KING RIVER RESOURCES LIMITED

PREFEASIBILITY STUDY UPDATE REDUCES CAPEX AND OPEX

Australian Securities Exchange Announcement 21 March 2019

King River Resources Limited (ASX: KRR) is pleased to provide this Prefeasibility Study (PFS) update on the company's 100% owned Speewah Specialty Metals ("SSM") Project in the East Kimberley of Western Australia.

The SSM project plan is to produce vanadium, titanium and iron products, along with other potential high value specialty commodities (refer KRR ASX release 1 March 2019).

KRR has engaged Como Engineers in Perth to compile Scoping Study level (±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 Study investigated two sulphuric acid leaching processing options. The results will also help focus future testwork and studies.

The two processing options investigated were:

- Static flooded vat leaching of coarse lump material (P_{100} 6.3mm grain size)
- Agitated tank leaching of a coarse concentrate (P_{80} 0.15mm grain size)

The CAPEX and OPEX study has shown that the Agitated Tank Leach option is the lower cost scenario.

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

Process Route	Main Plant Components	CAPEX		OPEX
		A$ Million	US$ Million	A$ /tonne mined
Agitated Tank Leach	Processing Facility	359	258	46.44
	Acid Contact and Regeneration Plants	580	418	
	TOTAL	939	676	

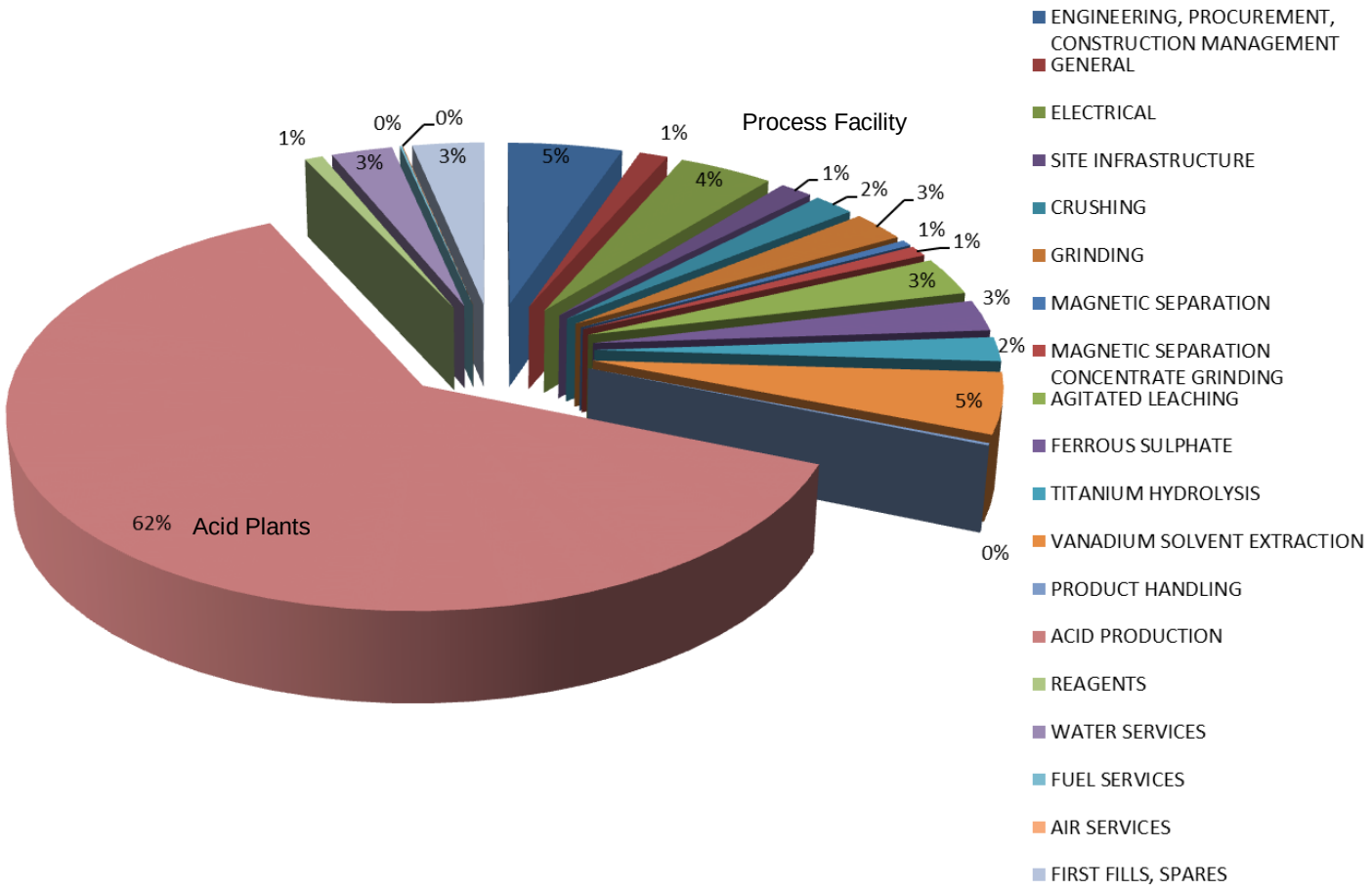
The Processing Facility comprises three main units:

1. Beneficiation Circuit that processes mine feed by crushing, grinding and magnetic separation to produce a P_{80} 0.50mm magnetite-ilmenite concentrate which is reground to a P80 of 0.15mm prior to leaching.
2. Agitated Tank leach Circuit that leaches the concentrate in sulphuric acid for 3 days.
3. Metal Recovery Circuit to produce the three target commodities – vanadium pentoxide, titanium dioxide and iron oxide products.

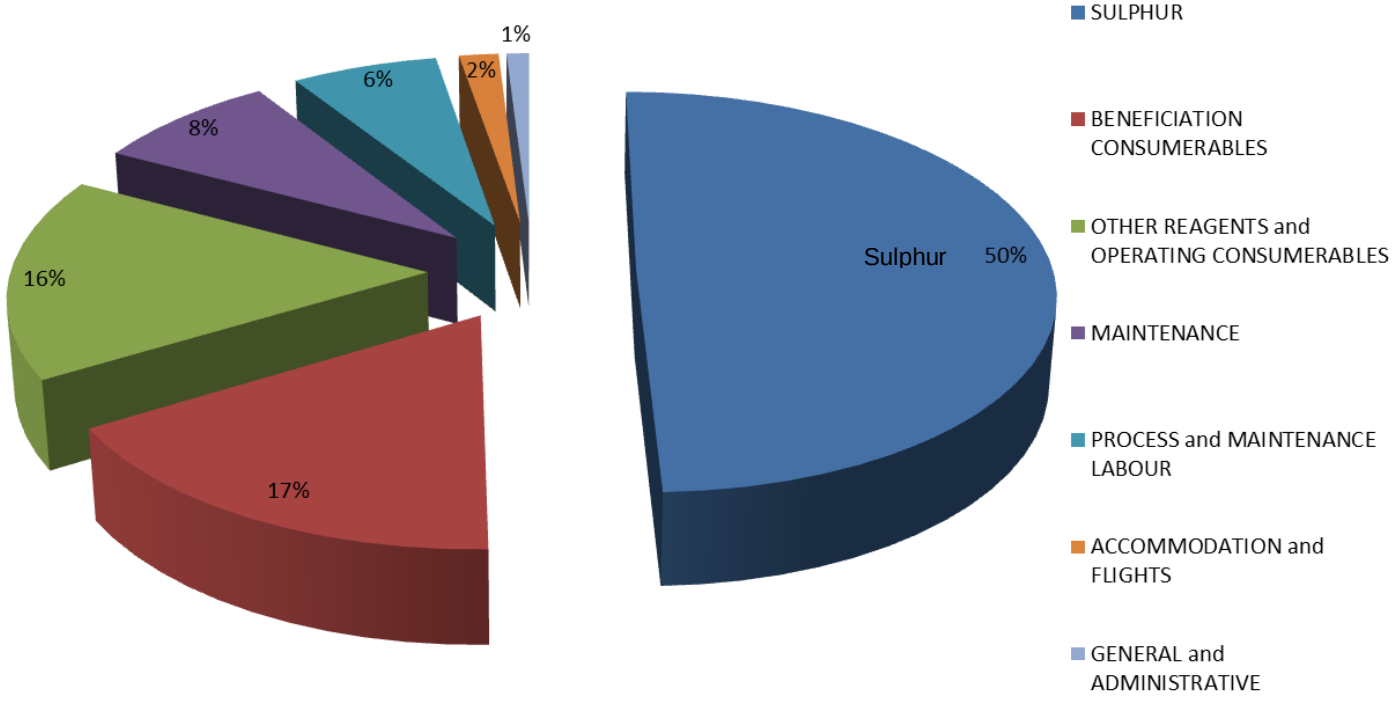
The Sulphuric Acid Plant is the heart of the process plant, producing sulphuric acid, steam, and electricity to drive the entire process. Sulphuric acid is produced by combining sulphur prills and water then piped to the leach tanks. Heat recovered from the production of the sulphuric acid could be used 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 breakdown of the CAPEX and OPEX for the Agitated Tank Leach process is summarised below:

CAPEX



OPEX



The design assumptions and qualifications used in this CAPEX and OPEX estimates are tabulated below and set out in more detail in Appendix 1.

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_2O_5, 3.37% TiO_2 and 14.7% Fe	CSA Global Mine Study
Beneficiation Grain Size (mm)	0.5	Metallurgical testwork
Beneficiation Mass Yield (%)	32	Metallurgical testwork
Leach Feed Regrind Size (mm)	0.15	Metallurgical testwork
Leach Circuit Size (concentrate t/yr)	1,600,000	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 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 ±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.

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Directors Comments

The Board is greatly appreciative of the very professional and proactive contributions of Como Engineers and our senior geologist Mr. Ken Rogers.

We are most encouraged by these initial CAPEX and OPEX estimates, as they have fallen within the lower range of KRR's initial target of US$650-750M for a three commodity project (V_2O_5, TiO_2 and Fe_2O_3).

KRR has ambitions to produce at least 5 high purity metal products, including high purity alumina (HPA).

The Opex is also below our initial target range but it will require additional costs added (including mining, power plant operation, borefield water, tailing disposal, campsite, and product transport and sales).

This study provides a clear picture for focusing the next phases of our testwork and studies.

A high priority will be to reduce the acid plant capital and operating costs, including a comparative economic study based on using imported sulphuric acid.

The Board is committed to examining the lowest capital and operating cost project development strategy and report a Prefeasibility Study (PFS) towards the 3rd quarter of 2019.

Anthony Barton
Chairman
King River Resources Limited

Statement by Competent Person

The information in this report including Appendix 1 that relates to Engineering Studies, 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.

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Appendix 1: Summary of Modifying Factors

