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**Australian Securities Exchange Announcement**

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**1 November 2018**

King River Copper Limited (ASX: KRC) is pleased to provide this Scoping Study update on its 100% owned Vanadium-Titanium-Iron Project at Speewah ("SVP"), located 110 km southwest of Kununurra in Western Australia. The SVP consists of a laterally extensive magnetite gabbro that hosts vanadium-titanium-iron (V-Ti-Fe) mineralisation.

**The Scoping Study presents the SVP as a cohesive project that demonstrates a viable business case for further development.**

This Scoping Study, compiles for the first time, work that has spanned the last decade, consisting of detailed analysis of geology; metallurgy; processing; product range; environment and social aspects of the project.

The base case used in the study has demonstrated to KRC that improvements in the business case might be made by reducing capital costs, enhancing project efficiency through various processing methods being trialed, production of additional higher value, higher purity products, and incorporating the recent improvements in the V<sub>2</sub>O<sub>5</sub> sale price.

KRC will be primarily focused in coming months on further investigating the leaching processing options that were reported to the ASX on 15 October 2018, by scaling up of bottle roll testing, at different particle sizes and coarser concentrate specifications, to thoroughly investigate the heap, dump or vat leach potential at Speewah.

The Board will authorise the commencement of a Pre-feasibility Study (PFS) early in 2019 after current heap leach analysis has been completed.

This PFS will be completed to a standard that will allow reporting an Ore Reserve and a much more detailed economic analysis.

**SCOPING STUDY HIGHLIGHTS**

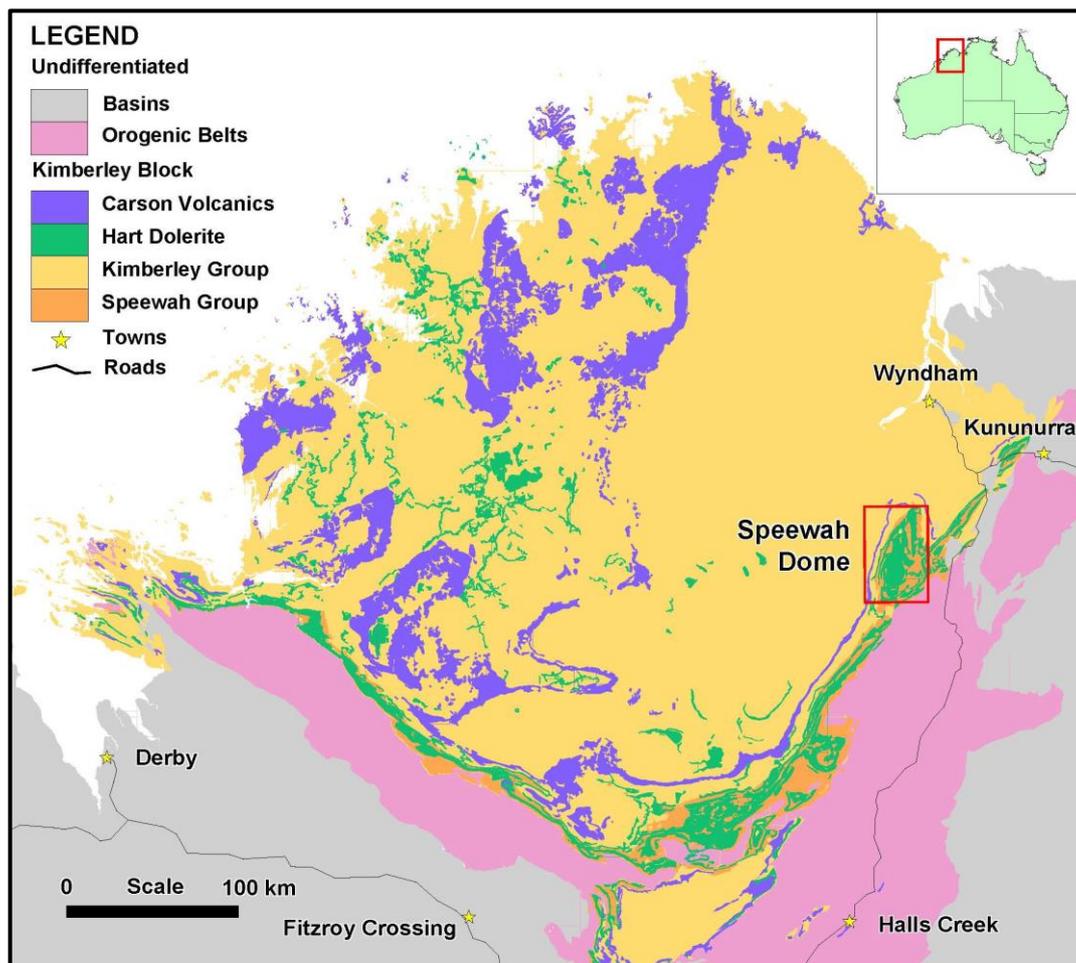
- ❖ Scoping Study outlines path forward for the development of the Speewah Vanadium Project.
- ❖ Positive business case with healthy cashflow margin supports progression of the study to the PFS stage.
- ❖ Measured and Indicated Mineral Resources 100% of planned mining scenario with simple mining geometry and low strip ratio on a large scale over a potential long mine life.
- ❖ Hydrometallurgical process route selected for a diverse revenue stream from vanadium pentoxide, titanium dioxide and iron products.
- ❖ KRC will now pursue the appointment of a project manager and continue with the evaluation and selection of an optimised project development plan.

