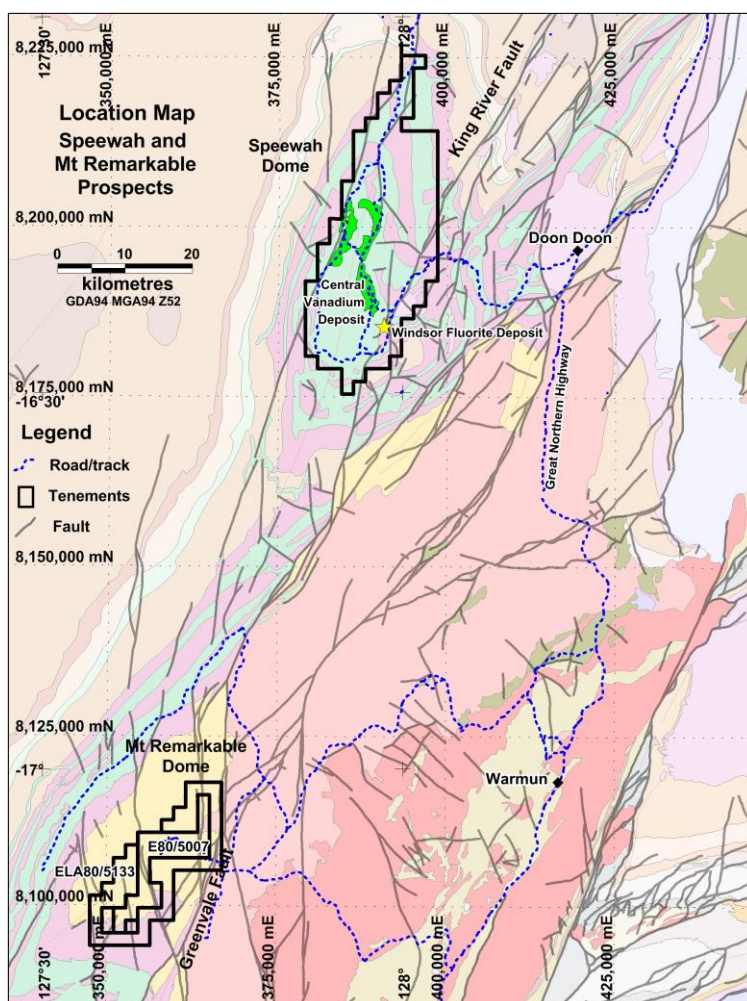


**Australian Securities Exchange Announcement**

**2 April 2019**

**SUMMARY OF HIGHLIGHTS**

- ❖ The Speewah Specialty Metals (SSM) Project progressed with:
  - KRR continued testwork and studies into on-site Beneficiation-Sulphuric Acid Tank/Vat Leaching-Precipitation of V, Ti and Fe end products, with the potential to reduce costs.
  - Heated Agitated Tank Leach and Heated Flooded Vat Leach testwork on magnetite-ilmenite concentrate and coarse lump material have delivered positive results, including Vanadium leach extractions to 97% after 3 days in agitated leach and 90% after 14 days in vats.
  - Como Engineers Capex Opex Scoping Study, based on a Beneficiation-Agitated Tank Sulphuric Acid leaching-Solvent Extraction process, demonstrated significantly lower capital costs.
  - Testwork and studies are underway to deliver a Prefeasibility Study towards 3<sup>rd</sup> quarter 2019.
- ❖ Final gold drill assays from exploration completed in 2018 at Mt Remarkable report more high grade gold intersections to the east and below the main Trudi grid, including:
  - 4m @ 19.88g/t Au including 1m @ 69.30g/t Au from 21m
  - 2m @ 10.47g/t Au from 33m
  - 3m @ 4.29g/t Au including 1m @ 6.7g/t Au from 27m



**Figure 1: Location of the Speewah and Mt Remarkable projects on a regional geological map**

During the March quarter 2019 King River Resources Ltd (ASX:KRR) reported on the Speewah Specialty Metals (SSM) Project studies and also further high grade gold intersections at the Mt Remarkable Gold project, both located in the East Kimberley of Western Australia and 100% owned by KRR (Figure 1).

## Speewah Specialty Metals (SSM) Project

### Sulphuric Acid-Leach Tests

KRR has been conducting sulphuric acid (H<sub>2</sub>SO<sub>4</sub>) flooded vat leach and agitated leach tests on coarse magnetite gabbro lumps and magnetite-ilmenite concentrate, from the high grade zone of the Central Vanadium deposit (Figure 2). This testwork summarised below is to support a new development plan for the SSM project to produce vanadium pentoxide (V<sub>2</sub>O<sub>5</sub>), titanium dioxide (TiO<sub>2</sub>) and iron (Fe<sub>2</sub>O<sub>3</sub>) products, along with other potential high value products like high purity alumina (4N HPA) and magnesium oxide products. Details of this testwork were reported KRR ASX release 1 March 2019.

#### Heated Flooded Column Leach Testwork

Nagrom have completed the first heated flooded column leach test on 4468.8g P<sub>100</sub> 5.6mm lump magnetite gabbro sample. This sample is from the high grade zone of SDH11-9 located in the Central Vanadium deposit (Figure 1).

This test more closely simulates a vat leach setup.

Initially, pre-leach slump and water percolation tests were completed on the 5.6mm lump sample in the column. These reported an average flow rate of 162L/min/m<sup>2</sup> and a pre-leach slump of 2%.

