

**HORIZONTE MINERALS PLC**  
**MANAGEMENT'S DISCUSSION AND ANALYSIS**  
**NINE MONTHS ENDED 30 SEPTEMBER 2022**

## **Background**

This Management's Discussion and Analysis of the financial position and results of operations has been prepared as at 8 November 2022 and should be read in conjunction with the Restated Condensed Consolidated Financial Statements of Horizonte Minerals Plc as at 30 September 2022 approved and filed at the same time as this document. The Restated Condensed Consolidated Financial Statements have been prepared in accordance with International Financial Reporting Standards and International Accounting Standards.

Horizonte Minerals Plc ('Horizonte' or the 'Company') is a publicly listed company, the shares of which are listed on the London Stock Exchange on the AIM market ('AIM') and the Toronto Stock Exchange (the 'TSX'), in both instances under the symbol 'HZM'.

## **Company Overview**

Horizonte has two advanced 100% owned nickel projects located close to the Carajás mining district in northern Brazil.

### **Araguaia Ferro-Nickel Project (ANP)**

- ANP is an advanced nickel project being developed by Horizonte as the next ferronickel (FeNi) operation in Brazil. Araguaia has the following key characteristics:
  - 100% owned by Horizonte
  - Located south of the Carajás Mining district in northern Brazil, with good access to infrastructure
- Feasibility Study ('FS') issued Q4 2018, has demonstrated:
  - Robust economics based on a 28-year life of mine ('LOM') producing ~14,000 tonnes per annum (TPA) nickel in FeNi from a single line Rotary Kiln Electric Furnace ('RKEF')
  - ANP is expected to generate over US\$1.6 billion in free cash flow over LOM using a nickel price of US\$14,000 per tonne ('/t')
  - Net Present Value<sup>1</sup> (NPV<sub>8</sub>) of US\$401M and Internal Rate of Return (IRR) of 20.1% using the base case of nickel price of US\$14,000/t, increasing to US\$740M and 28.1% using the consensus nickel price of US\$16,800/t

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<sup>1</sup> NPV calculated using 8% discount rate

- High-grade ore with an average nickel grade of 1.89% for the first 10 years of production
- C1 cost of US\$8,193/t Ni positioning Araguaia in the lower quartile of Nickel Laterite cost curve, C1 cost of US\$6,794/t Ni years 1-10
- Proven and Probable Mineral Reserve Estimate of 27.5 Mt grading 1.69% Ni

## **Vermelho Nickel-Cobalt Project (VNP)**

The VNP was acquired from Vale in late 2017. It is 100% owned by Horizonte and is located in the eastern part of the Carajás Mining district and approximately 200 kilometres north-west of the ANP. A Pre-Feasibility study ('PFS') was released in October 2019 which confirms VNP as a low-cost, long-life nickel sulphate project.

- The Study confirms VNP as a large, high-grade resource, with a long mine life and low-cost source of nickel sulphate for the battery industry
- The compelling economic and technical results from the study support further development of the project towards a full Feasibility Study
- A 38-year mine life estimated to generate total cash flows after taxation of US\$7.3billion<sup>2</sup>;
- An estimated Base Case post-tax NPV of US\$1.7 billion<sup>3</sup> and IRR of 26%
- At full production capacity, the Project is expected to produce an average of 25,000 tonnes of nickel and 1,250 tonnes of cobalt per annum utilising the High-Pressure Acid Leach process
- The base case PFS economics assumes a flat nickel price of US\$16,400/t for the 38-year mine life
- C1 (Brook Hunt) cash cost of US\$8,029/t Ni (US\$3.64/lb Ni), defines Vermelho as a low-cost producer
- VNP is set to deliver significant socio-economic benefits for communities in the Pará state, including over 1,800 direct jobs in the construction phase, and over 600 jobs during operation, as well as additional economic and social development programs.

## **Highlights for Q3 2022**

On 12 July 2022 the Group awarded new share options over 9,736,250 ordinary shares of £0.20 each in the capital of the Company to executives (PDMRs) and key personnel in the UK and Brazil under unapproved, standalone option agreements (the "Awards"). Each Award is exercisable in return for one ordinary share in the Company and will vest in three tranches on the 12-month, 18-month and 28-month anniversaries of the Award Date at a ratio of 25%, 25% and 50%, with exercise prices of £1.68, £1.72 and £1.76 for each one third of the Awards.

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<sup>2</sup>USD/BRL 1/3.8 exchange rate applied for life-of-mine

On 13 July 2022 the Group announced that it has awarded all major and long-lead-time process plant equipment contracts for the Araguaia Ferronickel Project. Following the completion of the competitive tender processes, and detailed negotiations, the Company has now secured equipment supply and technical support services for the balance of the Araguaia process flow sheet from leading global suppliers (FLSmidth A/S, Metso Outotec Oyi, Uvan Hagfors Teknologi AB, Inteco Melting and Casting Technologies GMBH).

On 19 July 2022 the Company announced an agreement has been signed between the Araguaia Nickel Project (“Araguaia”) and Brazil’s leading national industrial training provider Serviço Nacional de Aprendizagem Industrial (“SENAI”) for host community skills training. Under this agreement, a key component of Araguaia’s Local Content Initiative, the partners will train and develop local community members in core skills required during Araguaia’s construction and operational phases.

On 9 August 2022 the Company announced announce that it has awarded the industrial civil works contract for the construction of the Araguaia Ferronickel Project to Companhia Paranaense de Construção S.A. (“Copa”).

On 26 September 2022 the Company announced that its 100% owned Araguaia Nickel Project, currently in development, has been approved as a Strategic Minerals Project by the Brazilian Federal Government. This approval will ensure that the Araguaia Nickel Project is treated on a priority basis by the various Government agencies engaged in the construction and operation of the mine, through the support of an Inter-ministerial committee.

## **Events after the Reporting Date**

On 4 October 2022 the Company announced Construction is progressing to schedule with overall project progress of approximately 16% as at 30 September 2022 and Engineering approximately 71%, US\$375m of capital commitments on budget as of the end of August 2022, no lost time injuries recorded to date, with over 375,000 hours worked. Project remains on schedule to deliver first nickel in Q1 2024 and inflationary pressure combined with engineering improvements to de-risk the operation has resulted in a 12.6% cost increase with total project capex now forecast at U\$537million.

