owned Ant Hill manganese deposit, and its aim of securing a strategic partner to advance the project into full-scale production. This announcement follows on from the one made on 29th November 2024 and is in line with the Company's objective of becoming a Battery Minerals producer.

Battery Minerals refers to various minerals used in rechargeable batteries including manganese.

Overview

- HPMSM samples from the Micro Plant have undergone independent analysis by Source Certain International (SCI), a NATA-accredited laboratory in Western Australia. Results confirm compliance with, or exceeding, Chinese standard and numerous OEM specifications.

Metallurgical Test Work

The initial Micro Plant runs used ore from the same diamond drill holes as used in the previously reported testwork. The assorted samples remaining after the previous testwork were blended to give a series of samples of different feed composition which partially covered the anticipated variability in composition across the Ant Hill deposit. A further 100kg of ore were obtained from stockpiles to the south of the deposit and at the former site of the beneficiation plant developed prior to RDG taking ownership of the project. An additional 250kg was collected from the same stockpiles to allow continuation of the



optimisation work in the Micro Plant and to produce samples of HPMSM which have been made available for qualification testing to various OEM's.

HPMSM Production & Process Development

Following on from previous announcements (ASX: 15/11/2023 and 29/11/2024), the present runs were made using the same flowsheet but at larger scale on a semi-continuous basis. Reagents commercially available in bulk were used to better understand the importance of reagent purity on the process. Reagents from different sources were trialled and were found to have variable levels of impurities which affected the purification process. Additional work was undertaken to source reagents with lower impurities from other suppliers.

The initial runs in the Micro Plant were used to provide technical data, which was used by Carnac Project Delivery Services Pty Ltd (Carnac) to develop the 50,000tpa (Train 1) SysCAD model of the process.

The leachate was processed through purification and crystallisation to give manganese sulphate crystals. Substantial process development occurred during these runs to gain a better understanding of the interrelationship between temperature, time, impurity removal, reagent type and addition and the general operating conditions. The reagent requirements, operating temperature, residence times, maximum impurity levels in solution and a range of other parameters were optimised for each stage using the Micro Plant.

Further smaller scale runs were undertaken to allow investigation of alternative process options, including alternative methods for removing impurities.

The most recent runs to produce samples for OEM qualification used the same flowsheet, reagents and operating conditions in order to assess the consistency of the process.

Table 1 below shows the analyses of the most recent HPMSM products. After evaporation, the crystals were washed using high purity water, thermally dried at 140°C and sent for analysis at Source Certain International (SCI), a NATA accredited laboratory in Wangara, Western Australia.

Each batch of crystals were analysed in duplicate and the average value is reported. The Grade 1 and Grade 2 standards are from the Chinese standard HG/T 4823-2023 "Manganese sulphate for battery materials". Several elements not specified within the Chinese Standard but present within OEM specifications are also presented in Table 1.

Table 1: HPMSM analysis

Element	Grade 1 HG/T 4823-2023	Grade 2 HG/T 4823-2023	Run 12	Run 13	Run 14
Al	10	30	26.8	11.4	13.0
As			0.20	0.07	<0.03
Ba			3.55	0.43	0.15
Ca	50	100	24.1	5.6	8.3
Cd	5	10	<0.02	<0.02	0.04
Cl	100	200			
Co	50		8.8	1.2	3.2
Cr	10	15	0.15	0.06	0.23
Cu	10	20	0.90	1.25	1.41
F	Neg	Neg			



Element	Grade 1 HG/T 4823-2023	Grade 2 HG/T 4823-2023	Run 12	Run 13	Run 14
Fe	10	20	<0.5	<0.5	<0.5
Hg			<0.005	<0.005	<0.005
K	30	50	24.5	31.7	16.2
Mg	50	100	52.8	28.3	18.6
Mn (min) %	31.18	32			
Na	100	200	41.6	30.9	25.7
Ni	50		12.7	0.6	1.1
P			<5	<5	<5
Pb	10	15	<0.05	<0.05	<0.05
Se			0.63	0.68	1.98
Si	Neg	Neg	79.9	104.0	62.4
Sn			<0.1	<0.1	<0.1
Zn	10	20	0.70	0.67	1.42