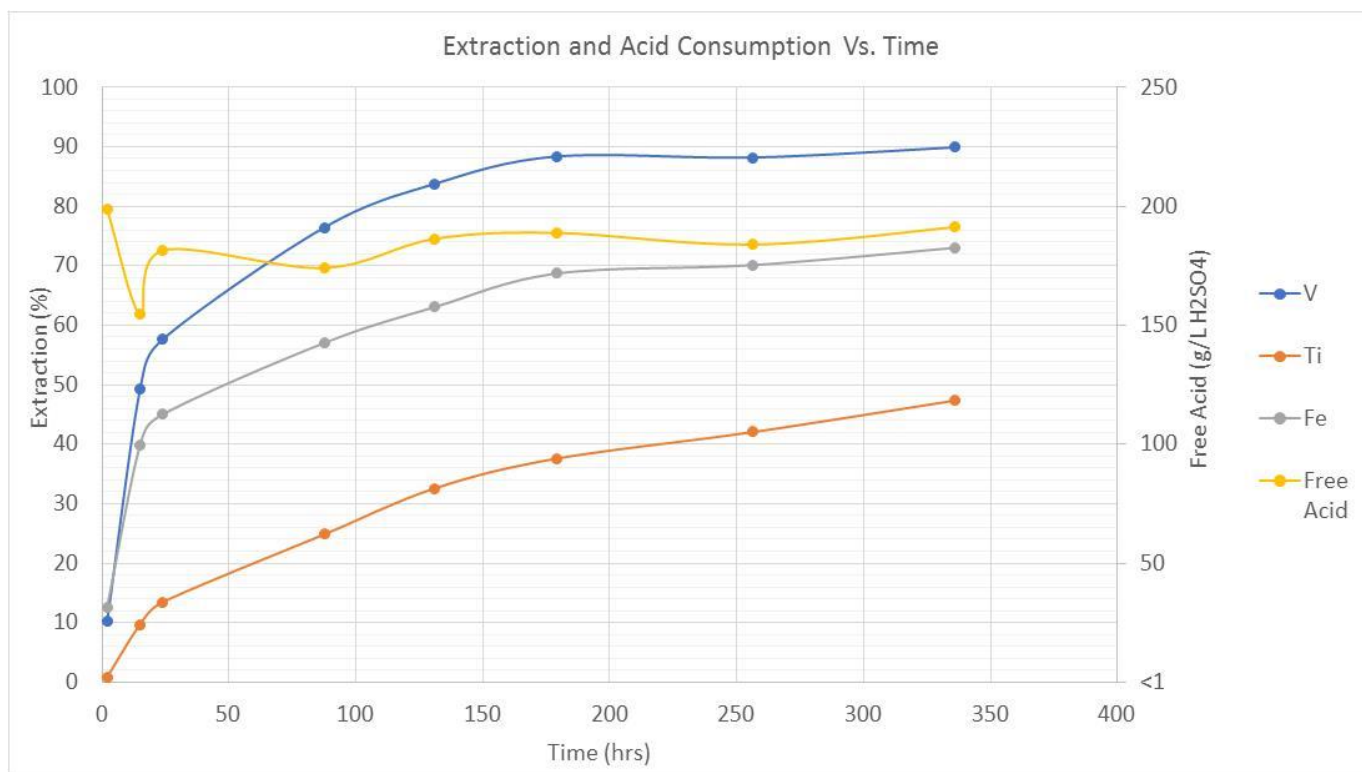
The final sulphuric acid leach results are summarised in the table below. The test conditions were leach temperature 70°C, leached in 20% H<sub>2</sub>SO<sub>4</sub> acid at 20% pulp density. The acidity was maintained between 150-200 g/L free acid H<sub>2</sub>SO<sub>4</sub> during the leach, at an upward flow rate of 37.4L/minute/m<sup>2</sup>. The leach was run over 14 days with solution assays monitored regularly to determine completion of V leaching.

Lump Sample Size	Acid (%)	Time (hours)	Time (days)	Column Leach Extractions (%)							Mass Loss	Acid Consumption	Post Leach Slump	Flow Rate
				V	Fe	Ti	Mg	Al	Ca	Si	%	kg/t	%	L/min/m <sup>2</sup>
HG P <sub>100</sub> 5.6mm	20	336	14	90	73	47	54	43	3.2	0.05	21.94	668	0	37.4

HG = high grade, head assay 0.36% V<sub>2</sub>O<sub>5</sub>, 3.65% TiO<sub>2</sub>, 21.37% Fe<sub>2</sub>O<sub>3</sub>, 44.75% SiO<sub>2</sub>, 12.74% Al<sub>2</sub>O<sub>3</sub>, 8.36% CaO, 4.33% MgO, 2.32% Na<sub>2</sub>O and 1.12% K<sub>2</sub>O.

These flooded column results are very encouraging and show:

- 90% V and 47% Ti leach extraction after 14 days. Ti leach curve is positive and still leaching.
- Most V, Fe and Ti extraction occurred in 7.5 days (see graph below).
- High flow rates and no slumping of the particles within the column have facilitated acid leaching.
- Particle size distribution (PSD) of the P<sub>100</sub> 5.6mm lump grains after leaching show little breakdown of the original lumps to finer grained material (see final residue PSD graph on the next page). The leached grains are more brittle than the original material.



