TRIGG

29 May 2023

ASX ANNOUNCEMENT

ASX: TMG

Positive initial test results from innovative new technology for producing SOP feed salts

Highly encouraging bench-scale test results pave the way for pilot-scale trials on a potential industry-changing technology being pursued by Trigg.

Key Points

- Second bench-scale test replicates the positive preliminary results for the innovative technology solution being evaluated to produce potassium-rich feed salts, as outlined in the Company's announcement of 3 April 2023.
- 2.4m^3 of concentrated brine from Lake Throssell is now en-route to the technology partner's laboratory for pilot-scale testing of the alternative processing route.
- Pilot-scale test work scheduled to commence early next Quarter which, if positive, has the potential to significantly de-risk Trigg's Lake Throssell Sulphate of Potash (SOP) Project in WA.

Trigg Minerals Limited (**ASX: TMG**) (**Trigg** or **the Company**) is pleased to report encouraging progress from its Research and Development (R&D) activities into an alternative processing method for producing potassium-rich feed salts from its Lake Throssell Sulphate of Potash (SOP) Project in WA.

The ongoing test-work, being undertaken with a technology partner, has the potential to deliver a simpler and more commercially robust method for processing feed salts which could significantly de-risk the Lake Throssell SOP Project. If commercially proven, the technology also has significant positive implications for the broader SOP industry in Western Australia.

The Company is pleased to report that a sighter-scale test on 100mL of concentrated brine from Lake Throssell has duplicated earlier preliminary results, with a 1L bench-scale test now underway to assist in the refinement of parameters for a planned pilot-scale test program.

The test-work is designed to provide an alternative to the secondary evaporation ponds where the concentrated brine needs to be maintained in an equilibrium to precipitate the complex potassium-rich salts (kainite-type mixed salts or KTMS).

Maintaining this part of the process in a steady-state when open to the atmosphere – with all of the consequent changes in temperature, pressure and humidity – has been shown by the nascent SOP industry's first movers to be problematic.

SmallCap Corporate, Suite 1, 295 Rokeby Road, Subiaco, Western Australia 6008
TRIGG.COM.AU +61 497 203 678 info@trigg.com.au

This is the phase of the SOP processing flowsheet which Trigg has been focusing on in order to identify and develop an alternative process route where the environment in which the precipitation occurs can be controlled – improving the reliability of the process and potentially reducing the time required for the ramp-up phase.

Bench-Scale Tests

A sighter-scale test on 100mL from the initial batch of concentrated brine from Lake Throssell has duplicated earlier preliminary results (Table 1).

A 1L bench-scale test is now underway to assist in the refinement of parameters for a planned pilot-scale test program and resulting salt samples from this program will be dried and sent for characterisation prior to the commencement of the pilot test.

Table 1: Brine analysis of 100mL sighter-scale test

Stage	K	Mg	Na	Cl	SO_4
	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
0	29,100	52,867	53,833	186,793	104,100
1	19,933	49,121	34,322	156,218	78,695
2	19,896	52,335	33,679	164,950	78,178
3	22,435	55,971	28,754	172,107	75,682
4	21,681	64,734	16,427	195076	52,520
5	18,311	73,050	10,204	212,784	44,257
6	9,507	78,489	6,707	226,244	29,397

Pilot-Scale Test

To prepare for the pilot-scale test-work, scheduled for next Quarter, brine that was abstracted from the Lake Throssell surficial aquifer during the 2022 drilling program was concentrated in a laboratory in Perth.

This step simulated the first phase of the traditional evaporation ponds to remove excess halite (sodium chloride or table salt) and replicates that of successful coastal salt evaporation ponds, where the robust halite crystals form freely. This preliminary evaporation process remains a part of the proposed process flow sheet for Lake Throssell, taking advantage of the abundant solar energy available on the Project.

The chemistry of the initial 19 tonnes (t) of brine (Table 2) was evaporated under accelerated atmospheric conditions at 60 to 80^{o}C with rapid air movement for up to 165 days. This removed over 4 tonnes of waste salt (Table 3) and approximately 12 tonnes of water to produce a final concentrated brine (Table 4) of 2.4m^3 in volume, weighing 3 tonnes.