The Company announced a placing and subscription raising (together the “Fundraise”) on 4 October 2022. Gross proceeds of approximately £70.5million (approximately US\$80million) was raised at a placing price of 90.5 pence per share from existing and new investors. The Company issued a total of 77,945,627 new ordinary shares, with existing shareholders La Mancha Investments S.A.R.L. and Glencore International AG participating for approximately £23.8million (approximately US\$27million) and approximately £26.4million (approximately US\$30million) respectively.

In connection with the Fundraise, Jeremy Martin, a director and Chief Executive Officer of the Company, and Simon Retter, Chief Financial Officer of the Company, each agreed to subscribe for 27,624 shares at the placing price. The Fundraise was completed on the 8th November 2022.

On 17 October 2022 the Company announced that Wood Plc (“Wood”) was awarded the principal engineering contract to undertake the Feasibility Study (“FS”) for Horizonte’s 100%-owned Vermelho Nickel-Cobalt Project (“Vermelho” or “the Project”).

On 3 November 2022 the Company announced that MIP Engenharia & Milplan Engenharia (“MIP/Milplan”) was selected to provide the Electro-Mechanical installation services at Horizonte’s 100%-owned Araguaia Nickel Project (“Araguaia” or “the Project”).

## **Objectives**

In the short, to medium term, the Company’s objectives are to:

- Progress the ANP project through to construction
- Advance the newly acquired Vermelho project towards a Feasibility Study
- Advance the permitting for Vermelho

## **Review of Operations**

### **Araguaia Ferro-Nickel Project (ANP)**

ANP is located on the eastern margin of the State of Pará, north-eastern Brazil, to the north of the town of Conceição do Araguaia (population of 46,206), south of the main Carajás Mining District. The Project has good regional infrastructure including a network of Federal highways and roads, with access to low tariff hydroelectric power. The Carajás Mining District, situated approximately 200km northwest of the Project, is host to several major iron and copper mines operated by mining major Vale SA.

The ANP areas comprise 27 exploration licences totalling 123,611 ha and the landholdings which comprise the Araguaia Projects do not form part of any native reserves.

### **ANP Feasibility Study Detailed Information**

The term “Feasibility Study” has the meaning ascribed by the Canadian Institute of Mining, Metallurgy and Petroleum (CIM), as the CIM Definition Standards on Mineral Resources and Mineral Reserves adopted by CIM Council, as amended. Under CIM guidelines, the Project is considered to be a “development property” – a property that is being prepared for mineral production and for which economic viability has been demonstrated by a Feasibility Study.

### **ANP Project Summary**

ANP will comprise an open-pit nickel laterite mining operation that proposes to mine 27.5 million tonnes (‘Mt’) Mineral Reserve of a 119 Mt Mineral Resource to produce an average of 52,000 tonnes of FeNi (containing an average of 14,000 tonnes of nickel) per year, for the 28-

year mine life. The metallurgical process comprises a single line RKEF to extract FeNi from the laterite ore. The RKEF plant and project infrastructure will be constructed over 31 months. After an initial ramp-up period, the plant will reach full capacity of approximately 900,000 tonnes of dry ore feed per year. The FeNi product will be transported by road to the port of Vila do Conde for sale to overseas customers.

The process plant, mining, infrastructure, and utilities engineering has been designed to support capital and operating cost estimates to the Association for the Advancement of Cost Engineering ('ACE') class 3 standard. This means that capital and operating costs estimates have a combined accuracy of - 10%+15%. The capital and operating costs are as of Q3 2018.

The results of the FS demonstrate that Araguaia is viable based on the assumptions used, the key economic outcomes are highlighted in Table 1, below.

Table 1 ANP FS Key Economic Outcomes

Item	Unit	Nickel price basis (US\$/t Ni)	
		Base (14,000)	CIBC (16,800)
Net cash flow	US\$M	1,572	2,582
NPV <sub>8</sub>	US\$M	401	740
IRR	%	20.1	28.1
Breakeven (NPV <sub>8</sub> ) Ni price	US\$/t	10,766	10,766
C1 Cost (Brook Hunt)	US\$/t Ni	8,193	8,193
Production year payback	years	4.2	3.3
LOM Ni recovered	kt	426	426
LOM Fe recovered	kt	995	995
Average Ni production at 0.9 Mt/a ore <sup>4</sup>	kt/a	14.5	14.5
Average Fe production at 0.9 Mt/a ore	kt/a	32	32
Total revenue	US\$M	5,970	7,164
Total costs	US\$M	3,811	3,995
Operating cash flow	US\$M	2,159	3,169
Capital intensity – Initial capex/t nickel	US\$/t Ni	1,041	1,041

The results shown in Table 1 assumes 100% equity. The base case was developed using a flat nickel price of US\$14,000/t Ni. Another case was prepared using a market consensus price of US\$16,800/t Ni. This additional price represents the upside scenario.

<sup>4</sup>Average over initial 25 years of processing

As shown in Table 1(above), for the base case the project has a 4.2-year payback period with cumulative gross revenues of US\$5,970 million. The economic analysis indicates a post-tax NPV of US\$401 million and an IRR of 20.1% using the base case forecast of US\$14,000/t Ni.

### **ANP Resources / Reserves and Mining**

Snowden Mining Industry Consultants completed the mining engineering along with mining capital, operating cost estimates and resource estimation for the ANP. Snowden is a global mining consulting and training business with leading skills and technologies in mining engineering, mine optimisation, and resource estimation.

### **ANP Mineral Resources**

The reporting standard adopted for the reporting of the Mineral Resource estimate uses the terminology, definitions and guidelines given in the CIM Standards on Mineral Resources and Mineral Reserves (May 2014)

ANP has two principal mining centres; Araguaia Nickel South ('ANS') and Araguaia Nickel North ('ANN'). ANS hosts seven deposits: Pequizeiro, Baiao, Pequizeiro West, Jacutinga, Vila Oito East, Vila Oito West and Vila Oito, while ANN hosts the Vale do Sonhos deposit.