## VANADIUM PROJECT

King River Copper Limited (KRC), an Australian listed company (ASX: KRC), is developing the Speewah Vanadium Project (“SVP”) which comprises three deposits (Central, Buckman and Red Hill), located on the western part of the Northern Australian Craton. A laterally extensive magnetite gabbro hosts the vanadium-titanium-iron (V-Ti-Fe) mineralisation within the Speewah Dome. The deposits are located on granted exploration licences.

KRC completed a Concept Study to examine the feasibility of producing vanadium in the form of standard grade (+98%) and high purity (+99.5%) vanadium pentoxide ( $V_2O_5$ ) and vanadium electrolyte (VE) and also titanium dioxide ( $TiO_2$ ) and iron oxide ( $Fe_2O_3$ ) products from the Central vanadium deposit at the SVP. This concept study addressed key studies to reduce the risks to the project.

KRC’s decision to progress towards completing a Scoping Study was driven by a combination of positive hydrometallurgical test outcomes, a resource upgrade, mining studies and marketing studies. The Scoping Study also examined the prevailing vanadium and titanium market conditions. Other key studies, such as baseline water, soil, heritage and environmental surveys, were completed earlier and form part of this Scoping Study.



*Location of the Speewah Dome*

## VANADIUM SCOPING STUDY

KRC has requested CSA Global Pty Ltd (CSA Global) to compile the Project technical, financial and implementation detail into a comprehensive Scoping Study outlining recommendations and future work to develop the SVP through a subsequent Prefeasibility Study (PFS).

Key components of the Scoping Study comprise:

- JORC (2012) Mineral Resource mining from Indicated and Measured Categories
- Open pit mining study
- Preliminary process flowsheet to produce a concentrate through magnetic separation
- Recovery of Vanadium, Titanium and Iron through hydrometallurgical processing
- Operating cost estimate
- Capital cost estimate
- Project development program highlighting milestones towards implementation
- Focus the many areas of investigation currently underway, into the activities for a Pre-Feasibility Study (PFS) scope of work.