As well as improving the reliability of the production and addressing some of the issues identified by the industry's first movers, the proposed alternative process will potentially recover some of the water from the brine that would ordinarily be evaporated into the atmosphere.

This has the advantage of not only increasing the efficiency of the process, but also reducing the requirement for an additional bore field for processing and camp water, therefore improving the overall environmental outcomes.

In the pilot-scale test, an estimation of the potential water recovery from the brine and quality of that water will be also assessed.

It is anticipated the pilot-scale test will provide sufficient data for the Company to establish a concept-level engineering design – including the additional energy needed – and quantify the savings through improving the reliability and efficiency of the process, reducing pond areas and accelerating the ramp-up phase.

Table 2: Initial Brine Chemistry prior to evaporation

	Volume	Spec Gravity	Mg	Ca	K	Na	Cl	S	SO_4
	(L)	Mg/L	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
Initial Brine	**15,751**	**1.21**	**10,477**	**293**	**6,263**	**103,418**	**138,750**	**8,424**	**24,475**

Table 3: Waste Salt

Bulk bag #	Wet Mass	Moisture	Mg	Ca	K	Na	Cl	S	SO_4
	(kg)	% w/w	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
1	456.5	0.66	3,200	1,680	2,000	369,250	578,200	8,000	23,200
2	864.5	1.12	4,900	1,190	2,000	372,900	557,000	8,500	23,500
3	558.0	1.73	2,000	1,270	1,000	390,700	594,400	3,700	10,700
4	887.5	0.82	4,400	760	3,000	380,900	615,400	5,900	17,900
5	986.0	3.76	3,200	390	2,000	387,350	585,600	2,800	8,000
6	223.5	2.77	3,200	1,070	2,000	361,300	559,800	6,300	15,100
7	175.5	0.91	3,200	920	3,000	370,250	580,600	8,800	14,000
Total	**4,151**	**1.79**	**3,649**	**955**	**2,122**	**379,297**	**584,784**	**5,658**	**16,014**

Note: Due to the requirement for many manual handling events to concentrate the large volume of brine in the laboratory there were considerable losses of waste salt.

Table 4: Final Concentrated Brine Chemistry for Pilot-Test

FINAL ICB #	Volume	Spec Gravity	Mg	Ca	K	Na	Cl	S	SO_4
	(L)	Mg/L	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
1	813	1.279	46,601	58	26,707	53,480	226,420	31,679	95,038
2	729	1.280	47,726	59	27,447	54,259	215,500	32,494	97,420
3	856	1.277	46,407	58	27,402	54,464	212,040	31,340	93,986
Total	**2,399**	**1.278**	**46874**	**58**	**27,180**	**54,068**	**217,965**	**31,805**	**95,386**

Note: Due to the requirement for many manual handling events to concentrate the large volume of brine in the laboratory there were considerable losses of brine.

Market Update

Prices in global potash markets have continued to ease on weak demand and reduced sentiment. The benchmark price is down approximately 40% year-on-year to around US$670/t since sanctions and other trade restrictions pushed potash prices to record highs.

The price remains above the long-term price assumption of US$550/t used in the Lake Throssell Scoping Study but highlights the imperative for Trigg to continue to learn from the industry first movers and seek alternative methodologies to mitigate technical and commissioning risks.

The Trigg Board will continue to focus on cost-saving measures and seek to deliver value for shareholders through this R&D and other initiatives.

Trigg Minerals' Managing Director, Keren Paterson, said: *"This is an exciting phase in the R&D process as we begin to generate some hard data to support our evaluation of what could well turn out to be a game-changer for Trigg and the broader SOP industry. Importantly, the second bench-scale test has replicated the initial findings – a very positive milestone which paves the way for a pilot-scale test to be carried out in the coming months.*

"This is a pivotal moment in the development of this new technology, which has the potential to improve the processing reliability of the much-needed and essential mineral fertiliser required for sustainable food production. In addition to its broader industry implications within the SOP sector, it may also have implications for the extraction of other minerals in brine.

"We look forward to keeping shareholders updated on our progress as we continue to generate further information and move towards the pivotal pilot scale test work program."

This announcement was authorised to be given to ASX by the Board of Directors of Trigg Minerals Limited.

