



PVW  
Resources

Tanami

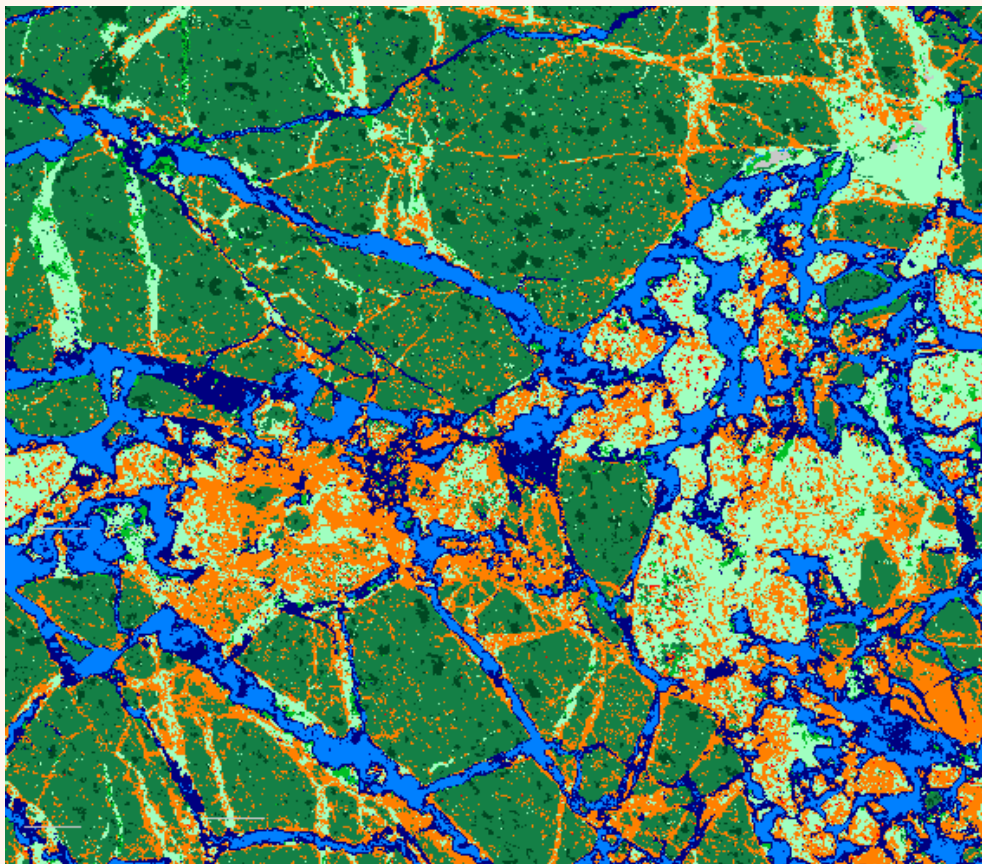
## ASX ANNOUNCEMENT

30 March 2022

# Metallurgical sighter test work delivers positive results to support Tanami Heavy Rare Earth Project potential

## Highlights

- Ore sorting and magnetic separation testing have been successful in upgrading the rare earth grade of samples while rejecting significant mass, indicating important potential to save on downstream processing costs.
- **Ore Sorting obtained a TREO grade of 7.16% at a recovery of 87.3%.**
- **Magnetic separation obtained an 81.2% recovery and 50.8% mass rejection.**
- Flotation testwork is being conducted on the magnetic separation concentrate to achieve a higher-grade concentrate suitable for downstream processing.
- Mineralogical studies continue to add to the understanding of mineralogy and ore paragenesis, assisting the geological understanding and exploration.



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Figure 1: Micro-XRF results from Killi Killi breccia, confirming a complex mineralising system.

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PVW Resources ('PVW', "the Company") is pleased to provide an update on the metallurgical sighter testwork and mineralogical results at the Tanami Rare Earth Project.

The metallurgy and mineralogy go hand in hand and both studies indicate the xenotime mineralisation will be recoverable using known processing technologies.

Studies on the five 20kg samples collected for metallurgical testwork by metallurgical consultants IMO are progressing well with encouraging results. The assay results of the five metallurgical samples were previously reported with an average HREO percentage of 80% including an average of 2,990ppm dysprosium oxide and up to 5,795ppm dysprosium oxide (see PVW:ASX announcement dated 1<sup>st</sup> February 2022 titled "Metallurgical samples highlight significant rare earths").

Ore sorting and magnetic separation work on the samples is complete at a "sighter" level. The knowledge gained from these two steps will ensure ongoing flotation testwork is conducted on the most suitable material to achieve a higher-grade concentrate for downstream processing.

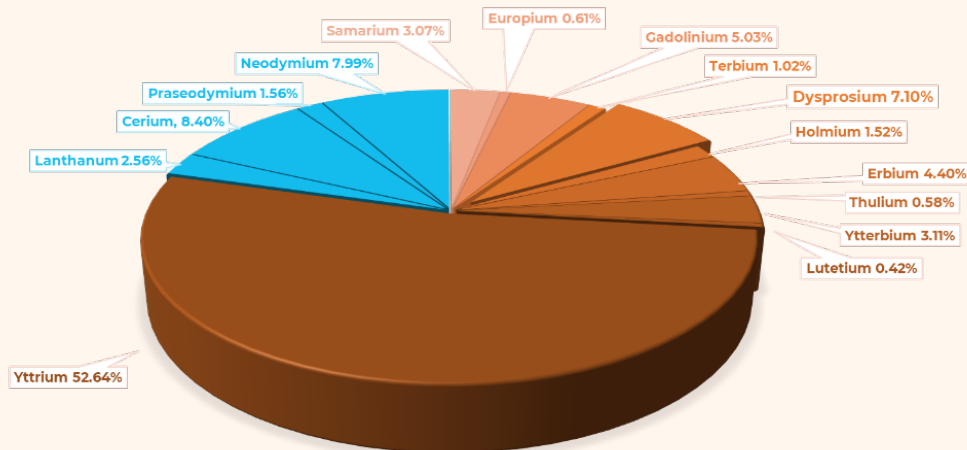


Figure 2: Average Rare Earth Oxide distribution for the five metallurgical samples (TAME001-005)

TREO = Total Rare Earth Oxides – Total of La<sub>2</sub>O<sub>3</sub>, CeO<sub>2</sub>, Pr<sub>6</sub>O<sub>11</sub>, Nd<sub>2</sub>O<sub>3</sub>, Sm<sub>2</sub>O<sub>3</sub>, Eu<sub>2</sub>O<sub>3</sub>, Gd<sub>2</sub>O<sub>3</sub>, Tb<sub>4</sub>O<sub>7</sub>, Dy<sub>2</sub>O<sub>3</sub>, Ho<sub>2</sub>O<sub>3</sub>, Er<sub>2</sub>O<sub>3</sub>, Tm<sub>2</sub>O<sub>3</sub>, Yb<sub>2</sub>O<sub>3</sub>, Lu<sub>2</sub>O<sub>3</sub>, Y<sub>2</sub>O<sub>3</sub>