Criteria	Commentary
Mineral Resource Estimate for conversion to Ore Reserves	• CSA Global Pty Ltd updated the Mineral Resource estimate in accordance with the JORC Code (2012) in 2017. KRR confirms it is not aware of any new information or data that materially affects the information included in this announcement and confirms that all material assumptions and technical parameters underpinning the estimate continue to apply and have not materially changed since that time. • The total Measured, Indicated and Inferred Mineral Resource in the Central, Buckman and Red Hill deposits is 4,712 million tonnes at 0.3% V_2O_5, 2% Ti and 14.7% Fe reported above a 0.23% V_2O_5 cut-off grade from the Central, Buckman and Red Hill deposits. This combined resource total comprises Measured Resources of 322 million tonnes at 0.32% V_2O_5, 2% Ti and 14.9% Fe, Indicated Resources of 1,054 million tonnes at 0.33% V_2O_5, 2% Ti and 14.9% Fe, and Inferred Resources of 3,335 million tonnes at 0.29% V_2O_5, 2% Ti and 14.6% Fe (Refer to KRR ASX announcement 26 May 2017 for the full resource statement details). • Testwork and studies have not been completed at a Prefeasibility Study (PFS) standard to allow for conversion to Ore Reserves.
Site visits	• Site visits have been undertaken by the Competent Persons involved in the Mineral Resource Estimate.
Study status	• The Speewah vanadium project has been the subject of a number of studies and metallurgical testwork between 2006 and 2012 (see KRR ASX announcement 21 April 2017). These were the basis of a Scoping Study for the production of vanadium pentoxide, titanium dioxide and iron oxide (hematite) products from the Central Vanadium deposit completed in 2012 (see KRR ASX announcement 23 April 2012). • The Prefeasibility Study underway is incomplete. It will examine the production of high purity vanadium pentoxide, titanium dioxide and iron oxide from the Central Vanadium deposit. • The main outstanding inputs are the completion of a geotechnical study on the drill core, further beneficiation plant, agitated leach and metal recovery process flow sheet development and costings, a mining and pit study, tailing storage facility study, updating the CAPEX and OPEX of the beneficiation, leach, metal recovery and sulphuric acid circuits at ±25% accuracy, market studies and revenue analysis, and an financial analysis.
Cut-off parameters	• The Mineral Resource is reported at 0.23% V_2O_5 cut-off grade. • A cut-off grade for the proposed in-pit resources has yet to be determined.
Mining factors or assumptions	• CSA Global completed a conceptual Mining Study in 2018 on the Central vanadium deposit (KRR ASX release 20 June 2018). Optimisation runs included both unrestricted low and high grade resource zones and runs restricted to just the high grade zone. • The mining methods, pit slopes, mining dilution and mining recovery factors, and minimum mining widths have yet to be determined and will be part of a mining study in the PFS. • The amounts of Measured, Indicated and Inferred Mineral Resources in the pit optimisation shell have yet to be determined in a mining study in the PFS. Earlier studies showed that only the Measured and Indicated Resources of the Central Vanadium resource would be modelled. • The infrastructure requirements of a mining operation have yet to be determined.
Metallurgical factors or assumptions	• Reverse circulation and diamond core samples from the Central Vanadium deposit are used in metallurgical testwork. Work has included beneficiation tests to produce a magnetite-ilmenite concentrate, including particle size analyses, magnetic separation tests, comminution testwork, and variability studies. In addition, salt roast, pyrometallurgical, acid leach, solvent extraction, thermal hydrolysis and chemical precipitation recovery tests and studies have been undertaken. Beneficiation and hydrometallurgical testwork is ongoing to refine the preferred process route of agitated tank leach using sulphuric acid. • A broad range of elements, in addition to V, Ti and Fe, are analysed in all metallurgical testwork to detect any deleterious elements. Chromium, copper, lead, zinc, arsenic, cadmium, sulphur and phosphorus are not sufficiently abundant to cause processing problems or economic and environmental issues. Silica, aluminium and calcium levels in the host rock require fine grinding to produce a concentrate suitable for salt roast process recovery but not for the hydrometallurgical process route selected by KRR; only trace quantities of these elements have reported into the vanadium and titanium products generated by KRR testwork to date.

- The proposed beneficiation process involves conventional crushing, grinding and magnetic separation methods similar to other vanadium operations that produce a magnetite-ilmenite concentrate and are appropriate to the style of mineralisation.
- Comminution data (UCS, Abrasion, Rod and Ball Mill Work indices) are satisfactory for carrying forward into a prefeasibility study subject to the representation by the samples of identifiable ore domains. The samples originated from 4 drill holes located along the length of the orebody and as such provide special representation.
- Beneficiation tests by Nagrom focused on Rougher-Scavenger tests, with LIMS Roughing at 1200G and MIMS Scavenging of the LIMS Non Mags at 3000G to produce a magnetite-ilmenite concentrate (KRR ASX releases 21 March 2018, 15 October 2018). Two samples; "High Grade" and "Low Grade" composites were tested at a grind size of 0.5mm. Some additional work was conducted by regrinding the concentrate and reprocessing them to produce higher grades. The aim of this LIMS Rougher+ MIM Scavenger testwork was to produce a concentrate with maximum recovery whilst rejecting a significant mass, in order for the concentrate to be forwarded to agitated leaching. Future studies should investigate the effect of further upgrading on leach plant size and acid consumption. The results of this work are tabulated below. The combined recovery to Mags for both samples were similar, the Low Grade sample merely had lower grades. The HG sample closely resembles the LOM feed grades for the metals of interest and the results were used for beneficiation process calculations.