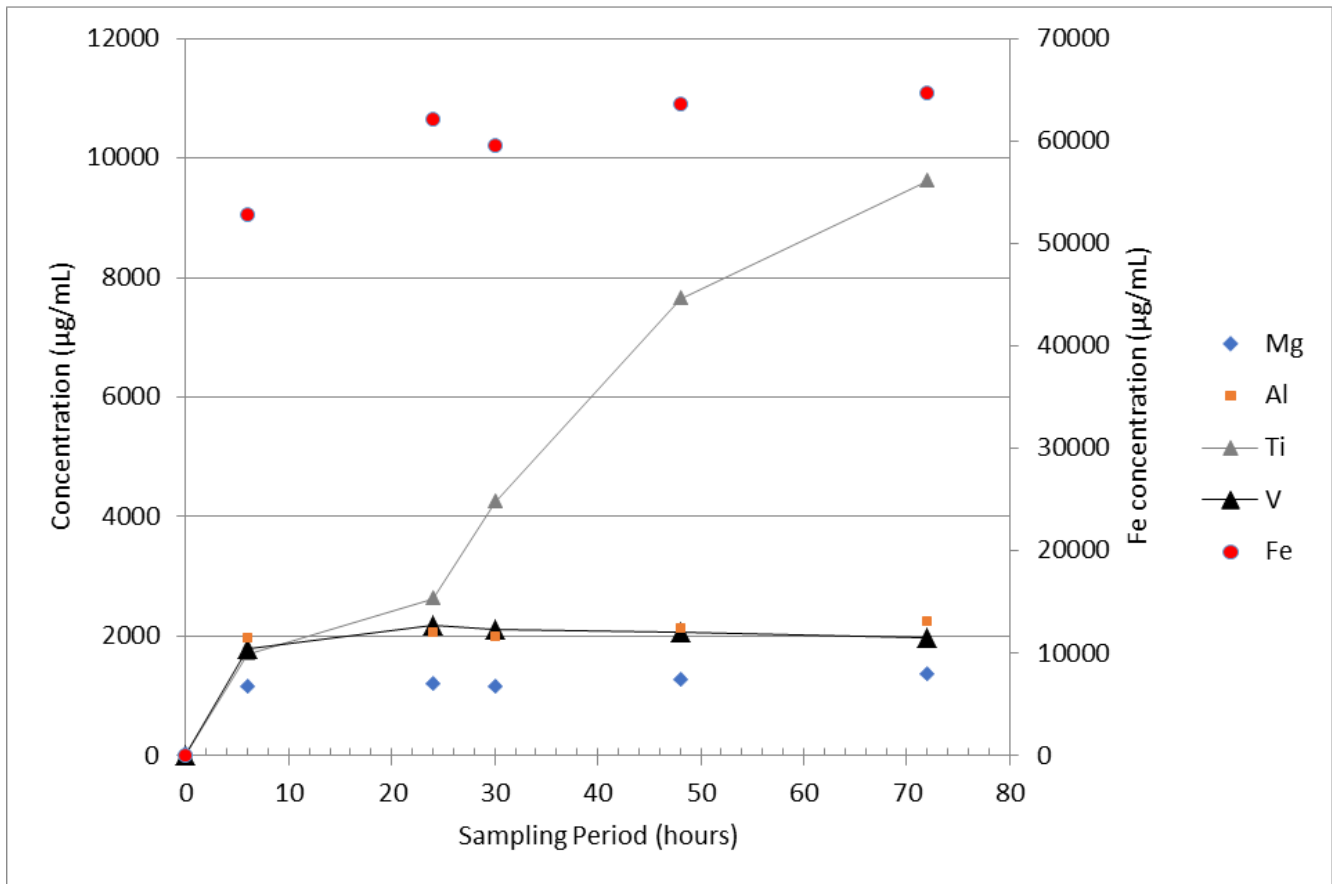
### Heated Tank Leach Testwork

TSW Analytical completed a sulphuric acid leach on a 106 micron concentrate sample from the high grade zone of SDH08-6 (Figure 1). The leach was completed under the same test conditions as the flooded column leach tests (20% H<sub>2</sub>SO<sub>4</sub> maintained at this level throughout the leach, 20% pulp density, plus agitation). The solution liquors were analysed at 6, 24, 30, 48 and 72 hours.

This test was completed to provide comparative data for engineering design of two vat leach scenarios – treating lump magnetite gabbro in static vats (the flooded column test above) and magnetite-ilmenite concentrate in agitated tanks.

The results of the concentrate microleach is summarised in the table below:

Concentrate Sample Size	Acid (%)	Time (hours)	Time (days)	Leach Extractions (%)						Mass Loss	Acid Consumption
				V	Fe	Ti	Mg	Al	Ca	%	kg/t
HG P <sub>80</sub> 106 um	20	72	3	97	89	62	62	70	39	63.9	990



These agitated leach results on concentrate show:

- 97% V and 62% Ti leach extraction after 3 days.
- Most V, Fe, Mg and Al extraction occurred in less than 24 hours (see graph).
- Ti extraction requires more time to leach and the positive Ti leach curve suggests higher extractions could be obtained by extending the leach time beyond 3 days.

### Refining Processing of V, Ti and Fe Products

Now that the leach testwork has successfully demonstrated very good metal extractions from both lump and concentrates in sulphuric acid, the company's focus will shift more to precipitation testwork to recover the targeted metals from the leach solutions.

Precipitation testwork is underway, using leach liquors from vat lump material and 106 micron concentrates, to make vanadium pentoxide, titanium dioxide, iron oxide and vanadyl sulphate products, trialing solvent extraction (SX), ion exchange (IX), thermal hydrolysis and chemical precipitation methods. This work is ongoing and results will be reported separately.

Over the next month, the emphasis will be on the precipitation of iron (Fe) as ferrous sulphate and the oxidation of the ferrous sulphate to produce an iron oxide product and recover sulphur dioxide. Iron is the most abundant metal in the leach solution, and its initial removal from the solution should aid the extraction of vanadium, titanium and other metals oxides.