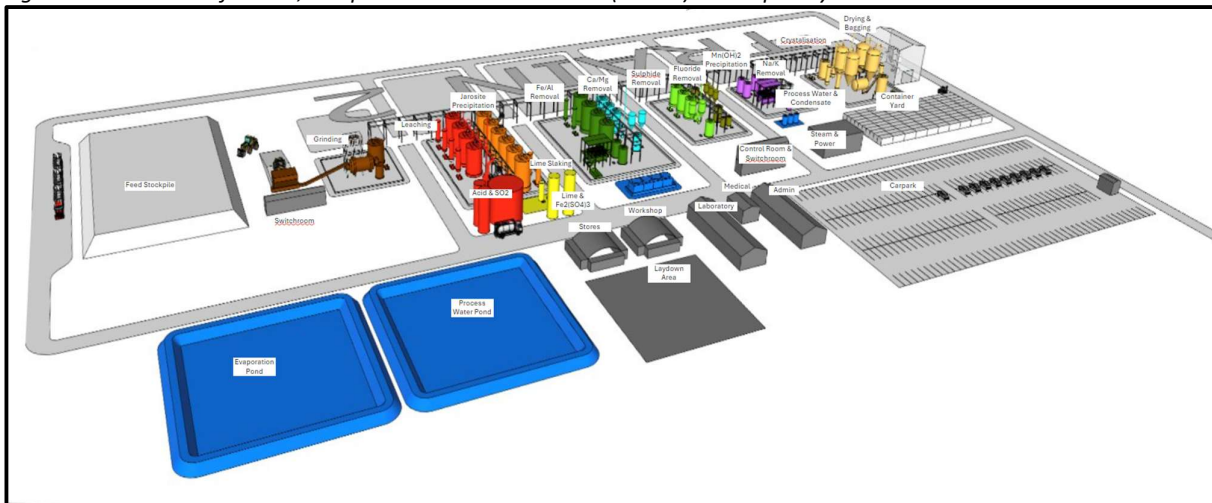
Notes:

- 1) Neg indicates that the level is negotiable with the OEM.
- 2) The ICP method used by SCL is unable to measure Cl or F and a method capable of providing suitable detection limits is being researched.
- 3) The Mn in the crystals is too high for the ICP to measure accurately. Internal analyses indicate that all crystals were >32% Mn.
- 4) Other than Mn all measurements are in parts per million (ppm)

As is clear, all three sets of crystals achieved the Grade 2 HPMSM (Chemical Industry Standard of The People's Republic of China HG/T 4823-2023), only the Al level being slightly over, prevented the sample meeting the Grade 1 (Chinese standard HG/T 4823-2023). The crystals met at least 3 other OEM specifications. Improvement in the removal of some elements, notably, Al, Ca, Co, Mg, Ni and Na was evident after Run 12. This is considered due to the optimisation efforts, improved operating methods and better process control.

In parallel with the process development work, the Company engaged Carnac Project Delivery Services Pty Ltd (Carnac), a multi-disciplinary engineering consultancy company to develop a SysCAD model and a Conceptual Schematic of the full-scale (Train 1) process facility, shown in Figure 1.

Figure 1: Schematic of the 50,000tpa HPMSM Process Plant (Train1) developed by Carnac





Future Work & Next Steps

Continued enhancements will improve impurity removal and physical HPMSM processing. Some laboratory test work is planned to assess the effect of adding seed crystals to stages where precipitation occurs. Seed crystals generally increase the rate of removal of elements and produce a coarser product thereby aiding filtration. Dewatering and washing of the crystals have also been identified as areas where improvements can be made.

The design of a larger Pilot Plant capable of producing 40-50kg per day of HPMSM has been completed using the data obtained from the test work programme and the SysCAD model. The Pilot Plant will allow the production of the much larger mass of HPMSM required by offtake partners in order to proceed to the subsequent stages of qualification with vehicle and battery manufacturers. It will also provide additional engineering data necessary for the design of the full-scale plant.

The Pilot Plant will be fed using ore from a number of locations within the Ant Hill orebody to ensure the process is sufficiently robust. Geometallurgical assessment of the orebodies will be undertaken to identify the best locations for sampling the orebodies.

Carnac have been engaged to provide CAPEX and OPEX Estimates in line with Class 5 estimates according to the AACE standards.

Resource Development Group Managing Director Andrew Ellison commented:

“The incredible progress on this project is a true testament to the relentless dedication and expertise of our team. We are now in a prime position to secure a strategic partner and accelerate the project into full-scale production—paving the way for Australia’s first high-purity manganese sulphate monohydrate facility. This marks a major milestone in shaping a new era for Australia’s critical minerals industry.”

This announcement dated 31 March 2025 is authorised for market release by the Board of Resource Development Group Ltd.

Michael Kenyon
Company Secretary

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COMPETENT PERSONS STATEMENT – Metallurgy

The information in this report relating to metallurgical test work results is based on and fairly reflects information reviewed by Dr Nicholas Welham. Dr Welham is a consultant to RDG Technologies Pty Ltd, a 100% owned subsidiary of Resource Development Group Limited. Dr Welham is involved in leading the development and optimisation of the process to produce HPMSM. Dr Welham is a Fellow of the Australian Institute of Mining and Metallurgy. Dr Welham is a qualified metallurgist and has sufficient experience which is relevant to the management and interpretation of test work activities undertaken to qualify as a Competent Person as defined in the 2012 Edition of the “Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves”. Dr Welham consents to the inclusion in the ASX release of the matters based on their information in the form and context in which it appears.