Several phases of diamond drilling have been completed across the Project commencing in 2010. Drilling at ANS has been undertaken by Horizonte and Teck, with drilling at ANN by Xstrata/Glencore. The Company has been active on the ANS project since the initial discovery in 2010 when it completed the acquisition and integration of the Teck and Xstrata project areas, it has been the sole project operator since 2015. A total of 75,250 metres ('m') of diamond drilling has been completed across 2,627 holes for the Project.

Mineral Resource estimates for the ANP deposits under consideration for the FS are shown in Table 2. The Measured Mineral Resource is estimated at 18 Mt at a grade of 1.44% Ni using a cut-off grade of 0.90% Ni. The Indicated Mineral Resource is 101 Mt at a grade of 1.25% Ni. This gives a combined Mineral Resource of 119 Mt at a grade of 1.27% Ni for Measured and Indicated Mineral Resources at a cut-off grade of 0.90% Ni (inclusive of Mineral Reserves). A further 13 Mt at a grade of 1.19% Ni (at a cut-off grade of 0.90% Ni) is defined as an Inferred Mineral Resource.

Table 2 ANP Mineral Resources as of February 2017 by material type (0.90% Ni cut-off)

Araguaia	Category	Material type	Tonnage (kt)	Bulk density (t/m <sup>3</sup> )	Contained Ni metal (kt)	Ni (%)	Co (%)	Fe (%)	MgO (%)	SiO <sub>2</sub> (%)	Al <sub>2</sub> O <sub>3</sub> (%)	Cr <sub>2</sub> O <sub>3</sub> (%)
Subtotal	Measured	Limonite	1,232	1.39	15	1.20	0.15	37.43	2.00	17.15	11.07	2.98
		Transition	6,645	1.26	116	1.75	0.07	18.89	10.20	42.06	6.59	1.29
		Saprolite	10,291	1.40	130	1.27	0.03	12.03	24.08	41.24	3.95	0.87
<b>Total</b>	<b>Measured</b>	<b>All</b>	<b>18,168</b>	<b>1.35</b>	<b>261</b>	<b>1.44</b>	<b>0.05</b>	<b>16.26</b>	<b>17.51</b>	<b>39.91</b>	<b>5.40</b>	<b>1.17</b>
Subtotal	Indicated	Limonite	19,244	1.39	216	1.12	0.12	36.22	2.40	20.46	9.61	2.65
		Transition	30,917	1.20	439	1.42	0.07	21.38	11.26	38.95	5.37	1.51
		Saprolite	51,008	1.31	610	1.18	0.03	11.83	25.79	40.59	3.16	0.85
<b>Total</b>	<b>Indicated</b>	<b>All</b>	<b>101,169</b>	<b>1.30</b>	<b>1,265</b>	<b>1.25</b>	<b>0.06</b>	<b>19.39</b>	<b>16.90</b>	<b>36.26</b>	<b>5.06</b>	<b>1.39</b>
<b>Total</b>	<b>Measured + Indicated</b>	<b>All</b>	<b>119,337</b>	<b>1.30</b>	<b>1,525</b>	<b>1.27</b>	<b>0.06</b>	<b>18.91</b>	<b>16.99</b>	<b>36.81</b>	<b>5.11</b>	<b>1.36</b>
Subtotal	Inferred	Limonite	2,751	1.37	30	1.08	0.10	34.92	3.04	22.84	9.23	2.50
		Transition	4,771	1.20	62	1.30	0.07	21.23	11.04	39.09	5.62	1.40
		Saprolite	5,398	1.35	62	1.15	0.03	11.80	24.36	41.81	3.69	0.82
<b>Total</b>	<b>Inferred</b>	<b>All</b>	<b>12,920</b>	<b>1.30</b>	<b>154</b>	<b>1.19</b>	<b>0.06</b>	<b>20.21</b>	<b>14.90</b>	<b>36.77</b>	<b>5.58</b>	<b>1.39</b>

*Notes:*

1. Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability. All figures are rounded to reflect the relative accuracy of the estimate and have been used to derive subtotals, totals and weighted averages. Such rounding consequently introduces a small margin of error. Where these occur, Snowden does not consider them to be material.

2. Mineral Resources are reported inclusive of Mineral Reserves.

3. The reporting standard adopted for the reporting of the Mineral Resource estimate uses the terminology, definitions and guidelines given in the CIM Standards on Mineral Resources and Mineral Reserves (May 2014) as required by NI 43-101.

4. Snowden completed a site inspection of the deposit by Mr Andy Ross, FAusIMM, an appropriate "Independent Qualified Person" as such term is defined in NI 43-101.

5. kt = thousand tonnes (metric).

## ANP Mineral Reserves

Mineral Reserves, which are inclusive of the identified economic portion of the Mineral Resources described above, were prepared by Snowden for the Project as part of the ANP FS. The CIM terms "Mineral Reserve", "Probable Mineral Reserve" and "Proven Mineral Reserve" have the meanings ascribed to those terms by the Canadian Institute of Mining, Metallurgy and Petroleum, as the CIM Definition Standards on Mineral Resources and Mineral Reserves, as adopted by CIM Council, as amended 2014. As provided for under the NI 43-101 instrument, Snowden has used an acceptable foreign code as the "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves" as the JORC 2012 Edition for the ANS and ANN Mineral Reserve estimates.

All economic Indicated Mineral Resources within the ANP pit designs were classified as Probable Mineral Reserves and all Measured Mineral Resources at Pequizeiro (ANS) were classified as Proven Mineral Reserves (this classification was tested and supported by the trial mining

program completed in this pit in 2017). Measured Mineral Resources at Vale dos Sonhos (ANN) were classified as Probable Mineral Reserves. A summary is provided in Table 3. The Mineral Reserve of 27.2 Mt gives a mine life of 28 years based on the annual ore throughput to the RKEF plant of 900,000 t/a.