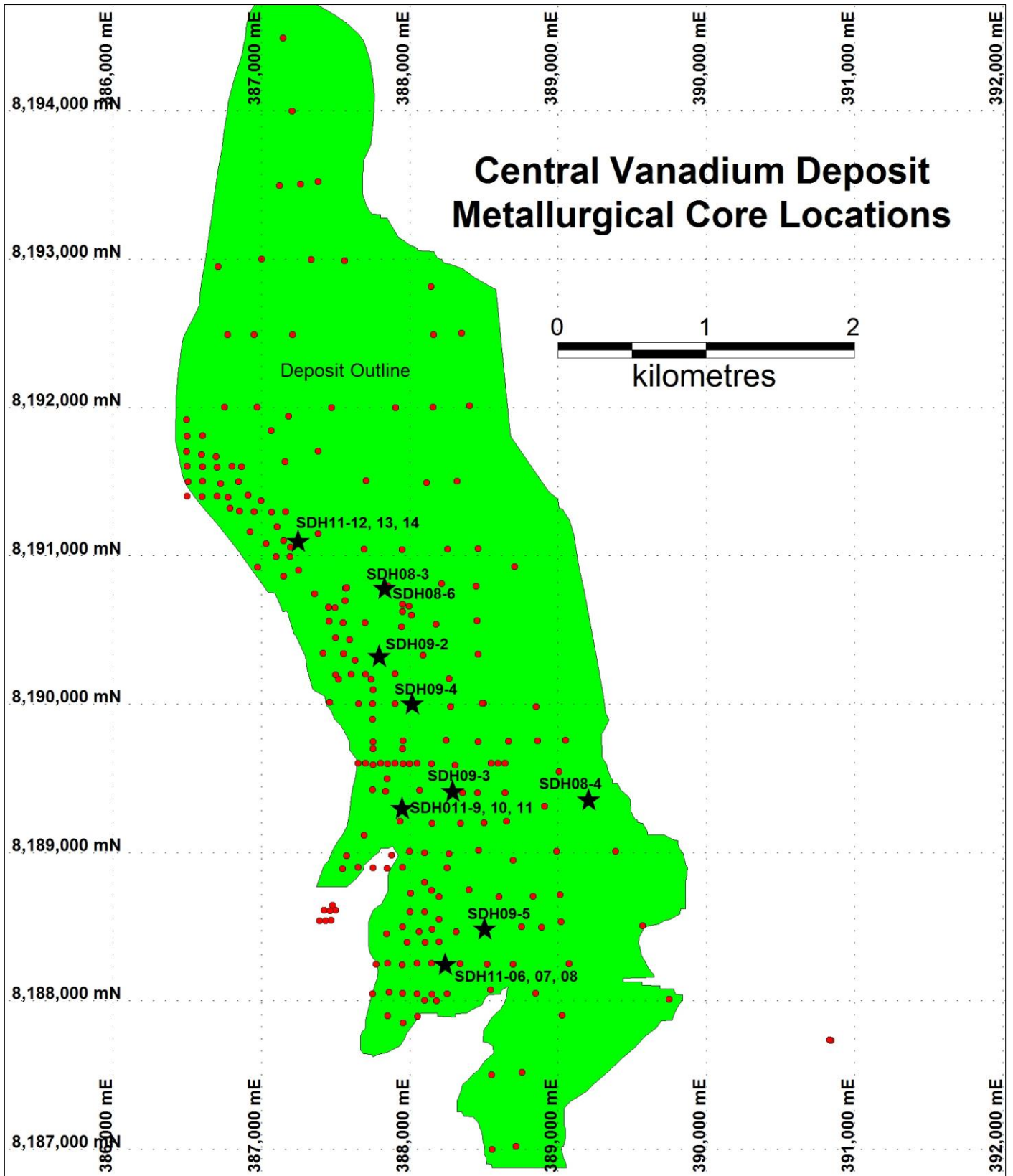


Figure 2: Diamond core hole locations (black stars) and Reverse Circulation drill holes (red dots) within the Central Vanadium Deposit, including metallurgical core holes SDH08-06 and SDH11-09 referred to in this announcement.



## Vanadium Capex Opex Scoping Study

KRR engaged Como Engineers in Perth to compile Scoping Study level ( $\pm 30\%$  accuracy) Capital Expenditure (CAPEX) and Operating Expenditure (OPEX) cost estimates for the Beneficiation, Leach and Metal Recovery Processing Facility and the Acid Contact and Regeneration Plants required for on-site sulphuric acid production. The details are reported in KRR ASX release dated 21 and 22 March 2019.

The Processing Facility and Acid Plants CAPEX (excluding power) estimates are summarised in the table below. The CAPEX costings include a 20% contingency.

Process Route	Main Plant Components	CAPEX	
		A\$ Million	US\$ Million
Agitated Tank Leach	Processing Facility	359	258
	Acid Contact and Regeneration Plants	580	418
	<b>TOTAL</b>	<b>939</b>	<b>676</b>

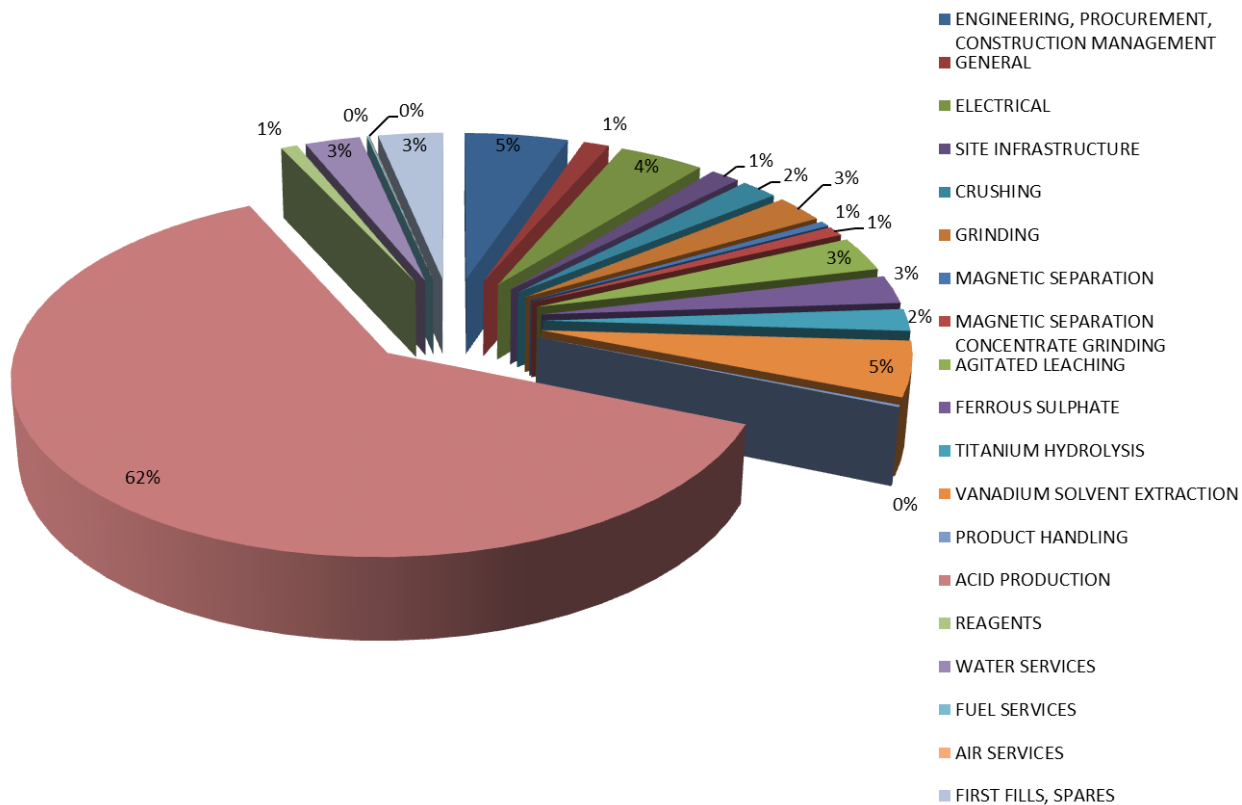
The design assumptions and qualifications are listed below:

Assumptions and Qualifications	Agitated Tank Leach Operation	Basis for Assumption
Currency	All costs in A\$ ex GST	-
Foreign Exchange Rates	USD\$0.72 = AUD\$1.00; EUR 1.00 = AUD\$1.60	Quoted rates
CAPEX Exclusions	Roadworks, mining and geology, mining infrastructure, bore water supply, power station, tailings dam, camp, offices, and communication costs.	-
OPEX Exclusions	Mining and geology, grade control and assays, tailings disposal, product transport, bore water supply.	-
Power	All electrical power and process heating are provided by the acid plant.	Burning 60tph sulphur prill generates 48MW of power
Beneficiation Head Grade of Feed (%)	0.31% V <sub>2</sub> O <sub>5</sub> , 3.37% TiO <sub>2</sub> and 14.7% Fe	CSA Global Mine Study
Beneficiation Grain Size (mm)	0.5	Metallurgical testwork
Beneficiation Mass Yield (%)	32	Metallurgical testwork
Leach Feed Re grind Size (mm)	0.15	Metallurgical testwork
Number of Leach Tanks	10	Calculated
Leach time (days)	3	Metallurgical testwork
Sulphuric Acid Consumption (kg/t concentrate)	1000	Metallurgical testwork
Acid Plant Size (tonnes acid/day)	4,400	Calculated
Sulphur Requirement (tonnes/hour)	60	Calculated
Magnetic Separation Recovery (%)	81.9% V, 85.5% Ti and 58.5% Fe	Metallurgical testwork
Leach Extractions (%)	96.9% V, 61.8% Ti and 89% Fe	Metallurgical testwork
Precipitation Efficiencies (%)	95% V, 93% Ti and 50% Fe	Assumed

The Processing Facility comprises three main units:

- Beneficiation Circuit that processes mine feed by crushing, grinding and magnetic separation to produce a P80 0.50mm magnetite-ilmenite concentrate which is reground to a P80 of 0.15mm prior to leaching.
- Agitated Tank leach Circuit that leaches the concentrate in sulphuric acid for 3 days.
- Metal Recovery Circuit to produce the three target commodities – vanadium pentoxide, titanium dioxide and iron oxide products.

- The Sulphuric Acid Plant is the heart of the process plant, producing sulphuric acid, steam, and electricity to drive the entire process. Sulphuric acid is produced by combining sulphur prills and water then piped to the leach tanks. Heat recovered from the production of the sulphuric acid could be used to generate steam that is piped to the vanadium pentoxide ( $V_2O_5$ ), titanium dioxide ( $TiO_2$ ) and iron oxide ( $Fe_2O_3$ ) plants to provide heat for the evaporation and crystallisation steps in the processes and heat the leach tanks. Steam could also be used to generate electricity in a steam turbine generator.



The CAPEX and OPEX Scoping Study has provided an early indication that the agitated tank leaching option should be the main focus for future metallurgical testwork and investigations.

The following strategies will be investigated and trade-off studies completed to help further reduce the capital and operation costs which will be quoted at  $\pm 25\%$  accuracy in the PFS:

- Reduce acid consumption. This will include investigating shorter leach times, optimise agitation, pulp density and grain size, and increase the feed and concentrate grades and reduce the mass yield.
- Obtain quotes from several acid plant suppliers.
- Reduce the leach circuit size by increasing the pulp density.
- Produce intermediate products that will eliminate the final stage calcination equipment and energy costs (such as remove Fe precipitation and acid regeneration from ferrous sulphate, or the sale of  $TiO_2(OH)_2$  hydrolysate instead of final titanium dioxide  $TiO_2$  pigment).
- Remove an acid plant cost by:
  - Use imported sulphuric acid and electricity from hybrid diesel/solar/hydro power generation;
  - Delaying the introduction of an acid plant until later years;
  - Outsource the acid and regeneration plants constructed and operated under a BOOT (Build-Own-Operate-Transfer) facility.

## **Mt Remarkable Gold Drilling**

Drilling at Mt Remarkable in 2018 is complete and final assays received. In total, 167 holes for 10,074m were drilled, with 18 RC holes for 1,500m completed as part of the latest phase. The holes targeted the high grade gold zones to the east and below the main Trudi vein grid (Figures 3 and 4).

