

# KING RIVER COPPER LIMITED

Australia's largest Vanadium in magnetite deposit ...  
delivering the highest grade Vanadium concentrates for  
leach processing into high purity vanadium pentoxide,  
titanium dioxide and iron oxide products

High grade Mt Remarkable gold discovery in the Kimberley

# Vanadium project location



- Nearby infrastructure includes sealed major highway, Wyndham Port, Ord River Dam and hydro electric project, Kununurra skilled workforce and industry involved with servicing the Argyle Diamond project.
- The project is ~110 kilometres southwest of Kununurra

# 4.7 billion tonne JORC resource

Vanadium resource estimate by CSA Global Pty Ltd (refer ASX announcement 26 May 2017 and Resource Statements in Tables 2 and 3 on Slide 19).

- Measured, Indicated and Inferred Mineral Resource, reported at a 0.23%  $V_2O_5$  cut-off grade from the Central, Buckman and Red Hill deposits, totals:

**4,712 million tonnes at 0.3%  $V_2O_5$ , 2% Ti and 14.7% Fe**

(comprising 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)

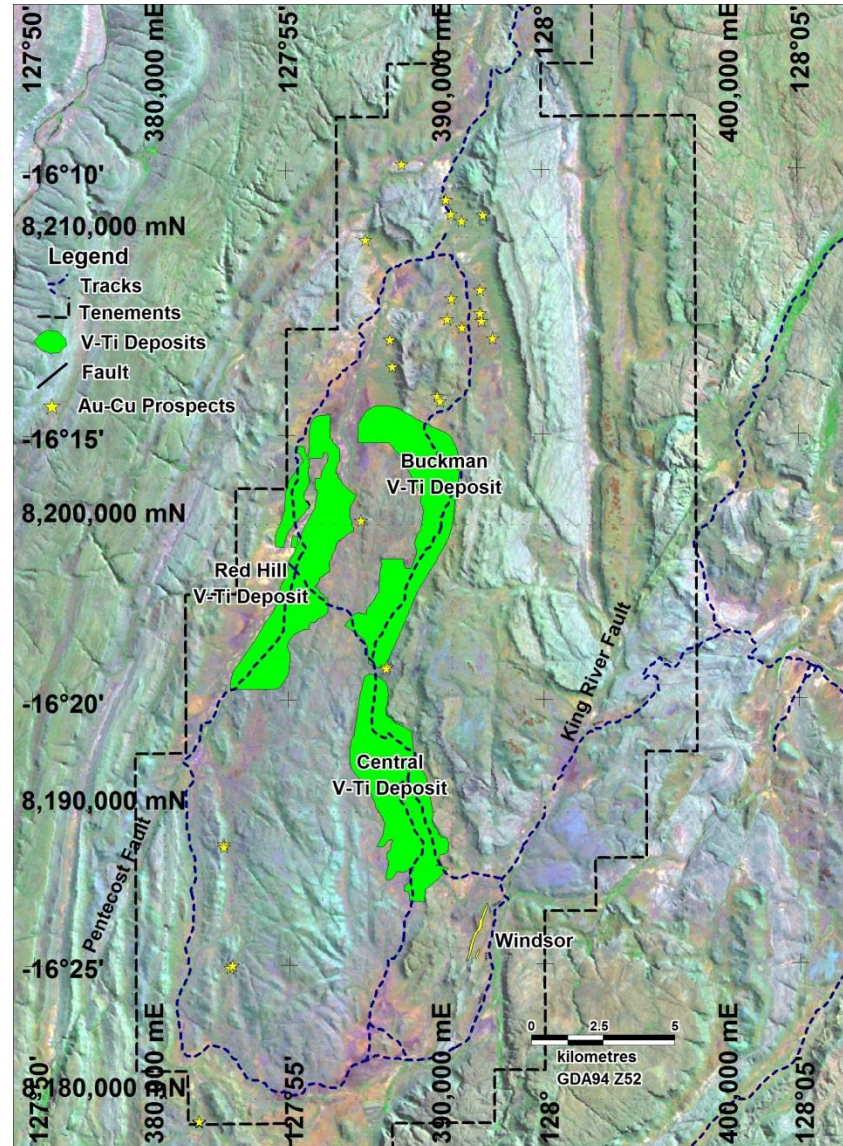
- Measured, Indicated and Inferred Mineral Resource, reported at a 0.23%  $V_2O_5$  cut-off grade from the high grade zone of the Central deposit, totals:

**520 million tonnes at 0.36%  $V_2O_5$ , 2% Ti and 14.8% Fe**

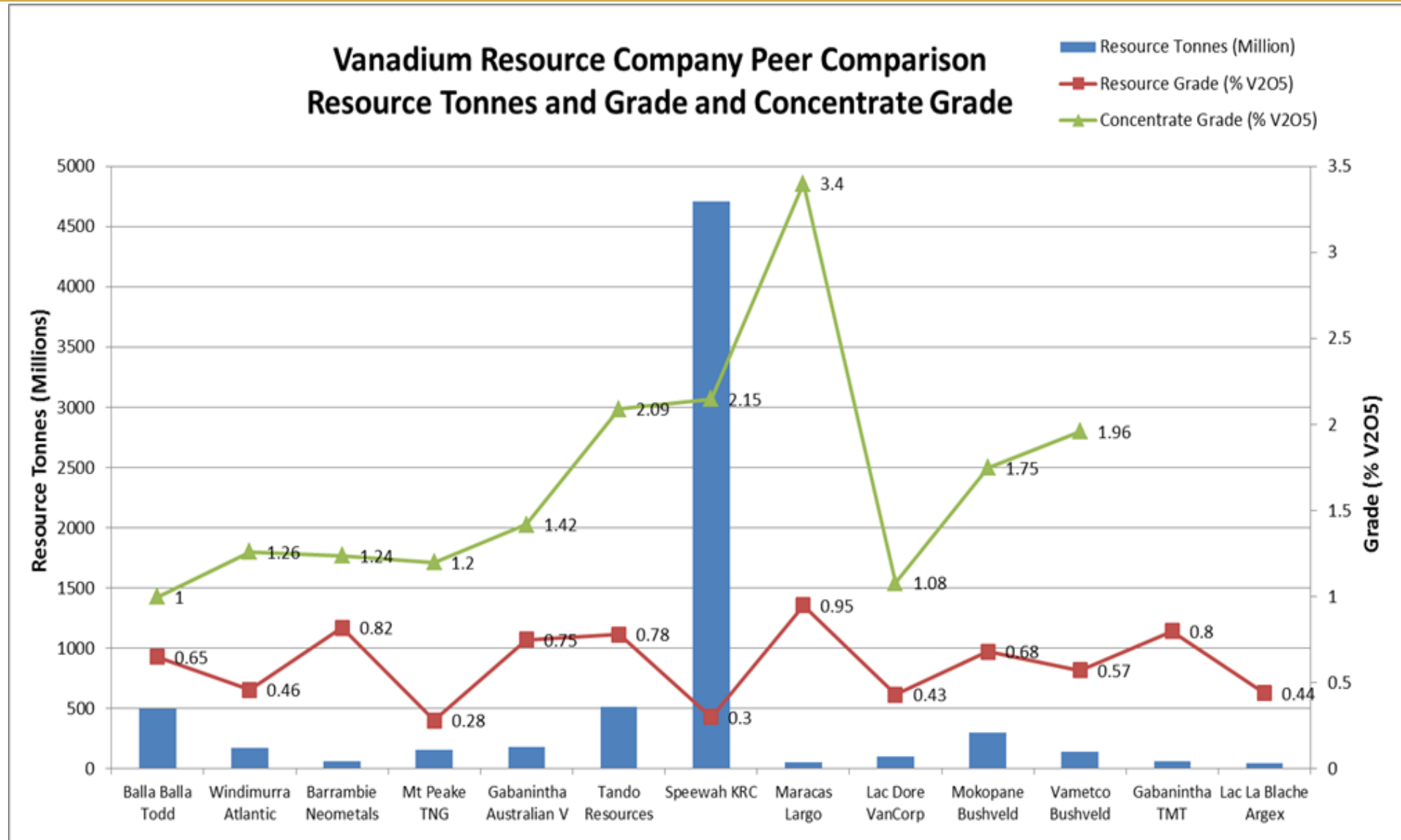
(comprising Measured Resources of 139 million tonnes at 0.37%  $V_2O_5$ , 2.1% Ti and 15.1% Fe, Indicated Resources of 135 million tonnes at 0.37%  $V_2O_5$ , 2% Ti and 14.8% Fe, and Inferred Resources of 247 million tonnes at 0.36%  $V_2O_5$ , 2% Ti and 14.7% Fe)