Table 3 ANP Open Pit Mineral Reserves reported at October 2018

Category	Ore (Mt)	Ni (%)	Fe (%)	SiO <sub>2</sub> :MgO	Al <sub>2</sub> O <sub>3</sub> (%)
Proven	7.33	1.72	16.01	3.01	6.00
Probable	19.96	1.68	17.57	2.36	4.56
<b>Total</b>	<b>27.29</b>	<b>1.69</b>	<b>17.15</b>	<b>2.52</b>	<b>4.94</b>

*Notes*

1. Mt – million dry metric tonnes.
2. A variable cut-off strategy was used based on the economics of each block.
3. Dilution was modelled as part of re-blocking, ore losses applied are 8%.
3. The reporting standard adopted for the reporting of the Mineral Reserve estimate uses the terminology, definitions and guidelines given in the CIM Standards on Mineral Resources and Mineral Reserves (May 2014) as required by NI 43-101.
4. Snowden completed a site inspection on three occasions between March 2016 and May 2017 by Mr Frank Blanchfield, B Eng., FAusIMM, an appropriate “Independent Qualified Person” as such term is defined in NI 43-101.

### ANP Mining

The deposits will be mined via conventional open-pit truck and shovel techniques using contractors. No blasting will be necessary. Reverse circulation (‘RC’) grade control drilling will be completed at a 10 m x 10 m spacing well ahead of mining. This combined with the use of visual control of the limonite and transition boundary, face sampling, stockpile sampling and ore feed sampling, supports a comprehensive mine-to-mill strategy that is designed to maintain consistent feed to the process plant.

Waste will be stored in external dumps near the pits. Ore will be transported to stockpile hubs near each deposit. Sheeting (using ferricrete won from the overburden) will be required to support trafficability in and around the mine during the wet season. Depending on plant demand, ore will be hauled from hub stockpiles or directly from the pits to the run of mine (‘ROM’) at the RKEF process facility. Stockpiles on the ROM will be sheeted and classified according to ore type and chemistry for blending.

The ANP resource model was converted to a mining model to reflect the mining method and incorporated anticipated mining dilution and loss. The model was re-blocked to 6.25 m x 6.25 m x 2 m, with a 300 mm “skin” of transition (directly beneath the limonite boundary) treated as a loss.

The ANP pits were optimised to target the highest-grade material giving a mine life of approximately 25 years. This resulted in a cut-off grade of 1.4% Ni being applied. The pits were then optimised using Whittle 4X to determine a shell to use for design.

The annual mining rate peaks at 3.5 Mt/annum between production years two and seven before dropping down to 3.0 Mt/annum for the remainder of the Project.



The mine supplies high nickel grades in the early mine life, reaching 2% in production year 2. The Ni grade is above 1.8% for the majority of the first 10 years of production and reduces to an average of approximately 1.6% Ni for the remaining mine life.

## **ANP Processing**

The ANP process plant design, along with capital and operating cost estimates were completed by Ausenco Engineering Canada Inc ('Ausenco'). Ausenco is a global diversified engineering, construction and project management company providing consulting, project delivery and asset management solutions to the resources, energy and infrastructure sectors.

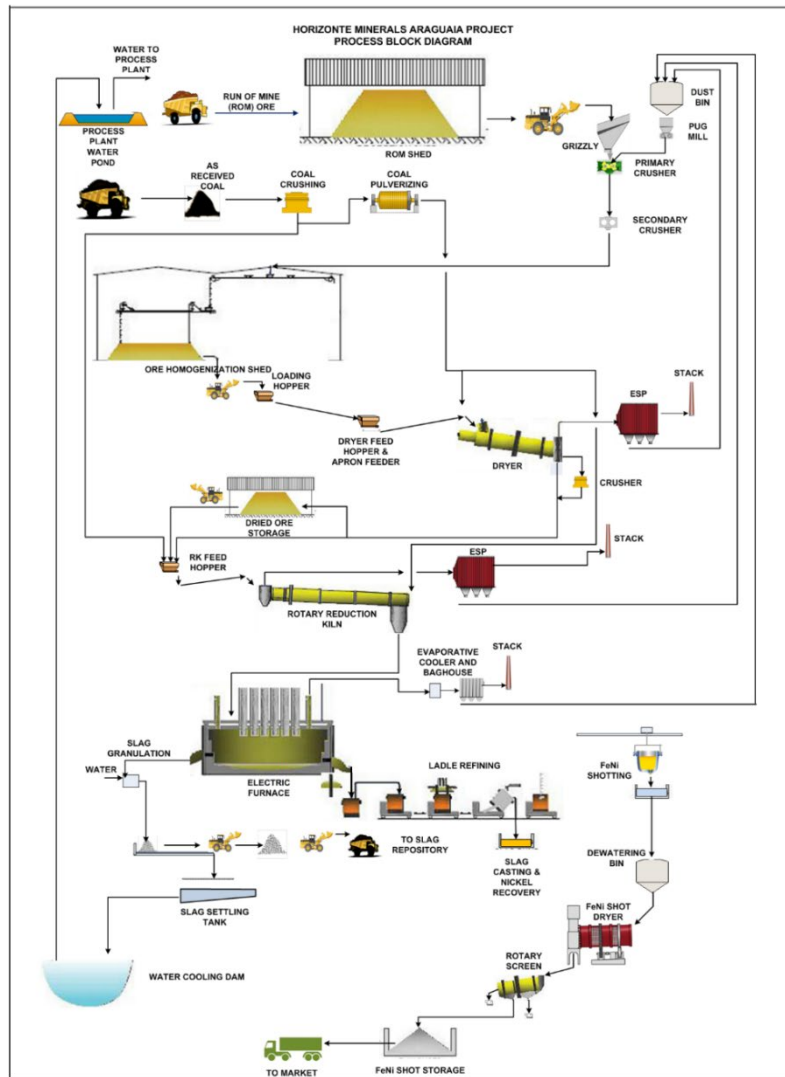
The Project will utilise a single RKEF processing line from ore receipts through to shotting of the FeNi product.

The RKEF process is proven and used successfully in over 40 nickel laterite plants around the world and was deemed appropriate for the Project based on the extensive metallurgical test work and the pilot plant campaigns completed on the ore.