Best results from the final batch of assays include:

- **4m @ 19.88g/t Au** including **1m @ 69.30g/t Au** from 21m in KMRC194
- **2m @ 10.47g/t Au** from 33m in KMRC196
- **3m @ 4.29g/t Au** including **1m @ 6.7g/t Au** from 27m in KMRC195

The intersection of **4m @ 19.88g/t Au** including **1m @ 69.30g/t Au** was returned from a new, very high-grade gold zone at the eastern most edge of the Trudi grid drilling where visible gold was noted from panning of the drill piles. The discovery of this new high-grade zone is very encouraging confirming the company's belief that multiple high-grade shoots exist at Trudi and are yet to be discovered. This zone possibly connects with recently announced high grade intersection of **9m @ 2.78g/t Au** including **1m @ 12.45g/t Au** from hole KMRC182 (KRR ASX announcement 12 October 2018).

Other recent exploration drill intersections further to the east are also mineralised (up to 5.76g/t Au – previously announced KRR ASX release 12 October 2018) providing additional areas to target high-grade shoots with future infill drilling.

Assay results from drilling beneath the Trudi Main prospect showed that mineralization pinches out between the two historic narrow, high-grade intersections in 08WRC059 and 08WRC064 (3m @ 3.52g/t Au including 1m @ 8.01g/t Au and 2m @ 6.86g/t Au including 1m @ 9.04g/t Au respectively). However, to the east KMRC193 intersected very broad strong structure providing an excellent target zone to the east and on an easterly plunge (Figure 4).

## **Proposed Exploration**

Interpretation of the drill results and further study of the drill rock chips and core is ongoing. Current targets include:

- Extension of the new high-grade mineralisation at the eastern end of the Main Trudi Grid. Preliminary observations suggest a possible lithological control to the high grade.
- Step out exploration to the east of the main grid where broad strong structures have been intersected and grades up to 5.76g/t Au have been returned.
- Extensional drilling to the east and west of the Main Trudi vein
- Deeper drilling
- Follow up drilling of the Jeniffer Vein for high grade mineralisation.
- Reconnaissance exploration for new mineralized veins.

KRR also expects some of its application licenses to be granted this year opening exploration opportunities, along 200km of under explored Whitewater Volcanics (the stratigraphy that is host to the high-grade Mt Remarkable and Hunter gold Projects), for new high-grade gold deposits.