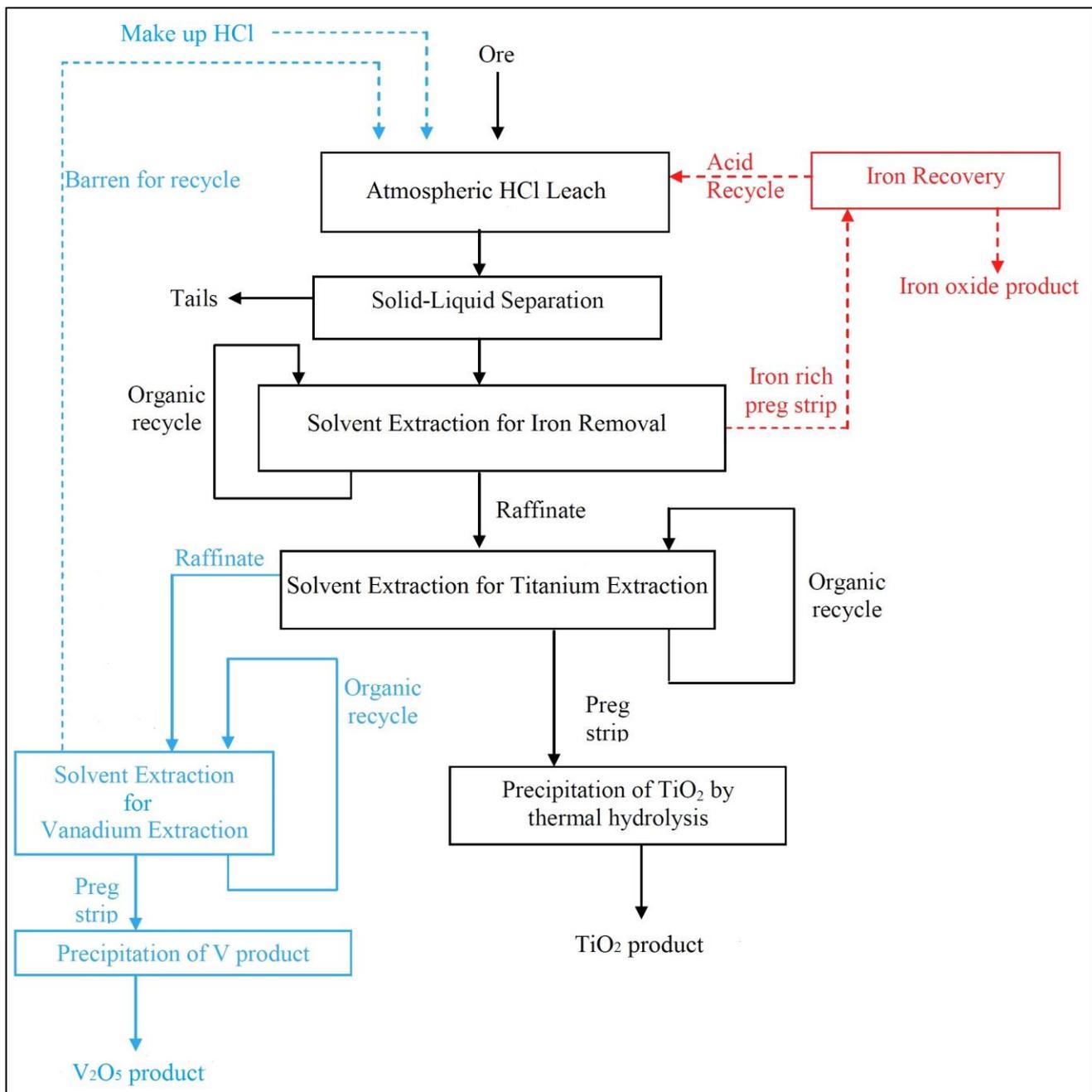
### **Scoping Study Cautionary Statement**