Keren Paterson
Managing Director

Trigg Minerals Limited

For more information please contact:

Keren Paterson
Managing Director

Trigg Minerals Limited
0497 203 678

info@trigg.com.au

Nicholas Read
Investor and Media Relations

Read Corporate
(08) 9388 1474

nicholas@readcorporate.com.au

Forward Looking Statements

This report contains forward-looking statements that involve several risks and uncertainties. These forward-looking statements are expressed in good faith and believed to have a reasonable basis. These statements reflect current expectations, intentions or strategies regarding the future and assumptions based on currently available information. Should one or more of the risks or uncertainties materialise, or should underlying assumptions prove incorrect, actual results may vary from the expectations, intentions and strategies described in this announcement. No obligation is assumed to update forward looking statements if these beliefs, opinions, and estimates should change or to reflect other future developments.

Competent Persons Statement

The information in this announcement that relates to brine test-work and analysis is based upon information compiled by Mr Laurie Mann, who is employed by Elmet Pty Ltd, an independent consulting company. Mr Mann is a Competent Person who is a Fellow of the Australasian Institute of Mining and Metallurgy and has sufficient experience relevant to the style of mineralisation and type of deposit under consideration and the activity to which is being undertaking 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”. Mr Mann consents to the inclusion in the announcement of the matters based upon the information in the form and context in which it appears.

APPENDIX – JORC Tables

Section 1: Sampling Techniques and Data		
Criteria	**JORC Code explanation**	**Commentary**
Sampling techniques	• *Nature and quality of sampling (eg cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.* • *Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.* • *Aspects of the determination of mineralisation that are Material to the Public Report.* • *In cases where 'industry standard' work has been done this would be relatively simple (eg 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay'). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (eg submarine nodules) may warrant disclosure of detailed information.*	• Results reported in this announcement relate to chemical test-work conducted by Trigg Minerals to advance its investigations into an alternative process for the recovery of sulphate of potash (SOP) from brine sourced from its Lake Throssell project. • A 16m^3 sample was taken from one trench in the surface of the Lake Throssell playa targeting the surficial aquifer. This sample is considered to be representative of the surficial aquifer brine and its chemistry. • The brine sample was evaporated at Nagrom in Perth, Western Australia under laboratory control and the supervision of Mr Laurie Mann who is a metallurgist with over 50 years' experience in the resources industry and is a Fellow of the AusIMM. • 4 batches of IBCs were setup with immersion heaters and two industrial fans. Each IBC was heated continuously to 80^{o}C during weekdays. The heating was turned off during weekends. The brines were evaporated to the brine harvest Mg tenor of 3.2-3.8%. Initially, the brine batches were topped up with fresh brine when target tenor was achieved. Salt harvests were conducted to ensure IBCs had sufficient volume to hold a significant volume of brine for evaporation. The brines were decanted at target tenor and collected and then the IBCs were topped up with fresh brine. The harvested salts were kason screened and stored in bulk bags. A total of 7 bulk bags of wet salt were collected. • Samples of the initial brine, regularly throughout the evaporation, the final concentrated brine, and salt products were analysed for Mg, Ca, K, Na, Cl & S. Waste salts produced from the concentration process were also analysed for moisture content. The specific gravity was also determined. • The resulting concentrated brine was homogenised so that all sub samples taken for future the test-work are identical.
Drilling techniques	• *Drill type (e.g. core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (e.g. core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc).*	• NA

Section 1: Sampling Techniques and Data		
Criteria	**JORC Code explanation**	**Commentary**
Drill sample recovery	• *Method of recording and assessing core and chip sample recoveries and results assessed.* • *Measures taken to maximise sample recovery and ensure representative nature of the samples.* • *Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.*	• NA
Geologic Logging	• *Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.* • *Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc.) photography.* • *The total length and percentage of the relevant intersections logged.*	• NA
Subsampling techniques and sample preparation	• *If core, whether cut or sawn and whether quarter, half or all core taken.* • *If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.* • *For all sample types, the nature, quality and appropriateness of the sample preparation technique.* • *Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.* • *Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate/ second-half sampling.* • *Whether sample sizes are appropriate to the grain size of the material being sampled.*	• See Sampling Techniques above.
Quality of assay data and laboratory tests	• *The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.* • *For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.* • *Nature of quality control procedures adopted (e.g. standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (i.e. lack of bias) and precision have been established.*	• All samples of the brine were taken by and analysed by Nagrom using ICP-AES analysis. • The bulk sample is a duplicate of previous samples taken from the trench and results correlate within acceptable limits. • Standard QA/QC procedures are applied at Nagrom, an ISO 9001 accredited laboratory.
Verification of sampling and assaying	• *The verification of significant intersections by either independent or alternative company personnel.* • *The use of twinned holes.* • *Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.*	• The initial brine results were in-line with previous sample results drawn from the aquifer which were verified by Bureau Veritas. The results were examined by Mr Laurie Mann for consistency and ionic balance. On this basis the accuracy is regarded as adequate.