**The largest vanadium in titanomagnetite hosted resource in Australia.**

# Vanadium-Titanium-Iron Resources Location



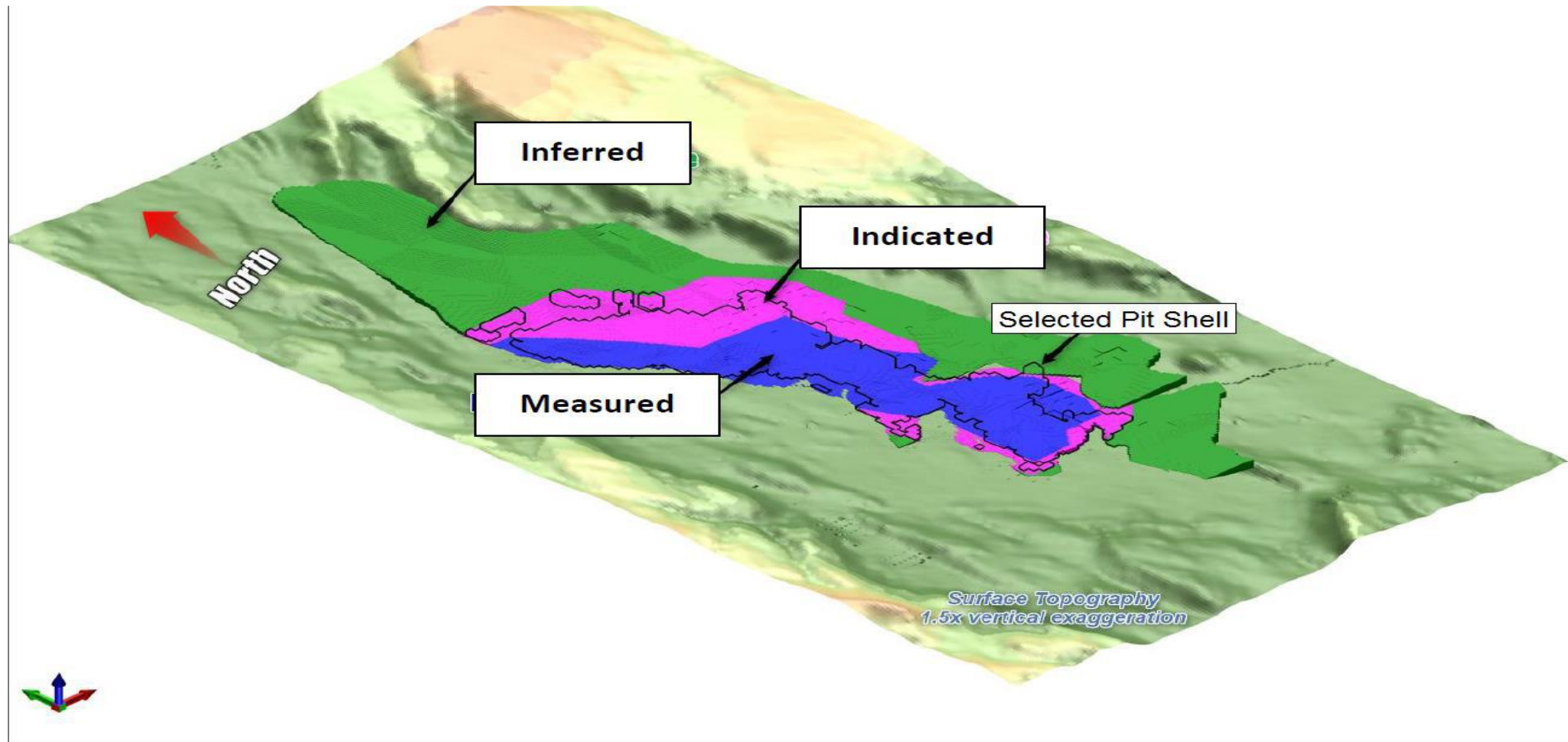
# Global peer comparisons





# CSA Global: Concept pit shell

Preliminary pit shell 4.2km x 1.2 km with a low strip ratio of 0.4 has been modelled



	Resource Measured Indicated Inferred	Map Orientation: Looking North East	Scale is Approximate	Plot Date 15-May-2018	Sheet 1 of 1
			500 0 500m	Plot File: Vizex	

**Speewah Central  
Pit Shell**

**KING RIVER**  
COPPER LIMITED

# Scoping progress

In June 2018, CSA Global completed an initial conceptual mining study using open cut optimisation techniques on the Central vanadium deposit only (KRC ASX 20 June 2018).

This pit study enabled KRC to upscale our scoping work to almost twice the size of the operation modelled in a 2012 scoping study.

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TSW Analytical has been working on two different HCl leach-chemical precipitation process routes to achieve high purity vanadium pentoxide:

- ❖ A direct hydrous vanadium oxide route produced a high grade vanadium pentoxide (99.48% V<sub>2</sub>O<sub>5</sub>) (KRC ASX 24 February 2018)
- ❖ An ammonium metavanadate (AMV) process route is the current focus of our testwork and has produced a high purity vanadium pentoxide (99.51% V<sub>2</sub>O<sub>5</sub>) product (KRC ASX 24 July 2018)

The production of high purity vanadium pentoxide has been the focus as it should be more readily converted into vanadium electrolytes.

TSW Analytical is now focusing on producing steel grade vanadium pentoxide (+98% V<sub>2</sub>O<sub>5</sub>).

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Primero Group has delivered initial detailed process flow sheets for each stage of the beneficiation plant at Speewah. The beneficiation circuit has been designed to maximise V and Ti recovery into the magnetite-ilmenite concentrate and reject a high proportion of the ROM feed at 0.5mm by two stage grinding and magnetic separation methods (KRC ASX 20 June 2018).

# Primero : Beneficiation flow sheet

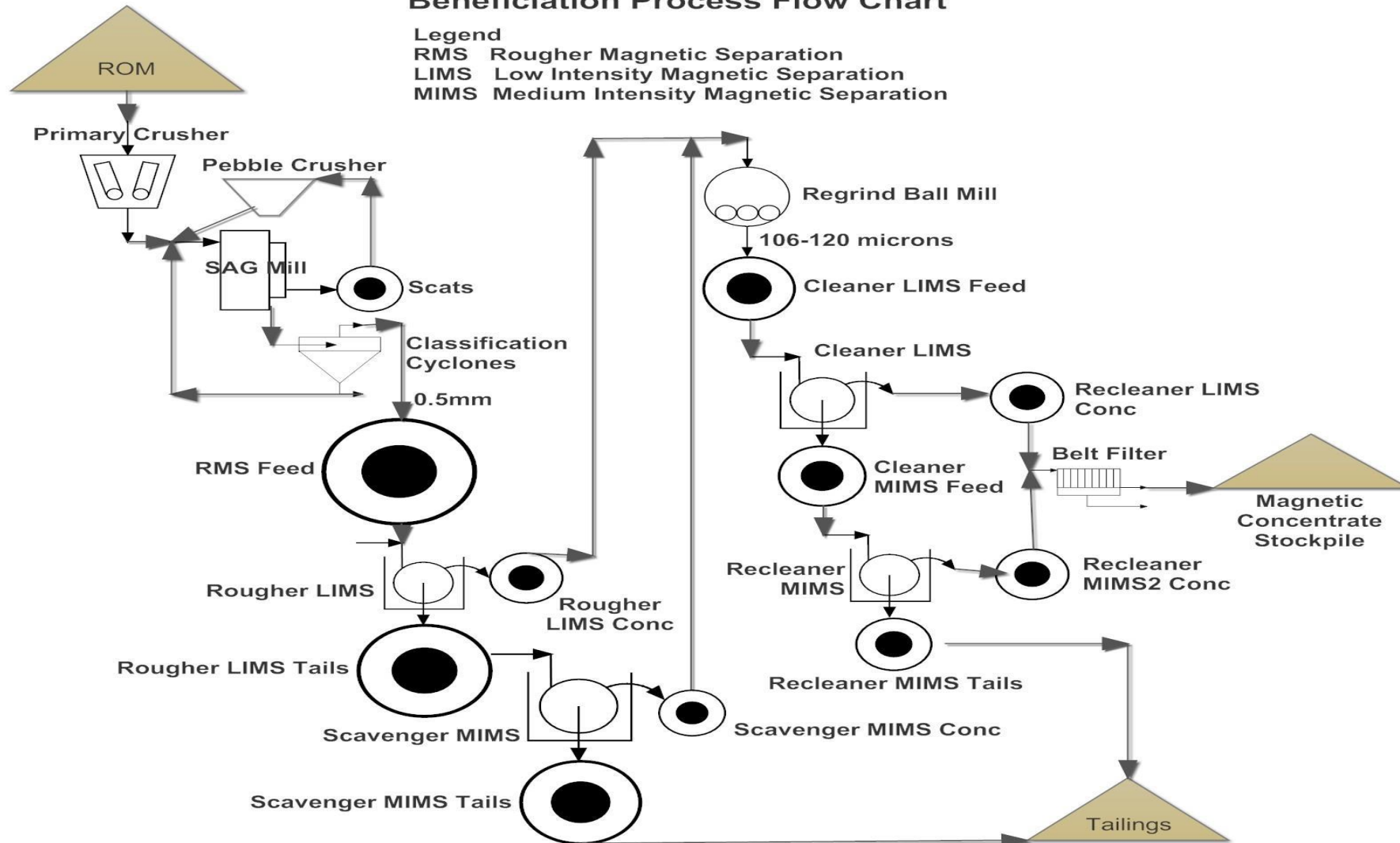
## Speewah Vanadium Project Beneficiation Process Flow Chart