The key steps in the RKEF flowsheet are (Figure 1);

- ROM ore, at an average moisture content of 34%, is first blended to meet metallurgical processing requirements, then transported to the primary crushing stage. Here the ore is sized using two stages of crushing to match the requirements of the subsequent steps. A mineral sizer with a 200 mm gap is used for primary sizing, while a mineral sizer with a 50 mm gap is used for the final stage
- The ore is then homogenised, partially dried and agglomerated to an average moisture content of 18% in a rotary dryer (4.5 m diameter x 40 m long) and fired with pulverized coal
- The dried agglomerated ore is then fed to the rotary kiln with the addition of reductant coal. In the kiln, the ore is completely dried, calcined to remove chemically combined moisture, and the iron and nickel oxides are partially pre-reduced. Kiln dust is recycled to the process at the primary crushing stage ahead of the dryer/agglomerator
- Calcine from the kiln is then transferred to the electric furnace where further reduction of the nickel and iron occurs, melting and separation of the metal and slag occurs at high temperature. Slag is tapped at a temperature of around 1,575°C, while FeNi metal is tapped at a temperature of close to 1,500°C
- After tapping, the melt is transferred by ladle to the refining stage. The final FeNi product containing 30% Ni is shotted with water, screened, dried and stockpiled before dispatch to the port on trucks where it is either bagged or loaded bulk into sea containers for shipping to customers
- The electric furnace slag is granulated and transferred to the slag repository by truck

Figure 1 ANP process flow diagram showing the RKEF steps



## ANP FS Financial Evaluation

### FS Capital Cost

The FS estimate is based on the AACE class 3 with an accuracy range between -10% and +15% of the final project cost (excluding contingency) with a base date of October 2018. All amounts expressed are in US dollars unless otherwise stated.

The FS capital costs estimate ('capex') includes all the direct and indirect costs, local taxes and duties and appropriate contingencies for the facilities required to bring the Project into production, including the process plant, power line, water pipelines and associated infrastructure as defined by the FS. The estimate is based on an Engineering Procurement and Construction Management ('EPCM') implementation approach and the Project contracting strategy.

The total estimated initial (pre-production) capital cost for the project is US\$443.1 million (after-tax, including growth and contingency, excluding escalation). A summary of the capex is shown in Table 4

Table 4 Summary of the FS capex for ANP

<b>WBS #</b>	<b>Area</b>	<b>US\$'000</b>
1000	Mine	6,003
3000	Ore Preparation	38,731
4000	Pyrometallurgy	137,518
5000	Material Supply	21,413
6000	Utilities and Infrastructure	106,918
7000	Buildings	9,095
8000	Indirect Costs	82,409
	Contingency	40,989
<b>Total Costs</b>		<b>443,076</b>

The direct costs in Table 4 include supply, shipping and site installation. The total contingency carried in the capex is US\$41.0 million, which combined with the US\$24.3 million growth allowance included in the direct costs provides a total provision of US\$65.3 million. This combined sum represents 17.2% of the total capex (excluding growth and contingency).

### **FS Operational costs**

The FS mining and operating cost estimate ('opex') was calculated for an operation producing 14,500 t Ni per annum and is set out as an annual total and US\$/t Ni in Table 5 (below), calculated as an average over the Life of Mine ('LOM'). The operating costs cover the mine, process plant, ore preparation, social and environmental, royalties and general and administrative overheads. The main contributors of the overall operating costs are power, coal, labour and mining costs, with additional consumables and other indirect costs, including G&A.

Table 5 ANP FS operating cost estimate

Description	Cost/annum (US\$)	US\$/t nickel
<b>Process Plant</b>		
<b>Directs</b>		
Power	32,114,355	2,410
Coal	21,591,099	1,620
Other directs	17,965,039	1,348
Labour	7,831,286	588
<b>Subtotal - Direct costs</b>	<b>79,501,779</b>	<b>5,966</b>
<b>Indirect costs</b>	<b>10,285,640</b>	<b>772</b>
<b>Mining costs</b>	<b>21,112,173</b>	<b>1,584</b>
<b>Total costs</b>	<b>110,899,592</b>	<b>8,322</b>

### ANP FS Summary Economics

The FS financial model developed assumes 100% equity. The base case was developed using a flat nickel price of US\$14,000/t Ni. An alternative case was prepared using a market consensus price of US\$16,800/t Ni. The alternative represents the upside scenario.

As shown in Table 6, the pre-taxation model for the base case at the ANP has a 4.2-year payback period with cumulative gross revenues of US\$5,970 million. The economic analysis indicates a pre-tax NPV of US\$456million and an IRR of 21.2% using the base case forecast of US\$14,000/t Ni.

Table 6 ANP FS economic performance (pre-taxation)

Item	Unit	Nickel price basis (US\$/t Ni)	
		Base (14,000)	CIBC (16,800)
Net cash flow	US\$M	1,834	3,208
NPV <sub>8</sub>	US\$M	456	840
IRR	%	21.2	29.9
Breakeven (NPV <sub>8</sub> ) Ni price	US\$/t	10,672	10,672
C1 Cost (Brook Hunt)	US\$/t Ni	8,193	8,193
Production year payback	years	4.2	3.3
Total costs	US\$M	4,137	4,137
Operating cash flow	US\$M	2,421	3,616