HRE or HREO = Heavy Rare Earth Oxides – Total of Sm<sub>2</sub>O<sub>3</sub>, Eu<sub>2</sub>O<sub>3</sub>, Gd<sub>2</sub>O<sub>3</sub>, Tb<sub>4</sub>O<sub>7</sub>, Dy<sub>2</sub>O<sub>3</sub>, Ho<sub>2</sub>O<sub>3</sub>, Er<sub>2</sub>O<sub>3</sub>, Tm<sub>2</sub>O<sub>3</sub>, Yb<sub>2</sub>O<sub>3</sub>, Lu<sub>2</sub>O<sub>3</sub>, Y<sub>2</sub>O<sub>3</sub>

**Executive Director Mr. George Bauk said,** "The positive results from the initial sighter metallurgical test work have provided the team with a number of key findings. Additional mineralogy work using micro-XRF spectroscopy further supports the presence of xenotime mineralisation, host of key Rare Earths including dysprosium and terbium."

"Secondly, no fatal flaws have been identified in the testwork and initial tests have demonstrated that ore sorting, and magnetic separation works, with positive upgrade/mass rejection and very good recovery. The test work program at this stage is not focused on optimisation and variability studies, but simply to ensure the known method of processing xenotime works."

"We look forward to the flotation results and this program will provide the company with a baseline for future studies post the 2022 exploration program. We continue to build our knowledge base on this exciting project through the programs undertaken in 2021 and look forward to the commencement of drilling, to start shortly".



## Metallurgical test work

This initial test work program was conducted to confirm the amenability of the Tanami Rare Earth Project to known rare earth ore beneficiation techniques currently being conducted on other heavy rare earth ores within Western Australia and worldwide. The aim was to determine if there were any fatal flaws on a Master Composite ore sample which was generated from outcrop rock samples taken from various locations within the Killi Killi East Prospect.

The Master Composite underwent initial ore sorting testwork at a coarse crush (<50 mm) on two different size fractions (-50+25 mm and -25+10 mm) using a common x-ray transmission technique to successfully separate the ore on the different mineral densities within the host rock. The initial success of this sifter test shows the potential for ore sorting to be used on a commercial scale and warrants further testwork to further optimise the various ore sorting techniques and to confirm their application on a commercial scale. The success of the ore sorting also indicates that other gravity separation techniques will be applicable post ore sorting providing PVW with further processing options.

The Master Composite (composited from ore sorter products including tails, similar to the ore sorter feed) along with the four variability composites which were used to make up the Master Composite as well as an outcrop sample from Watts Rise were processed through a Wet High Intensity Magnetic Separation (WHIMS) unit (post grinding to 75 µm) at various magnetic strengths up until 10,000 Gauss. This test resulted in a continual increase in rare earth recovery with minimal decrease in rare earth grade as the magnetic strength was increased. This indicated the ore will be amenable to rare earth upgrade by magnetic separation possibly in combination with an ore sorter to significantly reduce the mass to downstream flotation. It also indicates that further increasing the magnetic intensity will increase the rare earths recovery with minimal further impact on the concentrate rare earth grade.

WHIMS concentrates from the Master Composite were combined and are currently undergoing the next phase of test work, which is flotation. The aim of flotation is to generate a final beneficiation concentrate suitable for processing through downstream hydrometallurgical unit operations.

Following assessment of results for the Master Composite, further flotation analysis is likely to be conducted on the Variability Composites WHIMS concentrates to confirm their performance.

## Mineralogical studies

A key to understanding the metallurgical results is understanding the mineralogy. To improve the current understanding of the Killi Killi East mineralisation seven hand-sized rock chip samples collected in the 2021 field programme were selected for Micro-X-ray Fluorescence (XRF) spectroscopy using the Bruker M4 Tornado Plus spectrometer and imported into Advanced Mineral Identification Classification Software (AMICS). This technique allows for the acquisition of quantitative and qualitative geochemical data at high resolution (micron-scale) paired with manual mineral interpretation to confirm minerals identified using AMICS spectra analysis and to establish mineral abundance. Presence of these minerals was confirmed using SEM EDS/XRD analysis, details of which were provided in the ASX announcement dated 7 December 2021 titled "Mineralogy confirms Heavy Rare Earths at Tanami are Xenotime".





These studies have confirmed mineralisation in multiple styles in both the Pargee Sandstone (TATO002) and the Killi Killi Formation (TATO006). The Pargee Sandstone (TATO002) is an effective host rock for mineralisation, given the porosity and permeability of the conglomerate beds. This can be seen in the pervasive nature of the disseminated xenotime as shown in Figure 3 below.

The Killi Killi breccia (TATO006) contains several distinct structures which are geochemically unique, which suggests multiple stages of extensive hydrothermal fluid movement and xenotime precipitation.

Confirmation of several styles of mineralisation in both the Pargee Sandstone and the Killi Killi Formation indicates a significant mineral system hydrothermally altering the Meso/Paleoproterozoic unconformity, with evidence for multi-generational fluid flow and xenotime precipitation. The significance of the brecciation and mineralogy within the Killi Killi Formation potentially provides a range of additional exploration opportunities away from the immediate unconformity targets.