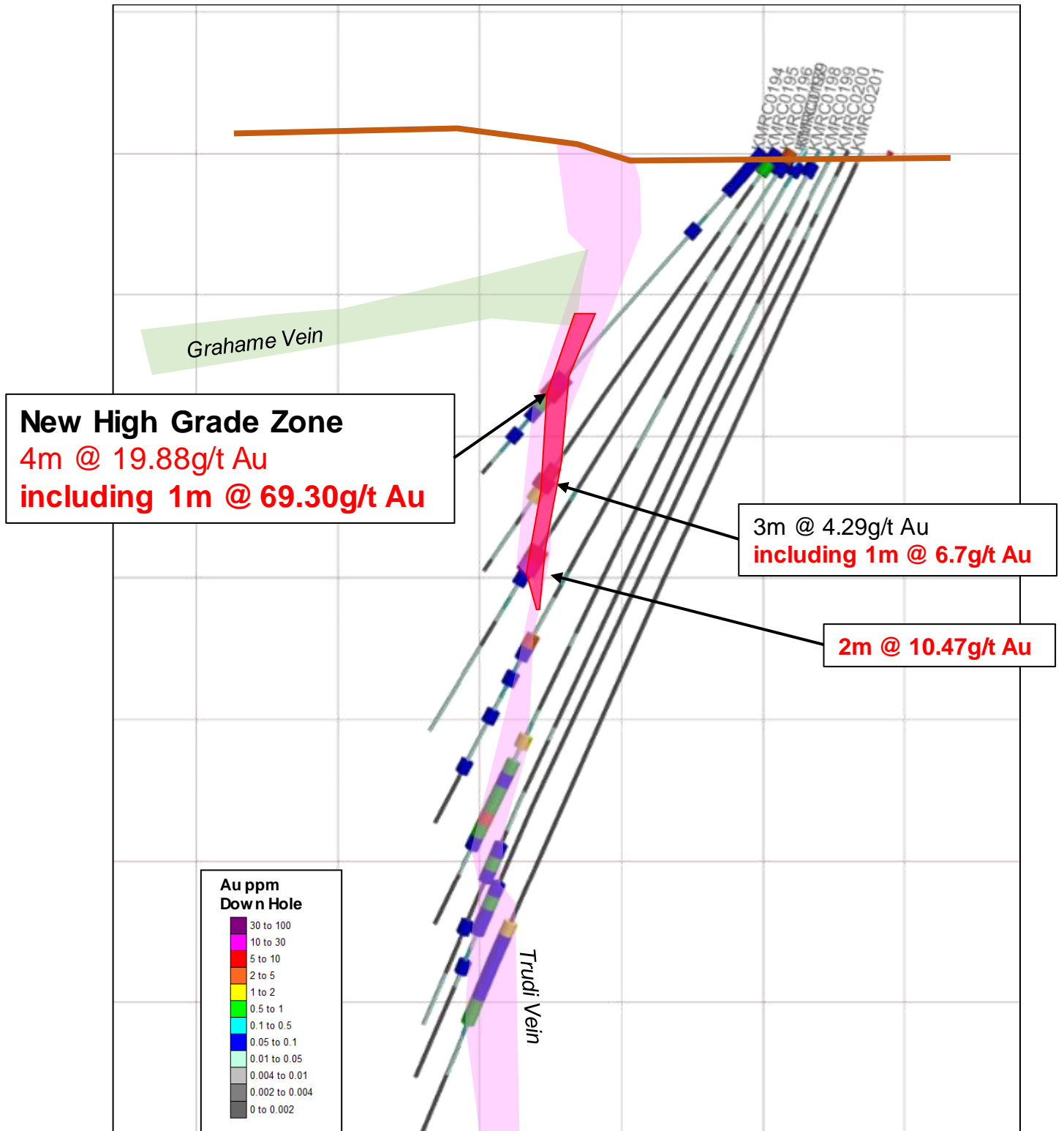


Figure 3 Results and assays pending on 359014mE section looking west

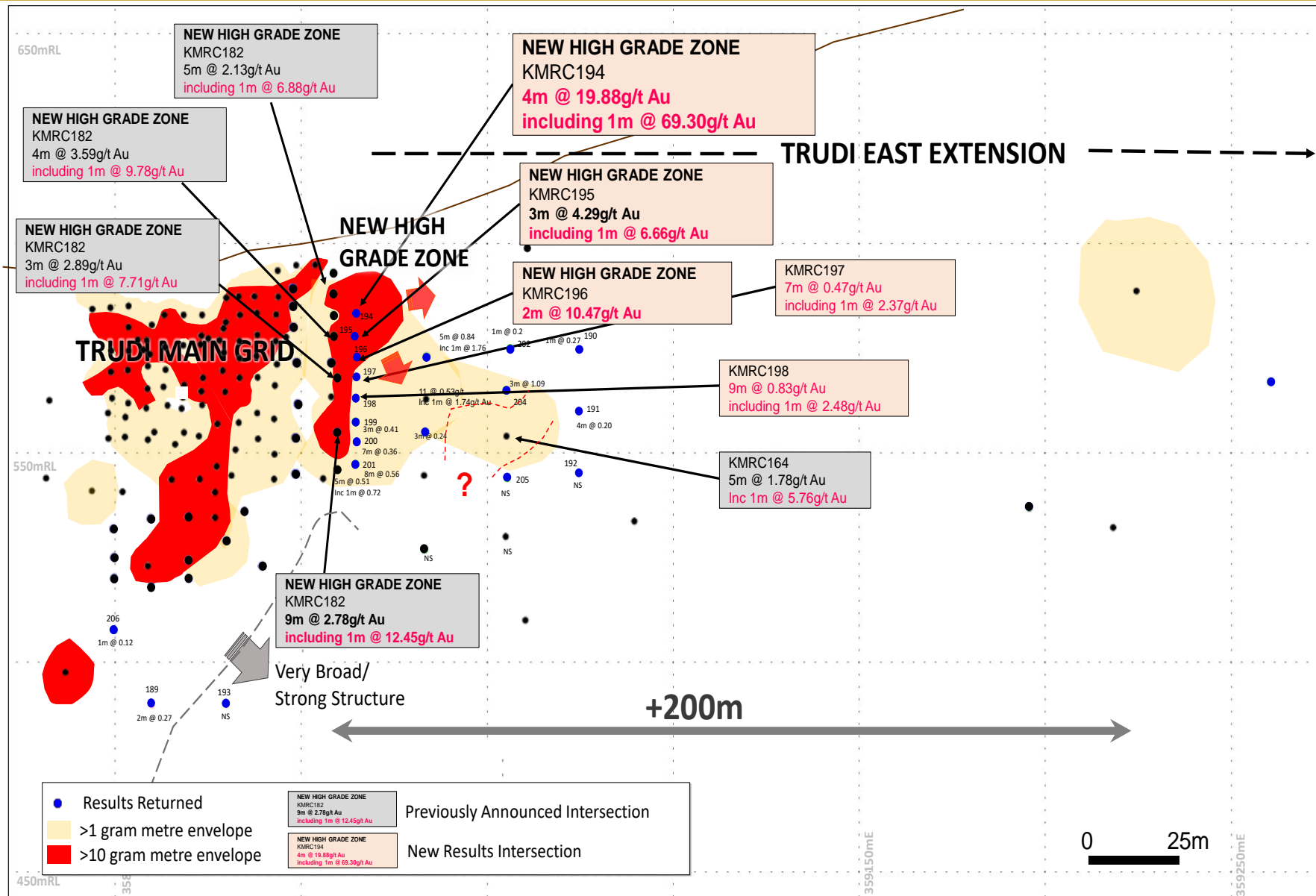


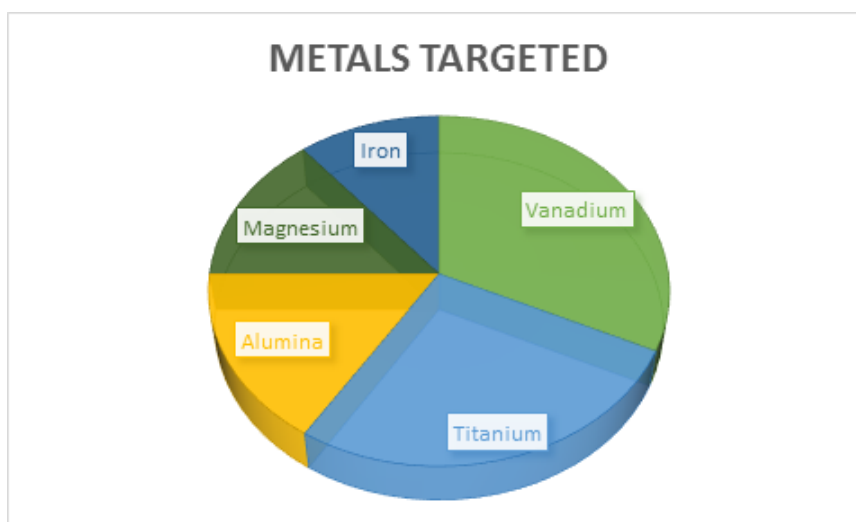
Figure 4: Long Projection of Trudi showing results

## Directors Comments

KRR is completing a Prefeasibility Study into the preliminary economics of the SSM project.

The testwork and studies completed during the quarter have identified a clear path forward for the project based on Mine-Beneficiation-Sulphuric Acid Agitated Tank Leach-Precipitation of  $V_2O_5$ ,  $TiO_2$  and  $Fe_2O_3$  products.

The sulphuric acid leaching method is also digesting a large percentage of other valuable, and globally critical metal elements (aluminium and magnesium), used in several technological and industrial processes, including the master and super alloys found in aerospace and transport products, LEDs, batteries, medical equipment, and other applications. Our Speewah project is now taking shape as much more than another large Vanadium project and it cannot be easily compared with other emerging Vanadium groups who may rely solely on the future price and demand for only vanadium products. The metals now targeted are shown below.