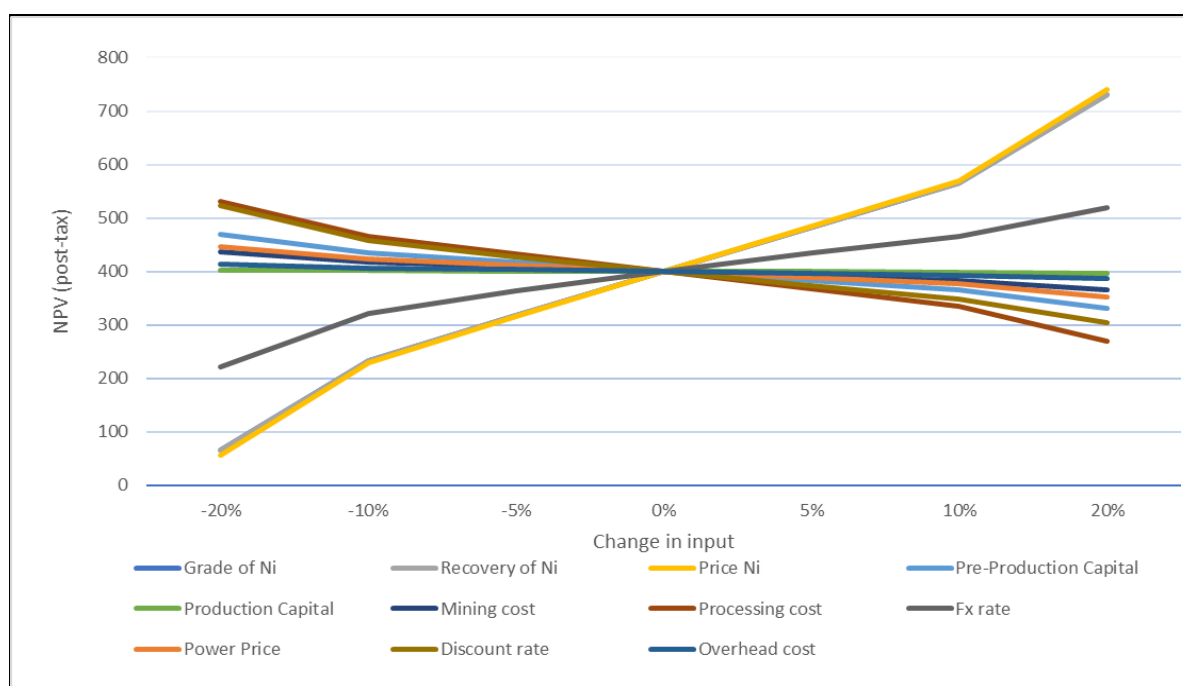
## ANP FS Sensitivity Analysis

A sensitivity analysis was completed as part of the FS that demonstrates how the NPV<sub>8</sub> is affected by changes to one variable while holding the other variables constant. The results of the sensitivity analysis are presented in Table 7 and Figure 2. The breakeven ('B/E') indicates the change in the variable that will bring the project NPV<sub>8</sub> to US\$0.000 if all other variables remain unchanged. For example, if the grade of Ni reduces by 23.3% the Project will break even on NPV<sub>8</sub>.

Table 7 ANP FS sensitivity table for the base case (US\$14,000/t) NPV<sub>8</sub>, after taxation

	-20%	-10%	-5%	0%	5%	10%	20%	B/E <sup>5</sup>
Grade Ni	65	234	317	401	483	566	731	-23.7%
Recovery Ni	65	234	317	401	483	566	731	-23.7%
Price Ni	56	230	315	401	485	570	740	-23.1%
Pre-production capital	469	435	418	401	383	366	331	110.2%
Production capital	403	402	401	401	400	399	397	-
Mining cost	436	418	409	401	391	383	365	222.6%
Processing cost	531	466	433	401	367	335	269	59.8%
US\$/BRL FX rate	222	321	363	401	434	465	519	-35.4%
Electricity price	447	424	412	401	389	377	353	167.2%
Discount factor	524	458	428	401	374	349	304	151.3%
Overhead cost	414	407	404	401	397	393	386	-

Figure 2: ANP FS sensitivity to NPV<sub>8</sub> for changes in various key inputs



<sup>5</sup> The breakeven change for the variable if all other variables remain unchanged. For example, if the grade of Ni reduces by 23.3% the Project will break even on NPV<sub>8</sub>.

The FS sensitivity analysis shows that the Project is more sensitive to nickel price, nickel recovery and grade than it is to either opex or capex.

### **ANP Market Review and Nickel Pricing**

A market study was provided by Wood Mackenzie (WM), a global natural resource research and consulting company, with a speciality in the nickel industry. WM's findings are summarised below.

The world nickel demand was forecast to increase by 3.6% in 2018, to 2.26 Mt before slowing to a compound annual growth rate of 2.1% a year, reaching 2.61 Mt in 2025. Growth over the long term is slightly stronger, at 2.5% a year, to 3.35 Mt in 2035, due to increasing uptake by the battery segment (for electric vehicles). Over this period, primary nickel uptake in stainless will account for 50–70% of total demand, rising from 1.54 Mt in 2018 to 1.66 Mt in 2025, and 1.77 Mt in 2035.

Thus, with an outlook for nickel of structural shortage, deepening deficits and falling stocks, nickel prices are expected to continue to increase above their recently established range of US\$12,500/t to US\$15,000/t (US\$5.90 to US\$6.80/lb). A near term forecast for the FS is, therefore, US\$14,000/t (US\$6.35/lb). For comparison, WM's long-term incentive price currently stands at about US\$26,450/t (US\$12.00/lb).

The composition of ANP FeNi30 is comparable to the existing FeNi30 being produced. Consequently, there is no impediment (based on the elemental breakdown provided) to the proposed FeNi30 product being acceptable to the stainless-steel market.

World stainless steel production increased by 12 Mt between 2012 and 2017, mostly in China and to a lesser extent across the rest of Asia. Production in 2018 was 50.7 Mt, up 4.5% from 2017. This upward trend is likely to continue over the mid-term, before slowing after 2025. As future growth in stainless production is expected to continue, the demand for FeNi (including FeNi30) should also increase. Consequently, WM forecasts long term FeNi production to be 450,000–460,000 a year, compared with 433,000 in 2018. This suggests there could be a need for the development of new FeNi projects in the future.

### **ANP Community and Environment**

The ANP FS sets out key environmental and social risks and impacts and how the Company plans to minimise, manage and mitigate them and then monitor performance. This will be primarily achieved through a system of Environmental Control Plans, to be implemented before, during and after construction to meet Brazilian and international standards.

The Company worked with Environmental Resource Management ('ERM'), a global leader in this field, together with local Brazilian groups: Integratio Mediação Social e Sustentabilidade (social and land) and DBO Environmental Engineering (fauna) for the FS environmental and social work streams and the project permitting. All FS work was undertaken to IFC Performance Standards, 1, 2 and 5 and Brazilian CONAMA (environmental) legislation.