- *This Scoping Study has been undertaken to determine the potential viability of an open pit mine with an on-site magnetic separation process followed by a hydro-metallurgical recovery of three metal products to provide King River Copper with the confidence to continue with its ongoing studies. The results discussed in this announcement should not be considered a profit forecast or a production forecast.*
- *In accordance with the ASX Listing Rules, the Company advises that the study it is based upon low-level technical and economic assessments (+/- 35%) that are not sufficient to support the estimation of Ore Reserves, or to provide assurance of an economic development case at this stage, or to provide certainty that the conclusions of the Study will be realised.*
- *The Scoping Study is based on JORC Mineral Resources which are classified as 100% Measured and Indicated.*
- *The Study is based upon material assumptions outlined in this announcement. These include assumptions about the availability of funding. While King River Copper considers all of the material assumptions to be based upon reasonable grounds, there is no certainty that they will prove to be correct or that the outcomes indicated by the Study will be achieved.*
- *Investors should note that there is no certainty that King River Copper will be able to raise funding when needed. It is also possible funding may only be available on terms that may be dilutive to or otherwise affect the value of existing shares. It is also possible that King River Copper could pursue other "value realisation" strategies such as a sale, partial sale or joint venture of the Project. If it does, this could materially reduce the company's proportionate ownership of the Project.*
- *Given the uncertainties involved, investors should not make any investment decisions based solely on the results of the Study.*



A review of processing options compiled by Primero found that the highest extraction and most effective hydro-metallurgical approach to recovering iron, titanium and vanadium from the magnetic concentrate is direct atmospheric hydrochloric acid leaching of the concentrate and solvent extraction of  $V_2O_5$ ,  $TiO_2$  and  $Fe_2O_3$ . The preliminary flowsheet for this process consists of five discrete steps and is described in the figure below:

- Initial treatment, i.e. the acid leach.
- Iron recovery – producing either an iron oxide or iron metal.
- Titanium recovery – aiming to produce a pigment grade  $TiO_2$ .
- Vanadium recovery – producing  $V_2O_5$  flake.
- Acid recovery – regenerating the leach acid for re-use



*Preliminary Flowsheet of Solvent Extraction*

## Mineral Resources and Mining

In 2017 CSA Global Pty Ltd (CSA Global) updated the Mineral Resource estimate reporting in accordance with the JORC Code (2012). The Measured, Indicated and Inferred Mineral Resource, reported at a 0.23% V<sub>2</sub>O<sub>5</sub> cut-off grade from the Central, Buckman and Red Hill deposits, comprises 4,712 million tonnes at 0.3% V<sub>2</sub>O<sub>5</sub>, 2% Ti and 14.7% Fe. This combined resource total comprises Measured Resources of 322 million tonnes at 0.32% V<sub>2</sub>O<sub>5</sub>, 2% Ti and 14.9% Fe, Indicated Resources of 1,054 million tonnes at 0.33% V<sub>2</sub>O<sub>5</sub>, 2% Ti and 14.9% Fe, and Inferred Resources of 3,335 million tonnes at 0.29% V<sub>2</sub>O<sub>5</sub>, 2% Ti and 14.6% Fe (refer to KRC ASX announcement 26 May 2017 for the full resource statement details). The high-grade zone within the Central Vanadium resource comprises a combined Measured, Indicated and Inferred Mineral Resource of 520 million tonnes at 0.36% V<sub>2</sub>O<sub>5</sub>, 2% Ti and 14.8% Fe (reported at a 0.23% V<sub>2</sub>O<sub>5</sub> cut-off grade). Only the Measured and Indicated Resources within the high-grade zone of the Central deposit (approximately 270 million tonnes at 0.37% V<sub>2</sub>O<sub>5</sub>) was used in the Scoping Study, including samples used in metallurgical testwork and studies.