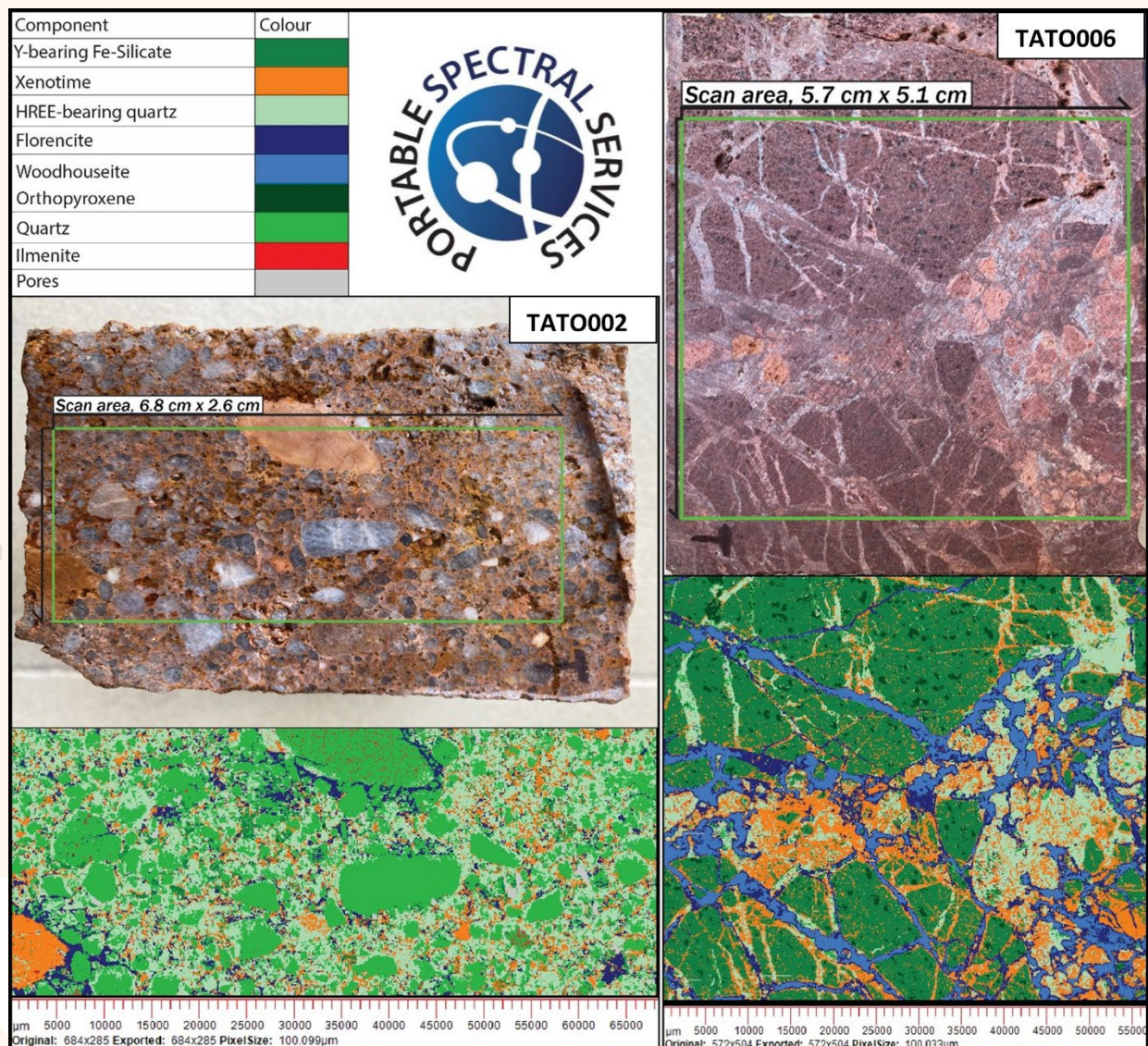


Figure 3: Mineralogy of samples TATO002 and TATO006 analysed by Micro-X-ray Fluorescence



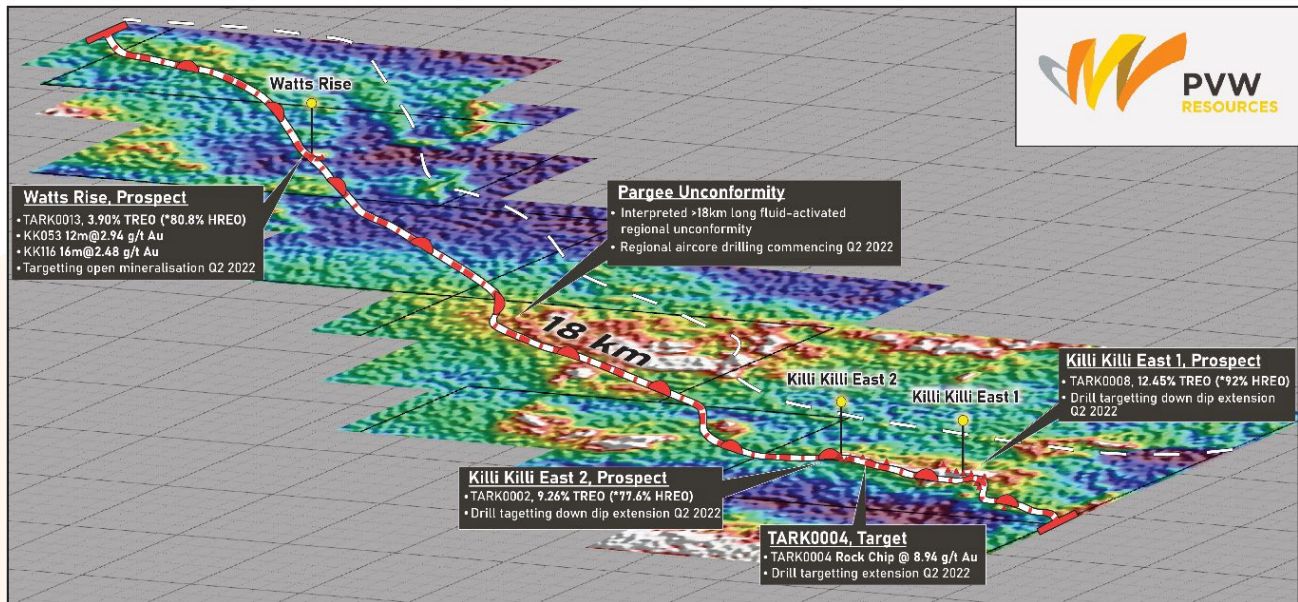


Figure 4: Tanami Project – Regional REE target (Watts Rise - Killi Killi Trend)

## Regional REE Target

The contact between the Pargee Sandstone and the Killi Killi Formation is a regional-scale unconformity of over 18km strike length and is considered prospective for hydrothermal unconformity-related REE mineralisation, examples of which occur across a large part of the Birrindudu Basin (eg. Browns Range, Boulder Ridge). The two main prospect areas, Killi Killi East and Watts Rise occur 12km apart and are both located close to the contact between the Pargee Sandstone and the Killi Killi Formation (see Figure 4). PVW Resources exploration program will target faults and structures that transect the regional unconformity and potentially act as conduits for mineralising fluids. Deposits of the hydrothermal unconformity-related style can have a small areal footprint (<200m) which may require detailed geological mapping and close spaced drilling. As part of the drilling program in April, regional targets along the unconformity between Watts Rise and Killi Killi East will also be tested. These regional targets are currently still being finalised.

## Key Next Steps

Task	Commence	Description
Pre – Drilling Field Work	April	Site preparation
Geophysical Interpretation	Ongoing	Full project regional interpretation
Drilling	April	Following heritage survey.
Metallurgical Testwork - Flotation	May	Initial flotation testwork on concentrate blend from the master composite sample.

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## About Rare Earths

Rare Earths are fundamental to the modern economy, enabling significant dollars in global GDP via a wide range of clean energy including the electrification of transport, information technology, defense and industrial applications such as robotics.