The groups have conducted several new studies in 2017 and 2018 together with ongoing programs, these include:

- Environmental Control Plans - elaboration and detailing of socio-environmental programs
- Inventories of fauna and flora
- Air dispersion modelling
- Hydrogeological modelling and water balance

- Visits by physical, biological and social analysts to site
- Air, noise and water monitoring – ongoing as part of baseline data build up into the construction and operational phase

ANP will generate approximately 500 direct and indirect jobs in the south-eastern rural area of Pará State, over the 28 years of operations. The majority of these workers during the operational phase will reside locally. The peak construction workforce is expected to reach over 1,000.

Social contributions are expected to total over US\$700 million during the LOM, including:

- Over US\$400 million in corporate taxes
- Over US\$280 million in employee and contractor wages

### **Vermelho Nickel-Cobalt Project (VNP)**

A Prefeasibility Study (PFS) was completed by Snowden in October 2019. The term “Prefeasibility Study” has the meaning ascribed by the Canadian Institute of Mining, Metallurgy and Petroleum (CIM), as the CIM Definition Standards on Mineral Resources and Mineral Reserves adopted by CIM Council, as amended. Under CIM guidelines, the Project is considered to be a “development property” – a property that is being prepared for mineral production and for which economic viability has been demonstrated by a PFS.

### **VNP Project Summary**

The VNP is located in the north-western Brazilian state of Pará in the Carajás municipality, approximately 200 kilometres (‘km’) north-west of the Company’s 100% owned Araguaia Project.

The VNP PFS proposes a planned 38-year operation with an open-pit nickel laterite mining operation that mines a 141.3 million tonne (Mt) Probable Mineral Reserve (at a cut-off of 0.7% Ni) to produce 924,000 tonnes of nickel contained in nickel sulphate, 36,000 tonnes of cobalt contained in cobalt sulphate and a saleable by-product, kieserite (a form of fertiliser) of which 4.48 Mt are produced. The project will utilise a hydro-metallurgical process comprised of a beneficiation plant where ore is upgraded before being fed to a High-Pressure Acid Leach (HPAL) and refining Plant which produces the sulphates. The plant is proposed to be constructed in two phases, with an initial capacity of 1 Mt per annum (Mt/a) autoclave feed (Stage 1), then after three years of production, a second process train (Stage 2 Expansion) will be constructed effectively doubling the autoclave feed rate to 2 Mt/a. The Stage 1 plant and project infrastructure will be constructed over 31 months. The nickel and cobalt sulphate products will be transported by road to the port of Vila do Conde (the same facility planned for Araguaia) for sale to overseas customers. The kieserite will be transported to consumers within Pará state.

The engineering has been developed for the process plant, mining, infrastructure and utilities to capex and opex estimates to an Association for the Advancement of Cost Engineering (AACE) class 4 standard. This means that capex and opex estimates have a combined accuracy of between -25% and +20% at a confidence level of 50%. The capex and opex are dated Q2 2019 and are exclusive of future escalation.

The results of the VNP PFS demonstrate positive economics for the project (Table 8, below).

Table 8 VNP Key PFS Economic Indicators (post taxation)

Item	Unit	Nickel price basis (US\$/t Ni)**	
		Base Case 16,400	Long Term 19,800
Net cash flow	US\$ M	7,304	9,546
NPV <sub>8</sub>	US\$ M	1,722	2,373
IRR	%	26.3%	31.5%
Breakeven (NPV <sub>8</sub> ) nickel price	US\$/t	7,480	7,480
C1 cost (Brook Hunt)	US\$/t Ni	8,029	8,029
C1 cost (Brook Hunt) years 1-10	US\$/t Ni	7,483	7,483
Production year payback	years	4.2	3.6
LOM nickel recovered	kt	924.0	924.0
LOM cobalt recovered	kt	46.61	46.61
LOM kieserite produced	kt	4,482	4,482
LOM Total revenue	US\$ M	19,034	22,175
LOM Total costs	US\$ M	11,729	12,629
Operating cash flow	US\$ M	8,451	10,693
Capital intensity – initial capex/t Ni	US\$/t Ni	635	635

Note: \*\* US\$2,000/t premium for battery sulphate production has been added to Nickel revenue, US\$34,000/t for the cobalt produced as cobalt sulphate, and net revenue of US\$100/t of the by-product, kieserite.

The VNP PFS economic model assumes 100% equity, providing the opportunity for increased returns leveraging commercial or other debt. The base case was developed using a flat nickel price of US\$16,400/t Ni. An alternate case using the WM long term Nickel price of US\$19,800/t Ni was also developed

As shown in Table 8 (above), for the base case the project has a 4.2-year payback period with cumulative gross revenues of US\$19,034 million. The economic analysis indicates a post-tax NPV<sub>8</sub> of US\$1,722 million and an IRR of 26.3% using the base case forecast of US\$16,400/t Ni, this increases to US\$2,373 million and 31.5% when using the Wood Mackenzie long term price of US\$19,800/t Ni.

### VNP Resources / Reserves and Mining

The VNP deposits consist of two hills named V1 and V2 (after Vermelho 1 and Vermelho 2), aligned on a northeast-southwest trend, overlying ultramafic bodies. A third ultramafic body, named V3, also located in the same trend lies on flat terrain, southwest of V2. The ultramafic bodies have had an extensive history of tropical weathering, which has produced a thick profile of nickel-enriched lateritic saprolite at V1 and V2.

The Vermelho area was explored in various stages by Companhia Vale do Rio Doce ('Vale') from 1974 to 2004 involving approximately 152,000 m of combined drilling and pitting. The drilling density was substantially enhanced from 2002 to 2004, with the majority of the resource upgraded to the Measured category as defined in JORC (2004) and CIM Definition Standards (2014). Pilot plant metallurgical studies were conducted in Australia focused on the HPAL processing method. A PFS was prepared in 2003, and a Feasibility Study ('FS') was completed in August 2004 by GRD-Minproc (2005). This study confirmed the positive economics supporting the outcomes obtained in previous studies and showed a production capacity of 46,000 tonnes per annum (t/a) of metallic nickel, and 2,500 t/a of metallic cobalt. The project was given construction approval in 2005 however later that year Vale elected to place the Project on hold after Vale acquired Canadian nickel producer Inco.