Now that the leach testwork has successfully demonstrated very good metal extractions from both lump and concentrates in sulphuric acid, the company's focus will shift more to precipitation testwork to recover the targeted metals from the leached solutions pregnant with dissolved metal.

The SMM project conceptual plan can be summarised as:

1. **Open pit mining** of the flat lying mineralisation of the Central deposit. Future Mining Studies in the PFS will determine whether it is based on mining just the high grade zone or a combined low and high grade operation. The combined head grade feed, based on an earlier unrestricted mine study (KRR ASX releases 20 June 2018 and 21 and 22 March 2019), would assay:  
0.31%  $V_2O_5$ , 3.37%  $TiO_2$ , 14.7% Fe
2. **Beneficiation.** Run-of-mine material would be crushed and ground to 0.5mm, with the magnetite and ilmenite magnetically separated into a concentrate with a mass yield of 32%, then the concentrate ground to 0.15mm for acid leaching. The grades of a typical concentrate from the low and high grade zones are (KRR ASX release 21 and 22 March 2019, Appendix 1):  
High Grade Zone (HG) 0.928%  $V_2O_5$ , 9.79%  $TiO_2$ , 27.3% Fe, (7.86%  $Al_2O_3$  and 3.59% MgO)  
Low Grade Zone (LG) 0.671%  $V_2O_5$ , 8.61%  $TiO_2$ , 25.3% Fe, (8.13%  $Al_2O_3$  and 3.99% MgO)
3. **Heated sulphuric acid leaching in agitated tanks.** Testwork using 20% sulphuric acid at 20% pulp density, heated to 70°C with agitation over 3 days has extracted 97% V, 62% Ti, 89% Fe, 70% Al and 62% Mg (KRR ASX release 1 March 2019).

4. **Refining of Products.** KRR is examining several hydrometallurgical methods to extract  $V_2O_5$ ,  $TiO_2$  and  $Fe_2O_3$  products, along with other potential high value products like HPA and magnesium oxide. The target recoveries assumed are 95% V, 93% Ti and 50% Fe (KRR ASX 21 March 2019).

Important metallurgical testwork and studies to be addressed in the PFS include:

- ❖ Complete heated agitated leach and further flooded column leach testwork to confirm the optimum process and conditions.
- ❖ Complete hydrometallurgical process flow sheet development trialing solvent extraction, ion exchange, thermal hydrolysis and chemical precipitation methods. Regeneration of sulphur values as sulphur dioxide ( $SO_2$ ) from the iron product is an important part of the process as it has the potential to reduce the sulphuric acid requirement.
- ❖ Options analysis into the capital and operating costs for an on-site Sulphuric Acid Plant compared to importing acid and contract diesel power generation, including the supply, port access and transport of sulphur and sulphuric acid.
- ❖ Re-assay RC drill pulps in storage for aluminium and magnesium, plus other rock forming elements, for inclusion in a new resource statement. The drill samples were originally assayed prior to 2012 for V, Ti and Fe.
- ❖ Geotechnical studies on drill core to help finalise pit design.
- ❖ Environmental, heritage and marketing studies.

**Anthony Barton**

Chairman

King River Resources Limited

**Statement by Competent Person**

The information in this report that relates to Exploration Results, Mineral Resources, Metallurgy and Previous Studies is based on information compiled by Ken Rogers (BSc Hons) and fairly represents this information. Mr. Rogers is the Chief Geologist and an employee of King River Resources Ltd, and a Member of both the Australian Institute of Geoscientists (AIG) and The Institute of Materials Minerals and Mining (IMMM), and a Chartered Engineer of the IMMM. Mr. Rogers has sufficient experience of relevance to the styles of mineralisation and the types of deposits under consideration, and to the activities undertaken, to qualify as a Competent Person as defined in the 2012 Edition of the Joint Ore Reserves Committee (JORC) Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. Mr. Rogers consents to the inclusion in this report of the matters based on information in the form and context in which it appears.

**TABLE 1: SCHEDULE OF TENEMENTS HELD AT 31 MARCH 2019  
SPEEWAH MINING PTY LTD and WHITEWATER MINERALS PTY LTD  
(wholly-owned subsidiaries of King River Resources Limited)**

Tenement	Project	Ownership	Change During Quarter	
E80/2863	Speewah (held by Speewah Mining Pty Ltd)	100%		
E80/3657		100%		
E80/4468		100%		
E80/4741		100%		
E80/4829		100%		
E80/4830		100%		
E80/4831		100%		
E80/4832		100%		
E80/4961		100%		
E80/4962		100%		
E80/4972		100%		
E80/4973		100%		
L80/43		100%		
L80/47		100%		
M80/267		100%		
M80/268		100%		
M80/269		100%		
E80/5007		Mt Remarkable (held by Whitewater Minerals Pty Ltd)	100%	
ELA80/5133			100%	
ELA80/5176	100%			
ELA80/5177	100%			
ELA80/5178	100%			
ELA80/5192	100%			
ELA80/5193	100%			
ELA80/5194	100%			
ELA80/5195	100%			
ELA80/5196	100%			

Note:

E = Exploration Licence (granted)    ELA = Exploration Licence (application)

M = Mining Lease (granted)         L = Miscellaneous Licence (granted)



**TREASURE CREEK PTY LTD**  
**(wholly-owned subsidiary of King River Resources Limited)**

Tenement	Project	Ownership	Change During Quarter
EL31617 (granted)	Tennant Creek	100%	
EL31618 (granted)		100%	
EL31619 (granted)		100%	
EL31623 (granted)		100%	
EL31624 (granted)		100%	
EL31625 (granted)		100%	
EL31626 (granted)		100%	
EL31627 (granted)		100%	
EL31628 (granted)		100%	
EL31629 (granted)		100%	
EL31633 (granted)		100%	
EL31634 (granted)		100%	

Note:

EL = Exploration Licence