Unique magnetic and electrochemical properties of the Rare Earth elements enable technologies to perform with greater efficiency, performance and durability – often by reducing weight, emissions or energy consumption.

Rare Earths drive technology to power global economic growth, enable life-saving products, and help shrink our carbon footprint. With the infancy of technological development, application of Rare Earths has just commenced.

Light Rare Earths										Heavy Rare Earths				
Lanthanum 57 138.91	Cerium 58 140.12	Praseodymium 59 140.01	Neodymium 60 144.24	Samarium 62 150.36	Europium 63 151.96	Gadolinium 64 157.25	Terbium 65 158.93	Dysprosium 66 162.50	Holmium 67 164.93	Erbium 68 167.26	Thulium 69 168.93	Ytterbium 70 173.04	Lutetium 71 174.967	Yttrium 39 88.906
<b>La</b>	<b>Ce</b>	<b>Pr</b>	<b>Nd</b>	<b>Sm</b>	<b>Eu</b>	<b>Gd</b>	<b>Tb</b>	<b>Dy</b>	<b>Ho</b>	<b>Er</b>	<b>Tm</b>	<b>Yb</b>	<b>Lu</b>	<b>Y</b>

Figure 5: Light and heavy rare earths

- Diesel fuel additive**
  - Cerium
  - Lanthanum
- UV cut glass**
  - Cerium
- Glass/mirrors polishing**
  - Cerium
- Catalytic converter**
  - Cerium/Zirconium
  - Lanthanum
- LCD Screens**
  - Cerium
  - Europium
  - Yttrium
- Component sensors**
  - Yttrium
- 25+ motors throughout vehicle**
  - Neodymium
  - Praseodymium
  - Dysprosium
- Headlight glass**
  - Neodymium
- Hybrid electric motor and generator**
  - Neodymium
  - Praseodymium
  - Dysprosium
  - Terbium
- Hybrid NiMH Battery**
  - Cerium
  - Lanthanum

Figure 6: Rare earth elements used in electric vehicles





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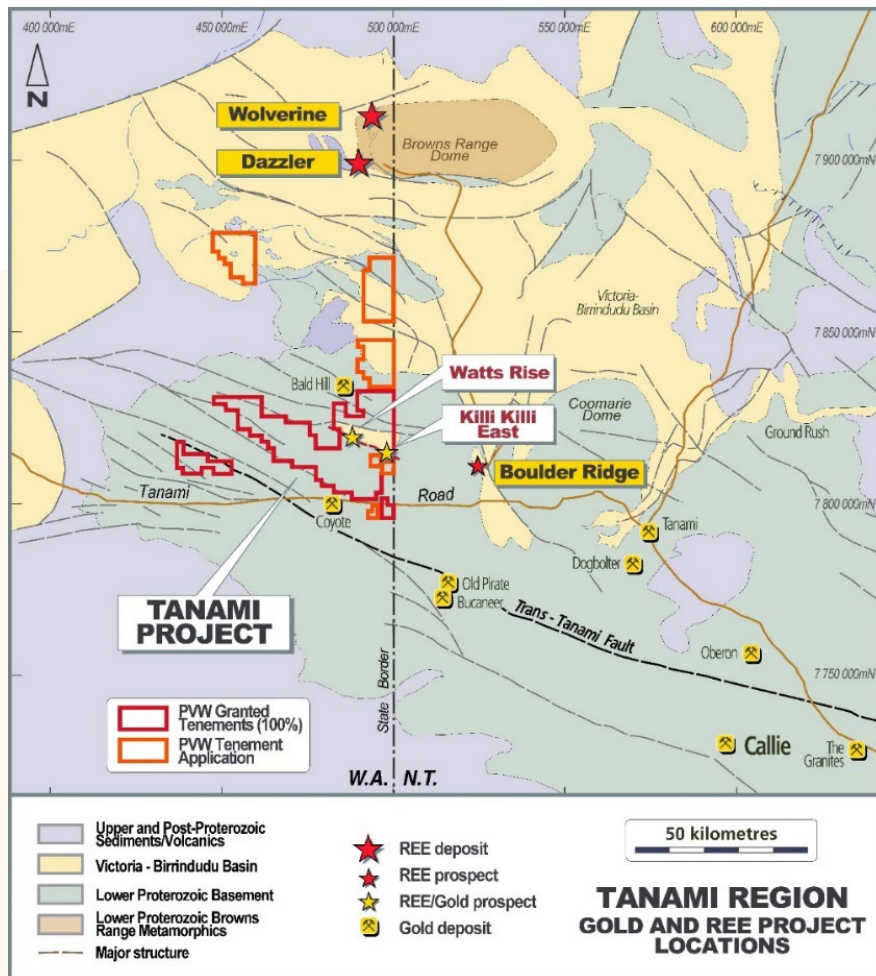


Figure 7: PVW Tanami Project location showing tenement holdings and REE prospects

### Hydrothermal unconformity-related REE deposits

Hydrothermal unconformity-related REE deposits are a class of REE deposits that have a similar geological setting to unconformity-related uranium deposits of Australia and Canada. The best known examples are at Browns Range where mineralisation occurs as xenotime-rich veins and breccias close to a regional unconformity between Archean metasediments and overlying younger Proterozoic sandstones. The deposits formed at 1.65 to 1.61Ga (Nazari-Dehkordi et al, 2018) along or adjacent to steeply dipping faults that transect the unconformity. The Killi Killi East prospect shares many geological similarities with this style of mineralisation.

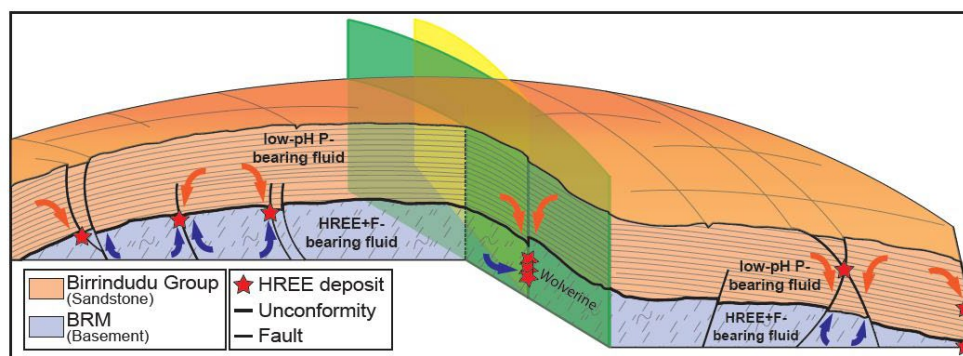


Figure 8: Model for the formation of hydrothermal unconformity related REE deposits (Diagram from Nazari-Dehkordi et al, 2018)





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### **Competent Person's Statement**

The information in this documents that relates to Exploration Results is based on information compiled by Mr Robin Wilson who is a Member of the Australasian Institute of Mining and Metallurgy. Mr Wilson is a consultant to PVW Resources and has sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is 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' (the JORC Code). Mr Wilson consents to the inclusion of this information in the form and context in which it appears.