### Legend

RMS Rougher Magnetic Separation

LIMS Low Intensity Magnetic Separation

MIMS Medium Intensity Magnetic Separation





# Acid leaching of concentrates

KRC's Vanadium testwork has examined a process flow sheet that processes high grade vanadium samples from the Central Vanadium deposit (0.37-0.39%  $V_2O_5$ ).

Initially a magnetite concentrate grading >2% vanadium pentoxide ( $V_2O_5$ ) is produced by crushing, grinding and magnetic separation methods.

The vanadium and titanium enriched concentrate is then leached in hydrochloric acid (at temperatures between 70 and 90 degrees) to release the V, Ti and Fe metals into solution for separation by hydrothermal and chemical precipitation methods.

This process is then followed by purification steps to produce high purity vanadium pentoxide ( $V_2O_5$ ), titanium dioxide ( $TiO_2$ ) and iron oxide ( $Fe_2O_3$ ) products.

High Purity Vanadium Pentoxide  
99.51%  $V_2O_5$



High Purity Titanium Dioxide  
99.5%  $TiO_2$



# Test work and study progress

Our main objective is to outline a project that clearly differentiates ours from others around the globe.

The flat lying nature of the Speewah mineralisation gives King River Copper the opportunity to mine very large volumes of material with minimum waste (0.4 tonne waste to 1.0 tonne mineralised material).

Metallurgical testwork and research has been ongoing on a number of fronts into the production of high purity Vanadium Pentoxide powder ( $>99.5\% \text{V}_2\text{O}_5$ ) and standard grade Vanadium Pentoxide flake ( $>98\% \text{V}_2\text{O}_5$ ), as well as Titanium Dioxide products (pigment grade and high purity  $>99\% \text{TiO}_2$ ), iron oxide hematite and Vanadium Electrolyte (used in vanadium flow batteries)

An improved beneficiation flowsheet on high grade core has now produced a  $2.11\% \text{V}_2\text{O}_5$  magnetite-ilmenite concentrate, at higher mass yield of  $16.5\%$  at a coarser grain size (120 micron), and with more waste rejection (refer KRC ASX announcement 21 March 2018), compared with concentrates used in 2012. studies.

Direct hydrochloric acid leaching of concentrate has demonstrated V, Ti and Fe recoveries  $>96\%$  at 9M acid strength,  $90^\circ\text{C}$  leach temperature,  $10\%$  pulp densities under atmospheric conditions (refer KRC ASX announcements 21 August 2017, 9 October 2017, 4 December 2017, 30 January 2018, and 27 February 2018).

Hydrothermal precipitation testwork has produced a high purity titanium dioxide ( $99.5\% \text{TiO}_2$ ) product (refer KRC ASX announcement 30 January 2018) and further testwork is ongoing to improve recoveries and increase the grade. Research is also underway to produce titanium metal sponge.

Chemical precipitation testwork has produced a high purity vanadium pentoxide ( $99.51\% \text{V}_2\text{O}_5$ ) by the Ammonium Metavanadate (AMV) process route (KRC ASX 24 July 2018).

# Potential for heap or vat leaching

Nagrom have recently completed a baseline bottle roll sulphuric acid ( $\text{H}_2\text{SO}_4$ ) leach test on a concentrate sample that assayed 1.7%  $\text{V}_2\text{O}_5$ , 15.37%  $\text{TiO}_2$  and 60.04%  $\text{Fe}_2\text{O}_3$ , with 14.49%  $\text{SiO}_2$ , 4.02%  $\text{Al}_2\text{O}_3$ , 3.77%  $\text{CaO}$  and 2.35%  $\text{MgO}$ .