	PSD			Wt%	Fe%	Fe Dist%	TiO2%	TiO2 Dist%	V2O5%	V2O5 Dist%
HG Comp	0.5mm	1200G	LIMS MAGS	25.2	29.8	49.8	10.683	72.6	1.075	73.9
SDHH-09 21-26.3		3000G	MIMS MAGS	7.1	18.4	8.7	6.645	12.8	0.408	8.0
SDHH-09 26.3-31.2			Combined MAGS	32.3	27.3	58.5	9.790	85.5	0.928	81.9
SDHH-09 31.2-37.9			NON MAGS	67.7	9.2	41.5	0.795	14.5	0.098	18.1
			Calc FEED	100.0	15.1	100.0	3.701	100.0	0.366	100.0

	PSD			Wt%	Fe%	Fe Dist%	TiO2%	TiO2 Dist%	V2O5%	V2O5 Dist%
LG Comp	0.5mm	1200G	LIMS MAGS	19.0	28.7	38.8	9.995	59.5	0.834	62.2
SDHH-09 6-11		3000G	MIMS MAGS	13.4	20.5	19.5	6.649	27.9	0.440	23.1
SDHH-09 11-16			Combined MAGS	32.3	25.3	58.3	8.613	87.4	0.671	85.3
			NON MAGS	67.7	8.6	41.7	0.594	12.6	0.055	14.7
			Calc Stage FEED	100.0	14.0	100.0	3.186	100.0	0.254	100.0

- The proposed vanadium, titanium and iron agitated tank leach and metal refining processes are not novel and are based on similar processes in commercial operations.
  - Commercial agitated tank leaching and solvent extraction recovery of vanadium mineralisation has not been done before; nonetheless, heap, vat and tank leaching and solvent extraction recovery are common technologies in the mining industry. In addition to CIL/CIP gold recovery, examples also include copper, nickel, and cobalt heap and vat leach projects that use an acid-leach solution to mobilise the metal followed by recovery in a Solvent Extraction (SX) plant, which is then followed by electro-winning. The proposed KRR process applies the same acid heap or vat leaching and solvent extraction technology to recover vanadium, but instead of electrowinning to produce a final product, the process will use an acid strip followed by precipitation to produce a final product.
  - Similarly, the recovery of titanium and iron from the agitated tank acid leach solutions involves a similar process to recover titanium and iron from ilmenite (the sulphate process), where iron is recovered in a ferrous sulphate precipitate by a combination of evaporation, iron powder reduction and cooling, and the titanium dioxide by thermal hydrolysis and calcination.
  - The final precipitation of iron oxide and sulphuric acid regeneration from the ferrous sulphate intermediate product involves a similar process to the iron pickling route.
  - Sulphuric acid leaching testwork on samples of minus 106um concentrate was conducted by TSW Analytical (KRR ASX release 1 March 2019). Leach test LT54 was conducted on a 30g concentrate sample in 20% H_2SO_4 at 70°C and 20% pulp density with continuous agitation, and wherein the acid level was maintained at ~200 g/L throughout the test. This test yielded excellent V extraction (96.9%), 89% Fe extraction and Ti extraction of 61.9% after 72 hours, consuming 990kg acid per tonne of concentrate.