The information in this document that relates to metallurgical test work is based on, and fairly represents, information and supporting documentation reviewed by Mr Peter Adamini, BSc (Mineral Science and Chemistry), who is a Member of The Australasian Institute of Mining and Metallurgy (AusIMM). Mr Adamini is a full-time employee of Independent Metallurgical Operations Pty Ltd, who has been engaged by PVW Resources Limited to provide metallurgical consulting services. Mr Adamini has approved and consented to the inclusion in this document of the matters based on his information in the form and context in which it appears.

### **Authorisation**

This announcement has been authorised for release by the Board of PVW Resources Limited.

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## Appendix 1

Table 1: Master Composite ore sorter results at a coarse crush of 50 mm

Product	Mass	TREO		LREO		HREO		SiO <sub>2</sub>		Fe <sub>2</sub> O <sub>3</sub>		P <sub>2</sub> O <sub>5</sub>	
	%	%	Dist %	%	Dist %	%	Dist %	%	Dist %	%	Dist %	%	Dist %
Comb Cons 1	30.1%	10.4	53.8%	2.10	48.1%	8.31	55.5%	65.7	27.3%	6.57	28.5%	8.40	44.7%
Comb Cons 1 and Fines	40.7%	8.75	61.3%	1.80	55.9%	6.95	62.8%	67.6	38.0%	6.76	39.8%	7.46	53.8%
Comb Cons 1 & 2	54.0%	8.19	76.1%	1.74	71.6%	6.45	77.4%	67.1	50.0%	7.94	62.0%	7.25	69.4%
Comb Cons 1 & 2 (-25+10 mm) and Fines	64.7%	7.51	83.5%	1.61	79.5%	5.90	84.7%	68.0	60.7%	7.84	73.2%	6.85	78.4%
Comb Cons 1 & 2 and Fines	71.0%	7.16	87.3%	1.55	83.7%	5.61	88.4%	68.8	67.4%	7.74	79.3%	6.62	83.1%
Tail	29.0%	2.54	12.7%	0.74	16.3%	1.80	11.6%	81.5	32.6%	4.94	20.7%	3.28	16.9%
<b>Total / Calc Head</b>	<b>100.00%</b>	<b>5.82</b>	<b>100.0%</b>	<b>1.31</b>	<b>100.0%</b>	<b>4.50</b>	<b>100.0%</b>	<b>72.5</b>	<b>100.0%</b>	<b>6.93</b>	<b>100.0%</b>	<b>5.65</b>	<b>100.0%</b>

Table 2: Master Composite magnetic separation results, fourth pass through Wet High Intensity Magnetic (WHIMS) unit at 75 µm Grind

Product	Mass	TREO		LREO		HREO		SiO <sub>2</sub>		Fe <sub>2</sub> O <sub>3</sub>		P <sub>2</sub> O <sub>5</sub>	
	%	%	Dist %	%	Dist %	%	Dist %	%	Dist %	%	Dist %	%	Dist %
Con 4,000 Gauss	15.0%	8.00	27.1%	1.65	21.9%	6.35	28.8%	59.8	11.8%	15.8	38.1%	6.85	22.1%
Con 6,000 Gauss	28.8%	8.07	52.4%	1.78	45.4%	6.29	54.8%	61.1	23.1%	13.0	60.3%	7.13	44.1%
Con 8,000 Gauss	40.3%	7.71	70.0%	1.77	63.1%	5.94	72.3%	62.9	33.2%	11.4	73.7%	7.07	61.1%
Con 10,000 Gauss	49.2%	7.33	81.2%	1.73	75.2%	5.60	83.3%	64.3	41.5%	10.4	82.4%	6.90	72.9%
Tail 10,000 Gauss	50.8%	1.64	18.8%	0.55	24.8%	1.09	16.7%	87.8	58.5%	2.16	17.6%	2.49	27.1%
<b>Total / Calc Head</b>	<b>100.0%</b>	<b>4.44</b>	<b>100.0%</b>	<b>1.13</b>	<b>100.0%</b>	<b>3.31</b>	<b>100.0%</b>	<b>76.25</b>	<b>100.0%</b>	<b>6.23</b>	<b>100.0%</b>	<b>4.66</b>	<b>100.0%</b>



**About PVW Resources:**



**Tanami Project – 100% ~1,400km<sup>2</sup>**

The Tanami Region hosts the large Callie gold deposit currently being mined by Newmont.

Limited exploration has been undertaken in the Tanami and many view this area as highly prospective and very underexplored.

Over the past 3 years the company has put together a 1,400km<sup>2</sup> mostly contiguous land package with significant REE results, geological understanding and historical drill results that require immediate follow up.

Previous exploration in the early 2010's resulted in 12m @ 2.94 g/t Au from surface and 5m @ 6.99 g/t Au also from surface.

Recent 2021 exploration by PVW has confirmed the REE potential with spectacular rock chip results from Killi Killi East including Assays up to 12.45% TREO with 14 of 20 samples returning assays

greater than 1% TREO and heavy rare earths comprising on average 80% of TREO:

- 12.45% TREO including 11,592ppm dysprosium
- 9.26% TREO including 7,070ppm dysprosium
- 7.38% TREO including 6,324ppm dysprosium
- 3.90% TREO including 2,743ppm dysprosium (located 12km from the Killi Killi East prospect).

For recent REE results refer to ASX:PVW, 13 Oct 2021, Confirmation of high-grade Heavy Rare Earths at Tanami. All historical Tanami Project exploration drilling results refer to ASX:PVW, Thred Prospectus Appendix A - Independent Geologists Report, Appendix 1.

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## Leonora Region – 100% 195km<sup>2</sup>

The company owns 100% Jungle Well and the Brilliant Well projects both with immediate follow up targets. Jungle Well has a 26,800oz Au inferred resource JORC12 compliant, the open pit was mined previously in 1996 during a low gold price. Drilling plans to explore the extension of the existing resource and along strike following up an intersection of 13.2m @ 1.74 g/t which was drilled exploring for Nickel.

The Brilliant Well Project is south of the Bundarra Gold Project (owned by Northern Star) with gold intersections from various drilling programs in 2011 and by PVW in 2019 which included 4m @ 4.09 g/t and 10m @ 3.36 g/t in historical 2011 drilling.

All Leonora Project exploration drilling results refer to ASX:PVW, Thred Prospectus Appendix A - Independent Geologists Report, Appendix 1.