After 58 days, leach efficiencies were 92% V, 76% Fe, 19% Ti, 49% Al, 44% Mg, 14% Ca and <1% Si.

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Bottle roll tests are currently underway on three much larger lump sizes of magnetite gabbro (P100 10mm, 5.6mm and 3.35mm) assaying 0.36%  $\text{V}_2\text{O}_5$ , 3.65%  $\text{TiO}_2$ , 21.37%  $\text{Fe}_2\text{O}_3$ , and 44.75%  $\text{SiO}_2$ , 12.74%  $\text{Al}_2\text{O}_3$ , 8.36%  $\text{CaO}$ , 4.33%  $\text{MgO}$ , 2.32%  $\text{Na}_2\text{O}$  and 1.12%  $\text{K}_2\text{O}$ .

After 12 days the V and Ti are leaching slowly (as would be expected), with high leach rates for Fe, Al and Mg (KRC ASX 15 October 2018).

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These bottle roll tests are the first stage of testing into whether Speewah magnetite gabbro or a coarse concentrate are suitable for heap or vat leaching.

Heap or vat leach operations have the potential to significantly lower capital and operating costs. KRC studies will examine this process route into the production of vanadium pentoxide, titanium dioxide, iron oxide and possibly high purity alumina (HPA) products using sulphuric acid leaching and solvent extraction methods.

A very recent Scoping Study has outlined a path forward for the development of a Fluorite Project, and the positive business case supports progression of that study towards a prefeasibility.

Indicated Mineral Resources represent 100% of planned mining scenario on existing mining leases.

## **FLUORITE PROJECT**

KRC owns 100% of the Windsor fluorite deposit at Speewah with a combined Indicated and Inferred Mineral Resource of 6.7 million tonnes at 24.6% CaF<sub>2</sub> (at 10% CaF<sub>2</sub> cut-off grade), comprising Indicated Resource of 4.1 million tonnes at 25.3% CaF<sub>2</sub> and Inferred Resource of 2.6 million tonnes at 23.6% CaF<sub>2</sub> (refer KRC ASX release 23 February 2018).

The deposit is located on existing King River Copper mining leases.