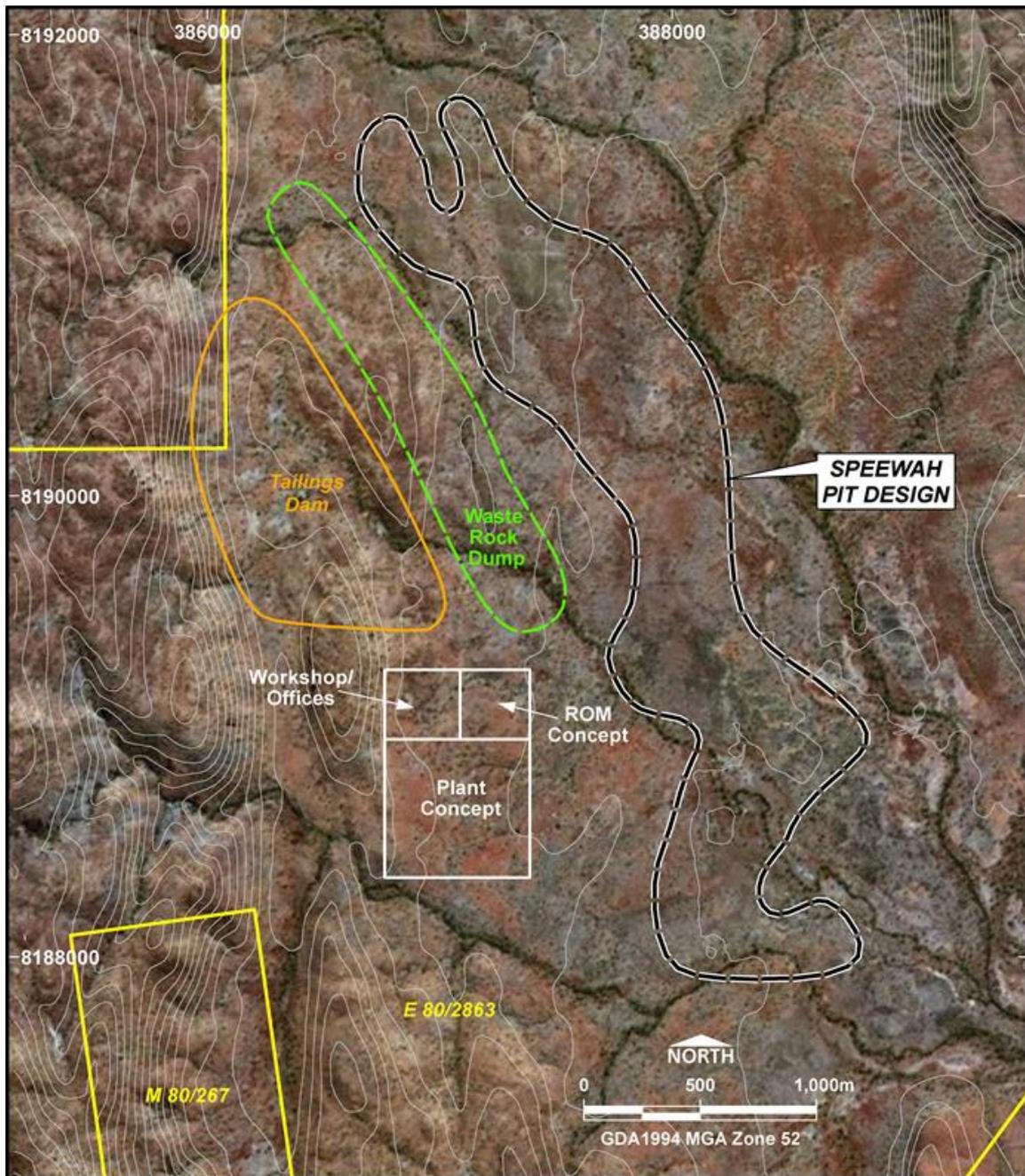
Typical open pit optimisation processes were run on the Indicated and Measured Mineral Resources of the Central deposit to identify a mining and production scenario for the project. The open pit optimisation considered the relevant mining and beneficiation recovery factors and cost estimates, anticipated mining dilution, hydrometallurgical recoveries and processing costs, and metal prices were applied to the open pit optimisation process.

When applying these factors, a large shallow dipping open pit with a low stripping ratio containing less waste than Resource tonnes was identified.

## Project Layout

The preliminary infrastructure strategy for the SVP is to establish the primary processing facilities on the mine site and then transport the magnetic concentrate to a hydro-metallurgical facility in Wyndham approximately 170 km to the north. Various power supply options will be investigated in the PFS study, including on-site generation, supply from the Argyle hydro-power facilities and options to connect with power sources in the region.