**Jungle Well Deposit**  
**November 2019 Maiden Inferred Mineral Resource Estimate**  
**(0.5g/t Au Cut-off)**

Type	Tonnage Kt	Au g/t	Au Ounces
LG Stockpile	7	1.3	300
Oxide	210	1.0	6,800
Transitional	309	1.1	10,600
Fresh	208	1.4	9,200
<b>Total</b>	<b>735</b>	<b>1.1</b>	<b>26,800</b>

*Note: Refer to the Thred Ltd website Prospectus – Appendix A - Independent Geologists Report, 2.4 Mineral Resource Estimation – Jungle Well Deposit. The Company confirms that all material assumptions and technical parameters underpinning the estimates continue to apply and have not materially changed at the time of publication.*

## Kalgoorlie Region – 100% 150km<sup>2</sup>

Right in and amongst the heartland of gold in Western Australia, PVW has a 150km<sup>2</sup> tenement package within close proximity to many operating gold processing plants. Near term drill targets: Regional Bedrock Targets including previous drill results including 6m @ 2.61 g/t and 4m @ 2.39 g/t and new conceptual targets. Aircore drilling at the Black Flag prospect and auger drilling at King of The West and the Pappy Project have confirmed these target areas are very prospective with initial exploration efforts returning positive results requiring ongoing follow up. Significant drill results have been returned for granites and within greenstones. Paleochannel targets with possible links to bedrock mineralisation are yet to be tested. All historical Kalgoorlie Project exploration drilling results refer to ASX:PVW, Thred Prospectus Appendix A - Independent Geologists Report, Appendix 1.

## Ballinue Project – 100% 950km<sup>2</sup>

The most recent addition to the PVW portfolio, the Ballinue Project is located in the Mid West region of Western Australia, over the Narryer Terrane and the Murchison Domain, within the West Yilgarn Ni-Cu-PGE Province. The West Yilgarn Province is defined by a corridor along the western margin of the Yilgarn Craton, bounded on the west by the Darling Fault and extending east for some 100km. The corridor hosts significant new discoveries, the most significant being Chalice Mining – Julimar Project (ASX:CHN). PVW's Ballinue Project is in the application phase and the company eagerly awaits grant of these tenements to commence systematic exploration, focusing on testing magnetic anomalies that could be the result of Layered Mafic-Ultramafic Intrusions.

### Right place for the right times for the right commodities

Western Australia is one of the leading investment jurisdictions according to the recent Fraser Institute rankings. During the challenging times we live in during COVID-19 all our projects and people are in Western Australia with excellent access to the projects. Finally, Western Australia is a global leader in gold production and gold exploration and producer of Rare Earths.

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**JORC CODE, 2012 Edition Table 1**

**• Section 1 Sampling Techniques and Data**

Criteria	JORC Code explanation	Commentary
Sampling techniques	<ul style="list-style-type: none"> <li>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.</li> <li>Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.</li> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>At the Killi Killi East and Watts Rise prospects metallurgical samples were taken from in-situ mineralisation using a handheld geo-pick. The samples are all around 20kg in size.. The samples were selected using a handheld spectrometer and Olympus portable XRF measuring yttrium and other elements (eg. strontium) in areas of outcropping mineralisation. Yttrium is a reliable indicator of rare earth mineralisation., A total of 5 samples were taken – 2 from Killi Killi East 1, 2 from Killi Killi East 2 and 1 from Watts Rise.</li> <li>The PXRF instrument is calibrated and serviced regularly, with daily instrument calibration completed. In addition, standards were analysed daily.</li> <li>The metallurgical samples were taken for the purposes of preliminary metallurgical testwork only. As point samples they have a high potential of bias and should not be considered as being representative of the overall mineralised structure. The whole sample collected was crushed and pulverised prior to analysis.</li> </ul>
Drilling techniques	<ul style="list-style-type: none"> <li>Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (eg 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).</li> </ul>	<ul style="list-style-type: none"> <li>Not applicable – no drilling carried out.</li> </ul>



Criteria	JORC Code explanation	Commentary
Drill sample recovery	<ul style="list-style-type: none"> <li>Method of recording and assessing core and chip sample recoveries and results assessed.</li> <li>Measures taken to maximise sample recovery and ensure representative nature of the samples.</li> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>Not applicable – no drilling carried out.</li> </ul>
Logging	<ul style="list-style-type: none"> <li>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.</li> <li>Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.</li> <li>The total length and percentage of the relevant intersections logged.</li> </ul>	<ul style="list-style-type: none"> <li>Geology, alteration and structure were recorded at the sample sites. These records are qualitative in nature.</li> </ul>
Sub-sampling techniques and sample preparation	<ul style="list-style-type: none"> <li>If core, whether cut or sawn and whether quarter, half or all core taken.</li> <li>If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.</li> <li>For all sample types, the nature, quality and appropriateness of the sample preparation technique.</li> <li>Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.</li> <li>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.</li> <li>Whether sample sizes are appropriate to the grain size of the material being sampled.</li> </ul>	<ul style="list-style-type: none"> <li>Not applicable – no drilling carried out.</li> <li>Not applicable – no drilling carried out.</li> <li>Material from each individual composite was stage crushed in its entirety to &lt;50 mm. Approximately 10 kg from each composite was then representatively split prior to stage crushing the 10 kg from each composite to &lt;3.35 mm..</li> <li>Approximately 500g was representatively sub-sampled prior to pulverising and submitted for analysis at Intertek Genalysis. . No field duplicates collected as samples were taken for metallurgical testwork only. As point samples they have a high potential of bias and should not be considered as being representative of the overall mineralised structure.</li> <li>Sample sizes of greater than 1kg are considered appropriate for the style of mineralisation.</li> </ul>



Criteria	JORC Code explanation	Commentary
<p>Quality of assay data and laboratory tests</p>	<ul style="list-style-type: none"> <li>• <i>The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.</i></li> <li>• <i>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.</i></li> <li>• <i>Nature of quality control procedures adopted (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.</i></li> </ul>	<ul style="list-style-type: none"> <li>• Samples were assayed Intertek Genalysis, Perth. The method used for the rare earth assays was FB6/MS, whereby samples are fused in a lithium borate fusion for determination of the rare earth elements, by ICP-MS. The non-rare earth elements were determined by XRF following the lithium borate fusion. Gold was measured by the FA50/OE method in which a 50g portion of pulverised sample is analysed using a fire assay flux, with determination by ICP-OE.</li> <li>• In the field an Olympus XRF handheld tool was used to provide a preliminary quantitative measure of mineralisation. A reading time of 30 -60 seconds was used. Calibration of the PXRF is daily and an yttrium standard is checked daily.</li> <li>• Laboratory QAQC involves the use of internal lab standards using certified reference material, blanks, splits and replicates as part of the in-house procedures.</li> </ul>
<p>Verification of sampling and assaying</p>	<ul style="list-style-type: none"> <li>• <i>The verification of significant intersections by either independent or alternative company personnel.</i></li> <li>• <i>The use of twinned holes.</i></li> <li>• <i>Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.</i></li> <li>• <i>Discuss any adjustment to assay data.</i></li> </ul>	<ul style="list-style-type: none"> <li>• Verification of results by more than one company geologist.</li> <li>• Not applicable – no drilling.</li> <li>• Primary data was collected into a spread sheet to be loaded to the Company database.</li> <li>• Adjustments made to the assay data were limited to the conversion of reported rare earth elemental assays for a range of elements to the equivalent oxide compound as applicable to rare earth oxides. In all instances the original elemental data will be stored in the database and the equivalent oxide values loaded into appropriately labelled fields identifying them as calculated values. Selected checks on these calculated fields did not identify any issues. The oxides were calculated from the element according to the following factors:</li> </ul>