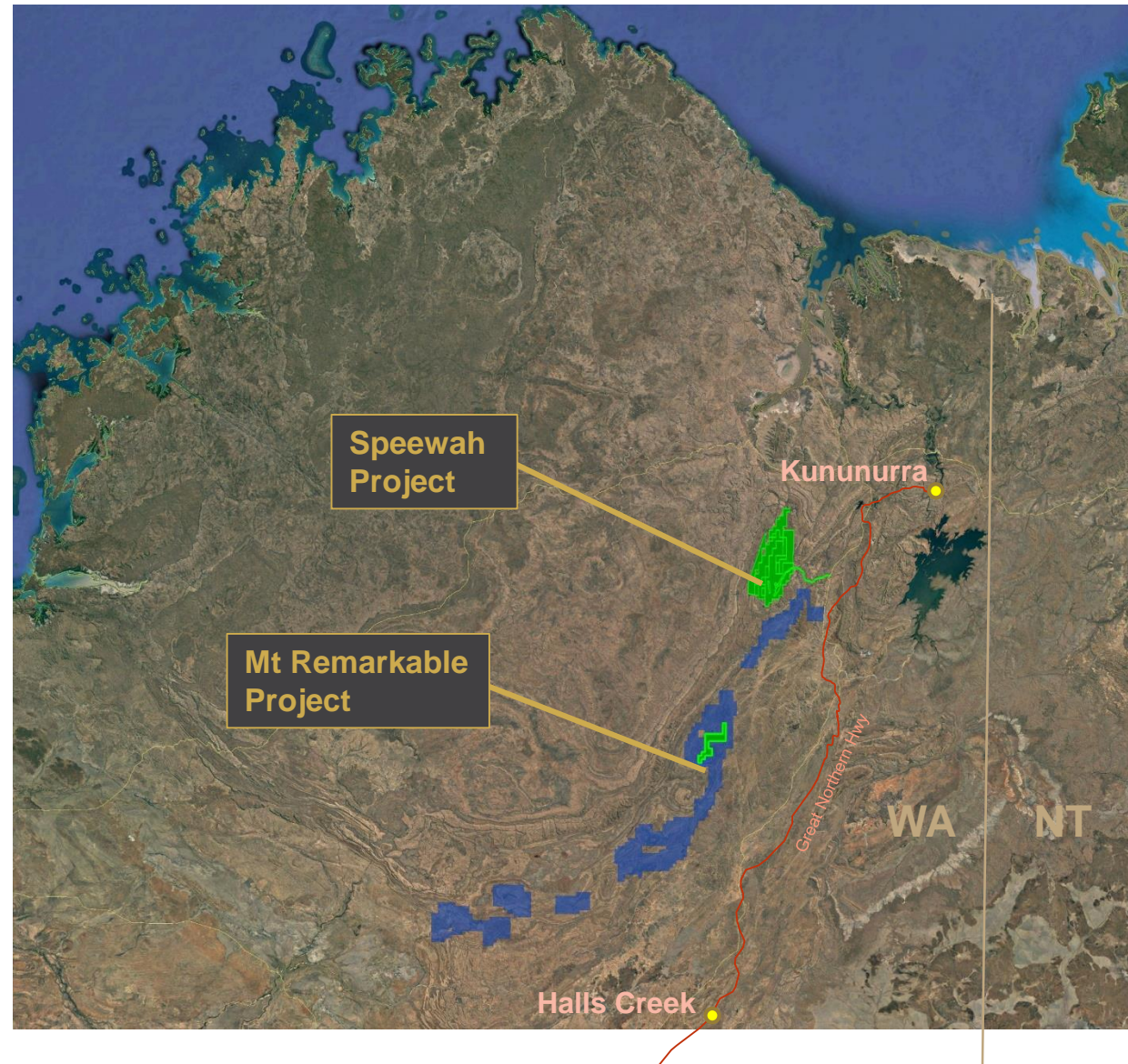


# Whitewater Volcanics - a new WA gold province?

## WA Tenements

### The East Kimberley

- Speewah:  
*Vanadium, Fluorite, Gold, Copper*
- Mt Remarkable:  
*Gold*





# Trudi Vein drill pad





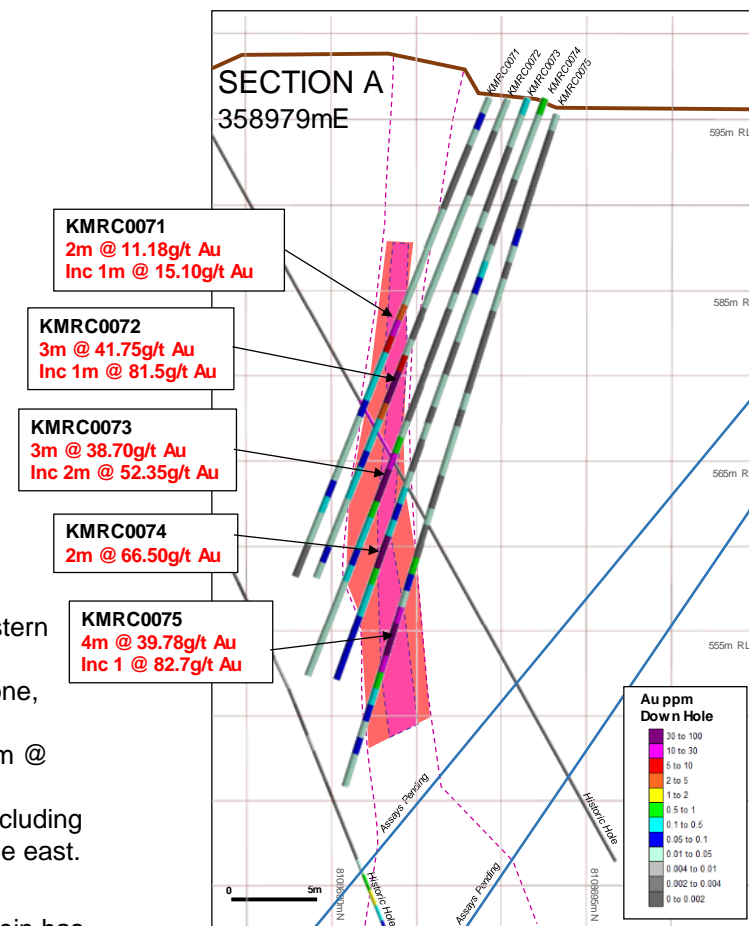
# Recent gold assays Mt Remarkable

## High Grade Gold Results at Mt Remarkable

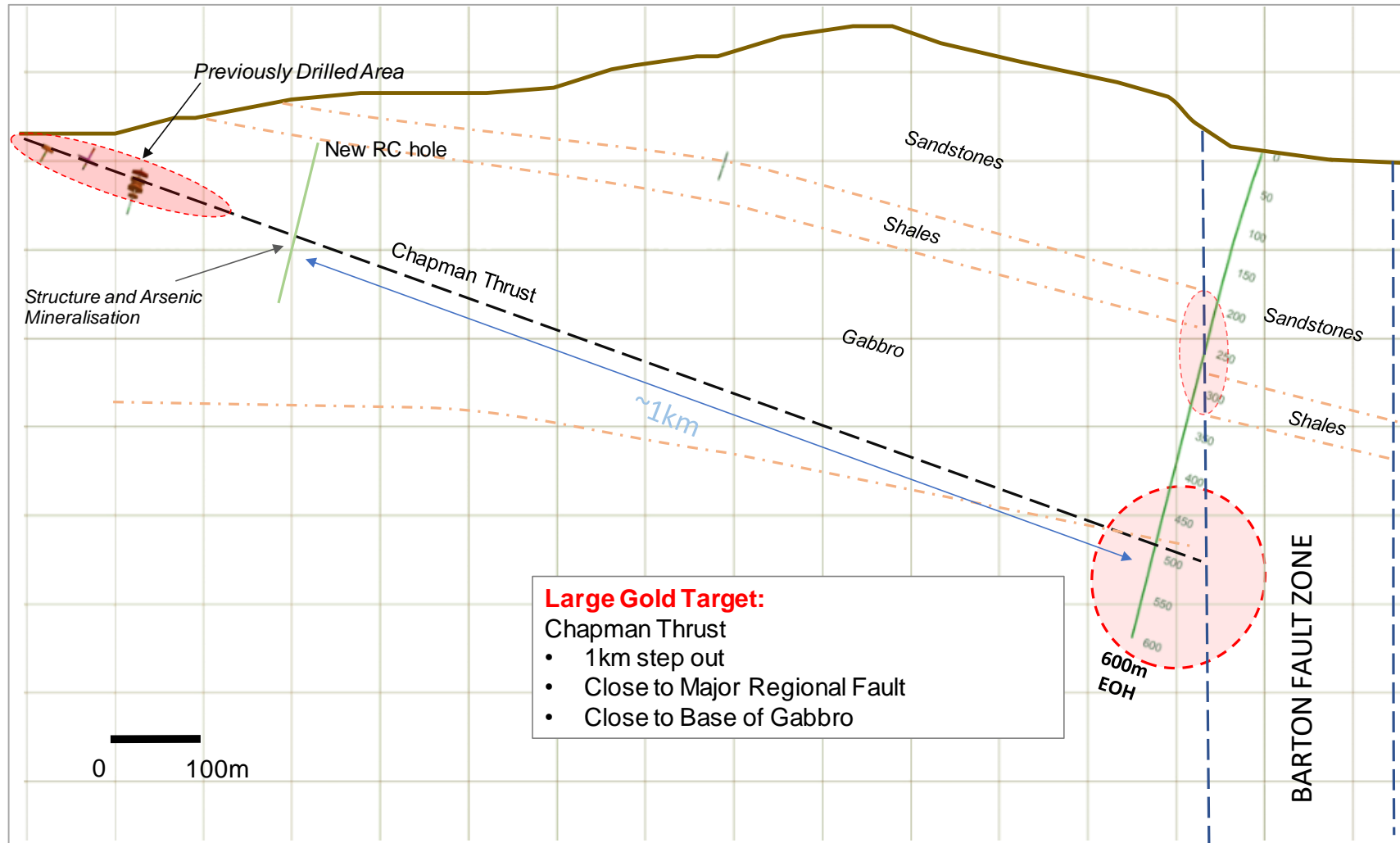
- ❖ Multiple high-grade intersections have been returned from several RC drill sections, defining a very high-grade gold zone at the eastern end of the main Trudi 5m grid drilling (KRC ASX 5 June 2018, 20 June 2018, 28 June 2018, 7 August 2018). Best down hole intersections include:

- **4m @ 113.29g/t Au including 1m at 346g/t Au** from KMRC0078
- **3m @ 34.8g/t Au including 1m @ 50.5g/t Au** from KMRC0077
- **3m @ 41.75g/t Au** including **1m @ 81.5g/t Au** from 16m in KMRC0072
- **3m @ 38.70g/t Au** including **1m @ 55.80g/t Au** from 22m in KMRC0073
- **2m @ 66.50g/t Au** including **1m @ 77.2g/t Au** from 27m in KMRC0074
- **4m @ 39.78g/t Au** including **1m @ 82.7g/t Au** from 31m in KMRC0075
- **3m @ 16.26g/t Au** including **1m @ 38.30g/t Au** from 13m in KMRC0076
- **2m @ 27.28g/t Au** including **1m @ 39.20g/t Au** from 29m in KMRC0079
- **2m @ 16.78g/t Au** including **1m @ 31.80g/t Au** from 15m in KMRC115
- **4m @ 36.77g/t Au** including **1m @ 70.9g/t Au** from 7m in KMRC127,
- **3m @ 29.53g/t Au** including **1m @ 87.30g/t Au** from 9m in KMRC129,
- **5m @ 9.03g/t Au** including **1m @ 28.10g/t Au** from 8m in KMRC126.

- ❖ RC drilling on the Trudi Vein has identified other high grade shoots and potential eastern extensions (KRC ASX 12 October 2018):
  - a new high grade zone at depth immediately east of the upper level high grade zone, including 9m @ 2.78g/t Au including 1m @ 12.45g/t Au in KMRC182.
  - deeper intersections below the Trudi Main Grid including 2m @ 5.64g/t Au with 1m @ 11.1g/t Au in KMRC147.
  - step out exploration 50m east of the main Trudi Grid returned 5m @ 1.78g/t Au including 1m @ 5.76g/t Au opening up new high-grade shoot exploration opportunities to the east.
- ❖ Follow up drilling of soil and rock sampling surveys which discovered the Jeniffer Vein has returned gold mineralisation with grades up to 3.16g/t Au (KRC ASX 12 October 2018).



# Speedwah Dome deep gold target



# Top of Trudi Hill outcrop



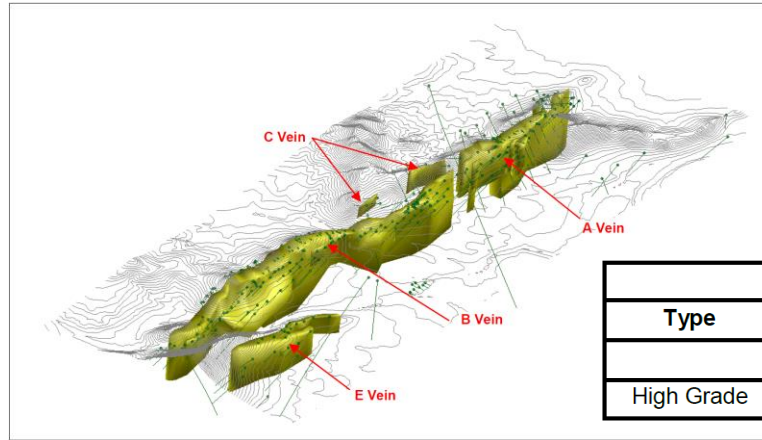


# World class mineral projects typically need?

- A unique orebody with a very long mine life, consistent grades amenable to the most modern day large scale mining methods
- Commodity/revenue diversification
- Economically viable process routes to produce high purity products
- Leading international engineering partners and consultants
- Adequate sources of capital
- A modest to low risk domicile

KRC is starting to tick the boxes.