	○ Metal recovery testwork by TSW Analytical is ongoing, trialling chemical precipitation of ferrous sulphate, thermal hydrolysis of titanium dioxide and SX of vanadium pentoxide. The refining process flow sheet development is incomplete and ongoing. • No pilot scale tests have been conducted for the Speewah Vanadium project.
Environmental	• Flora and fauna desktop and field studies have been completed at Speewah in 2009 and 2010 (see KRR ASX announcement 21 April 2012). • No Declared Rare Flora species pursuant to subsection (2) of section 23F of the Wildlife Conservation Act 1950 [WA] and as listed by the Department of Environment and Conservation (2007) and no threatened Flora listed pursuant to section 179 of the Environment Protection Biodiversity Conservation Act 1999 [Commonwealth] have been recorded by Flora surveys within the Speewah Project Area in 2009 and 2010. • Additional work is underway to update these studies. • Hydrological, soil and heritage surveys have also been completed.
Infrastructure	• Speewah is located 110km south of the port of Wyndham in Western Australia. Access is via the sealed Great Northern Highway then 45km of unsealed station tracks to site, being a total of 160km by road from Wyndham. • Power and water supply and hauls roads will need to be established. • The Great Northern Highway has been used for bulk transport of minerals to the Wyndham Port from mine sites south of Speewah. • Wyndham Port takes ships of maximum displacement 34,000 DWT. There is also a barge loading facility that may be available. • Kununurra is the main regional centre, located 160km from the Speewah site.
Costs	• Capital and operating cost assumptions will be made by consultants addressing the mining, beneficiation, leaching and refining costs using industry standard information and databases, and the metallurgical testwork. The study costs will be at PFS accuracy (±). • The mining study will use the relevant mining and beneficiation cost estimates, anticipated mining dilution and mining recovery factors, hydrometallurgical recoveries and processing costs, and metal prices, applied to the Mineral Resource model.
Revenue factors	• The current commodity prices for vanadium pentoxide, titanium dioxide and iron oxide (hematite) will be used in the mining, beneficiation and refining studies.
Market assessment	• For vanadium, energy storage, steel and Al-Ti-V master alloys continue to drive vanadium demand and prices. Vanadium pentoxide (V_2O_5) prices for flake in steel production have increased since the KRR Scoping Study completed in 2012. This has been influenced by low inventory and high demand. KRR assessment is for an increasing demand in the future for vanadium products in existing and new markets including vanadium flow batteries (VRB) and vanadium electrolyte. • For titanium, the titanium oxide market and price are mainly driven by the increasing use in plastics, paints and coatings, cosmetics, and increasing demand for lightweight vehicles using Al-Ti-V master alloys.
Economic	• KRR is unable to discuss production targets and forecasting financial information until completion of the Prefeasibility Study and Ore Reserve Estimation.
Social	• There are no Native Title claimant groups over the Speewah vanadium deposit. • KRR commenced discussion with the Woolah Aboriginal Corporation, the owners of Doon Station, in 2011 for the future development of the vanadium project. Discussions with the Traditional Owners are ongoing. • Site clearance studies have been undertaken over the Central vanadium deposit and along proposed haul roads. • Further negotiations and representations are required with all stakeholders.
Other	• KRR will be required to apply for a Mining Lease over the Mineral Resource. • There are several material risks common to all mining projects.
Classification	• No Ore Reserves have been defined or classified.
Audits or reviews	• The Mineral Resource was completed by independent mining consultants CSA Global in 2017. CSA Global's update was a conversion of an earlier estimate by Runge Limited completed in 2012. Both estimates reported the same tonnages and grades. • No Ore Reserve audits have been undertaken.
Discussion of relative accuracy/confidence	• The Vanadium Mineral Resource at Speewah has been reported in accordance with the JORC Code (2012) and classified as Measured, Indicated and Inferred. Only the Measured and Indicated Mineral Resources of the Central Vanadium deposit will be used in the Prefeasibility Study underway.

	• At this stage, insufficient metallurgical testwork or studies have been completed to the level of a Prefeasibility Study to allow the definition of Ore Reserves. • The Prefeasibility Study underway applies to the Central Mineral Resource and will be more accurately defined when the final mining study identifies a pit shell within the wireframes used for resource estimation.