Criteria	JORC Code explanation	Commentary
		<p>CeO<sub>2</sub> – 1.2284, Dy<sub>2</sub>O<sub>3</sub> – 1.1477, Er<sub>2</sub>O<sub>3</sub> – 1.1435, Eu<sub>2</sub>O<sub>3</sub> – 1.1579, Gd<sub>2</sub>O<sub>3</sub> – 1.1526, Ho<sub>2</sub>O<sub>3</sub> – 1.1455, La<sub>2</sub>O<sub>3</sub> – 1.1728, Lu<sub>2</sub>O<sub>3</sub> – 1.1371, Nd<sub>2</sub>O<sub>3</sub> – 1.1664, Pr<sub>6</sub>O<sub>11</sub> – 1.2082, Sm<sub>2</sub>O<sub>3</sub> – 1.1596, Tb<sub>4</sub>O<sub>7</sub> – 1.1421, Tm<sub>2</sub>O<sub>3</sub> – 1.1421, Y<sub>2</sub>O<sub>3</sub> – 1.2699, Yb<sub>2</sub>O<sub>3</sub> – 1.1387</p> <p>Ratios of each oxide to Total Rare Earth Oxides (TREO) are used to determine the percentages of heavy (HRE) and light (LRE) rare earth oxides.</p> <p>Rare earth oxide is the industry accepted form for reporting rare earths. The TREO (Total Rare Earth Oxide) is calculated from addition of La<sub>2</sub>O<sub>3</sub>, CeO<sub>2</sub>, Pr<sub>6</sub>O<sub>11</sub>, Nd<sub>2</sub>O<sub>3</sub>, Sm<sub>2</sub>O<sub>3</sub>, Eu<sub>2</sub>O<sub>3</sub>, Gd<sub>2</sub>O<sub>3</sub>, Tb<sub>4</sub>O<sub>7</sub>, Dy<sub>2</sub>O<sub>3</sub>, Ho<sub>2</sub>O<sub>3</sub>, Er<sub>2</sub>O<sub>3</sub>, Tm<sub>2</sub>O<sub>3</sub>, Yb<sub>2</sub>O<sub>3</sub>, Y<sub>2</sub>O<sub>3</sub>, and Lu<sub>2</sub>O<sub>3</sub>. Note that Y<sub>2</sub>O<sub>3</sub> is included in the TREO calculation.</p> <p>HREO% is determined by the formula:  <math display="block">\text{HREO}\% = \frac{[\text{Sm}_2\text{O}_3 + \text{Eu}_2\text{O}_3 + \text{Gd}_2\text{O}_3 + \text{Tb}_4\text{O}_7 + \text{Dy}_2\text{O}_3 + \text{Ho}_2\text{O}_3 + \text{Er}_2\text{O}_3 + \text{Tm}_2\text{O}_3 + \text{Yb}_2\text{O}_3 + \text{Y}_2\text{O}_3 + \text{Lu}_2\text{O}_3]}{[\text{La}_2\text{O}_3 + \text{CeO}_2 + \text{Pr}_6\text{O}_{11} + \text{Nd}_2\text{O}_3 + \text{Sm}_2\text{O}_3 + \text{Eu}_2\text{O}_3 + \text{Gd}_2\text{O}_3 + \text{Tb}_4\text{O}_7 + \text{Dy}_2\text{O}_3 + \text{Ho}_2\text{O}_3 + \text{Er}_2\text{O}_3 + \text{Tm}_2\text{O}_3 + \text{Yb}_2\text{O}_3 + \text{Y}_2\text{O}_3 + \text{Lu}_2\text{O}_3 \text{ (TREO)}]} \times 100</math></p>
Location of data points	<ul style="list-style-type: none"> <li>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.</li> <li>Specification of the grid system used.</li> <li>Quality and adequacy of topographic control.</li> </ul>	<ul style="list-style-type: none"> <li>Measurement points were located with a handheld GPS with an accuracy of +/- 5 metres.</li> <li>The grid system used by PVW is MGA94 Zone 52</li> <li>Not applicable at this stage of exploration.</li> </ul>
Data spacing and distribution	<ul style="list-style-type: none"> <li>Data spacing for reporting of Exploration Results.</li> <li>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.</li> <li>Whether sample compositing has been applied.</li> </ul>	<ul style="list-style-type: none"> <li>Metallurgical sampling was undertaken selected sites based on previous rock chip sampling assay results and where mineralisation is indicated by spectrometer readings and portable XRF readings of yttrium.</li> <li>Not applicable – early-stage exploration only.</li> <li>No compositing applied</li> </ul>



Criteria	JORC Code explanation	Commentary
<i>Orientation of data in relation to geological structure</i>	<ul style="list-style-type: none"><li><i>Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.</i></li><li><i>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.</i></li></ul>	<ul style="list-style-type: none"><li>Sampling orientation was appropriate for the intended purpose and representative of mineralisation only.</li><li>Not applicable – no drilling carried out.</li></ul>
<i>Sample security</i>	<ul style="list-style-type: none"><li><i>The measures taken to ensure sample security.</i></li></ul>	<ul style="list-style-type: none"><li>Not applicable</li></ul>
<i>Audits or reviews</i>	<ul style="list-style-type: none"><li><i>The results of any audits or reviews of sampling techniques and data.</i></li></ul>	<ul style="list-style-type: none"><li>No detailed audits or reviews have been conducted due to the Project only being in the early stages of exploration.</li></ul>