# Mineral Resource Estimates



## FLUORITE

Massive fluorite core

Note: Fluorite Resources estimated under JORC 2012  
KRC ASX 23 February 2018

**Table 1: Fluorite Mineral Resource estimate  
(10% CaF<sub>2</sub> cut-off grade)**

Type	Indicated		Inferred		Total		
	Tonnes	CaF <sub>2</sub> %	Tonnes	CaF <sub>2</sub> %	Tonnes	CaF <sub>2</sub> %	CaF <sub>2</sub> Mt
High Grade	4.1	25.3	2.6	23.6	6.7	24.6	1.7

Zone	JORC Classification	Tonnage (Mt)	V (%)	V <sub>2</sub> O <sub>5</sub> (%)	Fe (%)	Ti (%)
High Grade	Measured	181	0.21	0.37	15.1	2.1
	Indicated	404	0.20	0.35	15.0	2.0
	Inferred	1,139	0.19	0.34	14.9	2.0
Total High Grade		1,725	0.20	0.35	15.0	2.0
Low Grade	Measured	141	0.15	0.27	14.6	2.0
	Indicated	650	0.15	0.27	14.5	1.9
	Inferred	2,196	0.15	0.27	14.4	1.9
Total Low Grade		2,987	0.15	0.27	14.5	1.9
Combined Zones	Measured	322	0.18	0.32	14.9	2.0
	Indicated	1,054	0.18	0.33	14.9	2.0
	Inferred	3,335	0.16	0.29	14.6	2.0
Grand Total		4,712	0.17	0.30	14.7	2.0

## VANADIUM-TITANIUM

Note: Vanadium Resources estimated under JORC 2012  
KRC ASX announcement 26 May 2017

**Table 2: Speewah Project Global Mineral Resource estimate  
(0.23% V<sub>2</sub>O<sub>5</sub> cut-off grade)**

**Table 3: Central Mineral Resource estimate  
0.23% V<sub>2</sub>O<sub>5</sub> cut-off grade**

Zone	JORC Classification	Tonnage (Mt)	V (%)	V <sub>2</sub> O <sub>5</sub> (%)	Fe (%)	Ti (%)
High Grade	Measured	139	0.21	0.37	15.1	2.1
	Indicated	135	0.21	0.37	14.8	2.0
	Inferred	247	0.20	0.36	14.7	2.0
Total High Grade		520	0.20	0.36	14.8	2.0
Low Grade	Measured	91	0.15	0.26	14.6	2.0
	Indicated	167	0.15	0.27	14.8	2.0
	Inferred	462	0.15	0.27	14.3	1.9
Total Low Grade		720	0.15	0.27	14.5	2.0
Combined Zones	Measured	230	0.18	0.33	14.9	2.0
	Indicated	301	0.17	0.31	14.8	2.0
	Inferred	709	0.17	0.30	14.5	2.0
Grand Total		1,240	0.17	0.31	14.6	2.0

# Corporate Overview

ASX code	KRC
Share price (19/10/2018)	5.5 cents
Issued shares	~1.24 billion
ASX Options (exc.10 cents 30/6/18)	~413 million
Unlisted Options	~8 million
Market capitalisation	~ \$68 million



## Board of Directors

Anthony Barton – Chairman

Greg MacMillan – Non-Executive Director

Leonid Charuckyi – Non-Executive Director

## Top Shareholders

Anthony Barton & Associates

## Interest

~8. %

# IMPORTANT NOTICES

## **Note 1: Competent Persons Statement**

The information in this report that relates to Exploration Results, Mineral Resources and Metallurgical Results is based on information compiled by Ken Rogers and Andrew Chapman and fairly represents this information. Mr. Rogers is the Chief Geologist and an employee of the Company, 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. Chapman is a Consulting Geologist contracted with the Company and a member of the Australian Institute of Geoscientists (AIG). 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 Chapman and Mr. Rogers consent to the inclusion in this report of the matters based on information in the form and context in which it appears.

## **Note 2: Resource Statements**

The information in this Report that relates to Mineral Resources is based on previous KRC ASX announcements: The Fluorite Resources reported in Table1 in the previous slide has been sourced from a Resource Estimate Report which was reported in KRC ASX announcement dated 23 February 2018. These Fluorite Resources were estimated in terms of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves' (JORC Code 2012 Edition). The Vanadium Resources reported in Tables 2 and 3 in the previous slide has been sourced from a Resource Estimate Report which was reported in KRC ASX announcement dated 26 May 2017. These Vanadium Resources were estimated in terms of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves' (JORC Code 2012 Edition).

KRC confirms it is not aware of any new information or data that materially affects the information included in these resource announcements and confirms that all material assumptions and technical parameters underpinning the estimates continue to apply and have not materially changed.

## **Note 3: Disclaimer**

This presentation contains forward looking statements concerning the projects owned by KRC. Statements concerning mineral resources may also be deemed to be forward looking statements in that they involve elements based on specific assumptions. Forward looking statements are not statements of historical fact, and actual events or results may differ materially from those described in the forward looking statements as a result of a variety of risks, uncertainties and other factors. Forward looking statements are based on KRC's beliefs, opinions and estimates as of the date they are made and no obligation is assumed to update forward looking statements if these beliefs, opinions and estimates should change or reflect other future developments. The interpretations and conclusions reached in this presentation are based on current geological theory and the best evidence available to the authors at the time of writing. It is the nature of all scientific conclusions that they are founded on an assessment of probabilities and, however high these probabilities might be, they make no claim for complete certainty. Any economic decisions that might be taken on the basis of interpretations or conclusions contained in this presentation will therefore carry an element of risk.



# THANK YOU