The on-site layout of the project showing the open pits, provision for waste dumps, process plant and tailings storage is illustrated in the figure below.



*Preliminary project layout*

Schedule:

The mining and processing schedule has been generated using strategic planning software to deliver consistent feed to the plant and manage cashflow by mining waste rock on a just in time basis. The schedule is based on 100% Measured and Indicated Mineral Resources for the life of mine. The scoping study considered production volumes of over a range of possible rates. These scenarios projected payback periods between three to six years depending on a range of assumed economic parameters.

Cost estimates:

The capital and operating cost estimates used in the scoping study are preliminary in nature and are based on values from benchmark analysis and various specialist conceptual studies completed for KRC for this project.

The total up-front capital cost to complete this project is currently estimated to be between AU\$2.0 billion to AU\$2.5 billion. This estimate is based on preliminary engineering evaluation and scaling from industry benchmarks.

The mining costs are expected to be lower than the average Western Australian open pit mining costs due to the low stripping ratio and relatively favourable orebody orientation. Extensive process engineering studies and test-work has been conducted and reported in several previous announcements. Based on these studies KRC believe that there is a reasonable basis to estimate that the cost to process a tonne of material to form a magnetic concentrate is approximately AU\$16.00 to \$18.00 per feed tonne. Projected revenue has been estimated through commissioned market studies and peer group analysis.

Project Financial performance

The results of the study are being used for internal project decision making by KRC and the board are sufficiently encouraged by the financial returns of the long-life project to continue to the next stage of development.

The SVP scoping study does not assume any synergies and cost savings from the development of other deposits controlled by KRC in close vicinity to the project. Coordination and optimisation of the collective development of these projects will be addressed in future studies.

## Prefeasibility Study

The next stage for the Project will be a thorough PFS to assess options and mitigate risks identified for the project. The result of the PFS will be the definition of a chosen operational scenario that has the potential to realise the greatest project value. Upon completion of the PFS, this scenario will be further defined with increased accuracy in a Feasibility Study (FS).

KRC intend to make the appointment of a project manager for the PFS a top priority.

A preliminary Project implementation timeline is estimated in the table below, resulting in full production achieved in July 2023.

*Project implementation timeline*

<b>Critical milestone</b>	<b>Estimated duration</b>	<b>Estimated start date</b>	<b>Estimated completion date</b>
Process development testwork	15 months	October 2018	January 2020
Prefeasibility study	12 months	January 2019	January 2020
MOU offtake agreements	9 months	January 2020	September 2020
Feasibility study	10 months	January 2020	October 2020
Permits and approvals	18 months	January 2020	June 2021
Final investment decision	2 months	October 2020	November 2020
Detailed designs	10 months	December 2020	September 2021
Construction	12 months	October 2021	October 2022
Commissioning and ramp-up	9 months	November 2022	July 2023

The first critical stage of this Project is the formation of a project development team with a Project Manager to lead the comprehensive PFS.

The PFS is intended to include options analysis for the following Project areas:

- Product marketing
- Processing routes
- Refinery locations
- Power sources
- Water sources
- Mining approach options.

The critical paths for the PFS that will have the greatest impact on Project value are decisions on processing routes and product marketing. Other Project options studies will feed into the analysis of processing and marketing options.

Ongoing processing and metallurgical studies include those announced on 15 October 2018 which include promising initial findings for a low-cost heap leach recovery option. This and other viable options will be assessed on a trade-off basis compared to the base case identified in this Scoping Study.

The chosen PFS scenario will be accompanied with a cost estimate to an accuracy of  $\pm 25\%$  and a Project evaluation providing an NPV based on a reasonable marketing basis for product revenues over the life of the Project.

### **Statement by Competent Person**

The information in this report is based on information compiled by Ken Rogers (BSc Hons) from the CSA Global Speewah Vanadium Project Scoping Study report and previous KRC ASX announcements and fairly represents this information. Mr. Rogers is the Chief Geologist and an employee of King River Copper 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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