• **Section 2 Reporting of Exploration Results**

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	<ul style="list-style-type: none"> <li>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.</li> <li>The security of the tenure held at the time of reporting along with any known impediments to obtaining a license to operate in the area.</li> </ul>	<ul style="list-style-type: none"> <li>Fieldwork was completed on the exploration licences E80/4029 and E80/4197 within PVW's Tanami Project. The tenements are located approximately 220km southeast of Halls Creek in the Tanami Desert. PVW Resources owns 100% of all mineral rights on the granted tenements. The tenements are located within the fully determined Tjurabalan native title claim.</li> <li>The tenements are in good standing with no known impediments.</li> </ul>
Exploration done by other parties	<ul style="list-style-type: none"> <li>Acknowledgment and appraisal of exploration by other parties.</li> </ul>	<ul style="list-style-type: none"> <li>Orion Metals Limited completed the original gold and REE exploration prior to PVW Resources.</li> </ul>
Geology	<ul style="list-style-type: none"> <li>Deposit type, geological setting and style of mineralisation.</li> </ul>	<ul style="list-style-type: none"> <li>At the Killi Killi East and Watts Rise prospect the REE mineralisation is predominantly hosted in a basal conglomerate unit of the Birrindudu Basin which unconformably overlies the older Killi Killi Formation. This geological setting is analogous to that of the heavy rare earth (xenotime) deposits at Northern Minerals Browns Range Project and in particular the high-grade Dazzler deposit. The potential style of mineralisation is hydrothermal unconformity-related REE mineralisation.</li> </ul>
Drill hole information	<ul style="list-style-type: none"> <li>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:             <ul style="list-style-type: none"> <li>easting and northing of the drill hole collar</li> <li>elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar</li> <li>dip and azimuth of the hole</li> <li>down hole length and interception depth</li> <li>hole length</li> </ul> </li> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>Not applicable – no drilling carried out</li> </ul>





Criteria	JORC Code explanation	Commentary
Data aggregation methods	<ul style="list-style-type: none"> <li>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.</li> <li>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.</li> <li>The assumptions used for any reporting of metal equivalent values should be clearly stated.</li> </ul>	<ul style="list-style-type: none"> <li>None applied or considered necessary for the style of sampling undertaken.</li> <li>Not applicable</li> <li>No metal equivalents reported.</li> </ul>
Relationship between mineralisation widths and intercept lengths	<ul style="list-style-type: none"> <li>These relationships are particularly important in the reporting of Exploration Results.</li> <li>If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.</li> <li>If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (e.g. 'down hole length, true width not known').</li> </ul>	<ul style="list-style-type: none"> <li>Not applicable – no drilling carried out</li> </ul>
Diagrams	<ul style="list-style-type: none"> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>Relevant diagrams have been included within the text of the report.</li> </ul>
Balanced Reporting	<ul style="list-style-type: none"> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>All metallurgical results reported herein.</li> </ul>
Other substantive exploration data	<ul style="list-style-type: none"> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>The results are considered indicative only of the mineralisation in the area.</li> <li>Petrology and mineralogy studies have been completed on rock chip samples from previous program by PVW and reported in December 2021. The main REE mineral is xenotime with lesser florencite and goyazite.</li> <li>Micro X-ray Fluorescence spectroscopy (<math>\mu</math>XRF) is a rapid and non-destructive technique used to quickly acquire qualitative</li> </ul>



Criteria	JORC Code explanation	Commentary
		<p>and quantitative geochemical data at high spatial resolution (i.e. <math>\mu\text{m}</math>-scale). Measurements can be collected under normal atmospheric conditions (air) or under vacuum. Air readily attenuates X-ray energies, notably low energy X-rays so the evacuation of air and operation of the sample chamber under a vacuum significantly improves light element analysis (i.e. <math>Z &gt; 11</math>). Elements ranging from sodium (Na) to uranium (U) can be measured with quantification limits ranging from percentages to parts per million. Chemical data is acquired using a bench-top Bruker Nano Analytics 2D-micro-XRF spectrometer (Bruker M4 Tornado). The instrument has a 50kV 30-Watt Rh anode target, a 30mm<sup>2</sup> XFlash<sup>®</sup> silicon drift detector and poly-capillary optics that can focus a beam spot size down to 25 <math>\mu\text{m}</math>. Sample location is recorded on two cameras (10x and 100x) enabling the precise location of the X-ray beam on the sample to be identified. The mapping function produces 2-dimensional compositional maps, by collecting an entire x-ray spectrum for each pixel in a grid. These qualitative element maps show the spatial variation and abundance of major, minor and trace elements. The <math>\mu\text{XRF}</math> can then quantify the data using the fundamental parameterisation method. Fundamental parameter algorithms can calculate the concentration of each element in weight percent, which is then normalised to 100%. The use of a fundamental parameter (FP) model can enable the collection of semiquantitative data for heterogeneous samples.</p> <ul style="list-style-type: none"><li>• The Advanced Mineral Identification and Characterization System (AMICS) is the latest software package for automated identification and quantification of minerals and synthetic phases. The innovative mineral identification technology allows for the online classification of X-ray spectra to minerals. The mineralogy knowledge of the user combined with the comprehensive mineral database allows the mineralogy to be determined and applied to the measured sample and any subsequent samples. The modal mineralogy, the calculated assay and the mineral distribution can be shown in tables for</li></ul>



Criteria	JORC Code explanation	Commentary
		<p>semi-quantitative results or visually represented as charts or graphs. Manual mineral interpretation was conducted to confirm the presence of the minerals identified using the AMICS software and to establish their abundance throughout the samples. Geochemical information collected by the Bruker M4 Tornado was used to infer the presence and abundance of these minerals within each sample. The mineralogy maps show the spatial variation and abundance of minerals in each sample and highlight the compositional and textural relationships of the different mineral phases. The micro-XRF instrument collects an X-ray spectrum for each pixel, with pixel intensity proportional to the intensity of the elemental peak. The AMICS software processes each X-ray spectrum to identify the mineral phase from the comprehensive mineral database provided with the software, combined with the minerals that have been manually added to the database. Spectra at grain boundaries will contain elements from more than one mineral phases, in this case AMICS software can employ a simulated mineral mixture gradient algorithm that provides robust mineral boundary identification. It is important to note that the software will apply the most applicable mineral based on the X-ray spectrum for that pixel, therefore manual mineral identification is necessary to check the validity of the minerals identified.</p>
Further work	<ul style="list-style-type: none"> <li>• <i>The nature and scale of planned further work (e.g. tests for lateral extensions or depth extensions or large- scale step-out drilling).</i></li> <li>• <i>Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.</i></li> </ul>	<ul style="list-style-type: none"> <li>• It is expected that an extensive drill program will commence in April 2022 at the end of the wet season. The drill program will test targets at the Killi Killi East and Watts Rise prospects as well as regional targets along the unconformity. Further metallurgical studies are ongoing for samples from Watts Rise and Killi Killi East. Final results are expected from this work in May 2022..</li> <li>• Diagrams showing the geological interpretation are included in the body of the report above.</li> </ul>



**Section 3 Estimation and Reporting of Mineral Resources**

Not applicable

**Section 4 Estimation and Reporting of Ore Reserves**

Not applicable

personal use only