Section 1: Sampling Techniques and Data		
Criteria	**JORC Code explanation**	**Commentary**
	• *Discuss any adjustment to assay data.*	• Data is stored in Excel files on the Company's Cloud Storage.
Location of data points	• *Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.* • *Specification of the grid system used.* • *Quality and adequacy of topographic control.*	• NA
Data spacing and distribution	• *Data spacing for reporting of Exploration Results.* • *Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.* • *Whether sample compositing has been applied.*	• NA
Orientation of data in relation to geological structure	• *Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.* • *If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.*	• NA
Sample security	• *The measures taken to ensure sample security.*	• The sample was collected by field personnel during and delivered to Nagrom. All evaporation and test-work has been carried out by Nagrom which prepared the concentrated brine for transport. • Nagrom maintains secure storage of the Company's samples in its custody. • An international shipping agency has end-to-end custody of the concentrated brine for delivery to the technology partner.
Audits or reviews	• *The results of any audits or reviews of sampling techniques and data.*	• None.

Section 2: Reporting of Exploration Results		
Criteria	**JORC Code explanation**	**Commentary**
Mineral tenement and land tenure status	• *Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.* • *The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.*	• Tenements E38/3065, E38/3544, E38/3537, E38/3458 & E38/3483 at Lake Throssell are 100% owned by Trigg Minerals. • Trigg Minerals has Exploration Access Agreements with the traditional owners of the Lake Throssell area.
Exploration done by other parties	• *Acknowledgment and appraisal of exploration by other parties.*	• No previous exploration has been caried out on Lake Throssell.

Section 2: Reporting of Exploration Results		
Criteria	**JORC Code explanation**	**Commentary**
Geology	• *Deposit type, geological setting and style of mineralisation.*	• Shallow unconfined surficial lake playa and deep confined palaeo-drainage system. • The deposit is a brine containing potassium and sulphate ions that could form a potassium sulphate salt (sulphate of potash). The brine is contained within saturated sediments.
Drill hole Information	• *A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes:* • *easting and northing of the drill hole collar;* • *elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar;* • *dip and azimuth of the hole;* • *downhole length and interception depth; and* • *hole length.* *If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.*	• NA
Data aggregation methods	• *In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (e.g. cutting of high grades) and cut-off grades are usually Material and should be stated.* • *Where aggregate intercepts incorporate short lengths of high-grade results and longer lengths of low-grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.* • *The assumptions used for any reporting of metal equivalent values should be clearly stated.*	• NA
Relationship between mineralisation widths and intercept lengths	• *These relationships are particularly important in the reporting of Exploration Results.* • *If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.* • *If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (e.g. 'downhole length, true width not known').*	• NA.
Diagrams	• *Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported. These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.*	• NA. • This test-work is related to an alternative for the secondary evaporation process in the proposed flow-sheet in the Scoping Study (see ASX Release 5 October 2021)

Section 2: Reporting of Exploration Results		
Criteria	**JORC Code explanation**	**Commentary**
Balanced reporting	• *Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.*	• All meaningful and pertinent results that are available are presented in the report.
Other substantive exploration data	• *Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.*	• NA.
Further work	• *The nature and scale of planned further work (e.g. tests for lateral extensions or depth extensions or large-scale step-out drilling).* • *Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.*	• Advance the bench-scale test-work with the technology partner to finalise pilot-scale test parameters. • Pilot-scale test of the proposed alternative to the KTMS crystalliser ponds.