## VNP Mineral Resources

Snowden Mining and Industry Consultants ('Snowden') were commissioned by Horizonte to produce the Geology and Mineral Resources sections of the PFS for the Project.

Within the mining licence, at a cut-off grade of 0.7% Ni, a total of 140.8 Mt at a grade of 1.05% Ni and 0.05% Co is defined as a Measured Mineral Resource and a total of 5.0 Mt at a grade of 0.99% Ni and 0.06% Co is defined as an Indicated Mineral Resource. This gives a combined tonnage of 145.7 Mt at a grade of 1.05% Ni and 0.05% Co for Measured and Indicated Mineral Resources. A further 3.1 Mt at a grade of 0.96% Ni and 0.04% Co is defined as an Inferred Mineral Resource at a cut-off grade of 0.7% Ni.

The Mineral Resource is summarised in Table 9, below.

Table 9 VNP Mineral Resource above 0.7% Ni cut-off within the mining licence

Classification	Tonnage (Mt)	Ni %	Ni metal (kt)	Co %	Co metal (kt)	Fe <sub>2</sub> O <sub>3</sub> %	MgO <sub>2</sub> %	SiO <sub>2</sub> %
Measured	140.8	1.05	1,477	0.05	74.6	31.1	11.3	41.0
Indicated	5.0	0.99	49	0.06	2.8	26.3	8.6	49.0
<b>Measured + Indicated</b>	<b>145.7</b>	<b>1.05</b>	<b>1,526</b>	<b>0.05</b>	<b>77.3</b>	<b>30.9</b>	<b>11.2</b>	<b>41.3</b>
Inferred	3.1	0.96	29	0.04	1.4	24.0	15.5	42.2

### Notes

1. Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability. All figures are rounded to reflect the relative accuracy of the estimate and have been used to derive subtotals, totals and weighted averages. Such calculations inherently involve a degree of rounding and consequently introduce a margin of error. Where these occur, Snowden does not consider them to be material.
2. Mineral Resources are reported inclusive of Mineral Reserves.
3. The reporting standard adopted for the reporting of the Mineral Resource estimate uses the terminology, definitions and guidelines given in the CIM Standards on Mineral Resources and Mineral Reserves (May 2014) as required by NI 43-101.
4. Mineral Resources are reported on a 100% basis for all Project areas.
5. Snowden completed a site inspection of the deposit by Mr Andy Ross FAusIMM, an appropriate "independent qualified person" as such term is defined in NI 43-101.
6. kt = thousand tonnes (metric).

## VNP Mineral Reserves

Snowden Mining and Industry Consultants ('Snowden') were commissioned by Horizonte to produce the Mining and Mineral Reserves sections of the PFS for the Project.

Mineral Reserves were produced in accordance with the CIM Definition Standards (2014). These standards state that Mineral Reserves are classified as either "Probable" or "Proven" Mineral Reserves and are based on Indicated and Measured Mineral Resources only in conjunction with the estimation of Mineral Resource and Mineral Reserve best practice guidelines as provided by the CIM. No Mineral Reserves have been estimated using Inferred Mineral Resources.

All economic Measured and Indicated Resources within the pit designs were classified as Probable Reserves. A summary of the Mineral Reserves is provided in Table 10, below

Table 10 VNP Open pit Mineral Reserves reported as of October 2018

Value	Probable
Ore (Mt)	141.3
Ni (%)	0.91
Co (%)	0.052
Fe (%)	23.1
Mg (%)	3.81
Al (%)	0.79

*Notes*

1. *Cut-off varies by resource model block depending on individual block geochemistry, however, as a guide, the cut-off is approximately 0.5% Ni.*
2. *Snowden completed a site inspection of the deposit on four occasions between March 2017 and September 2019 by Mr Anthony Finch B Eng, B Econ, P. Eng. MAusIMM (CP Min.), an appropriate "independent qualified person" as such term is defined in NI 43-101.*

### **VNP Mining**

Mining at VNP is planned to be undertaken with conventional open-pit truck and excavator mining methods. Blasting will be necessary for the upper parts of the deposit. Waste overburden will be stripped on 4 m benches and ore on 2 m benches for additional selectivity.

Reverse circulation ('RC') grade control drilling will be completed at 12.5 m x 12.5 m spacing to define the waste/ore/ore type boundary ahead of mining.

Waste will be stored in dumps adjacent to the pits. Ore will be transported to the run of mine ('ROM') stockpile near the processing plant or the low-grade stockpiles for later processing

Due to the wet season, mining (including stockpile rehandling) will be reduced between October and March (as is standard practice in the region). It was assumed that a fleet of Scania G500 8x4 22 m<sup>3</sup> heavy tippers will be used as part of the fleet and coarse beneficiation rejects will be used as sheeting, to mitigate trafficability issues.

The mine production schedule targeted a processing rate of 1 Mt/a HPAL feed for the first three years and a doubling in capacity thereafter to 2 Mt/a. To facilitate this, ROM feed of approximately 2.25 Mt/a to 4.5 Mt/a is required as well as an acid production capacity of 350 kt/a to 700 kt/a.

The annual mining rate starts at 8 Mt/a and peaks at 12 Mt/a between production years 5 and 11 during which time a large ore stockpile is developed for subsequent depletion later in the project life. Strip ratios for the deposit are extremely low (0.14 Waste: Ore) consequently waste dumps are relatively small.

The mine supplies higher-grade ore in the early mine life to the HPAL circuit, reaching up to 2% Ni and 0.1% Co in the first four production years. The HPAL feed grade (after beneficiation) is above 1.5% Ni and 0.08% Co for the majority of the first 17 years of production and decreases over the remaining LOM as feed is sourced from large lower grade stockpiles that are to be developed in the early years and are processed in the later years.

### **VNP Processing**

The process plant design, along with capital and operating cost estimates were completed by Simulus (Engineers) Pty Ltd, Perth Australia ('Simulus'). Simulus is a specialist in nickel and cobalt laterite project metallurgical test work, piloting and process design.

The process selected for the Project is the production of a nickel and cobalt sulphate product via HPAL, mixed sulphide precipitation ('MSP'), pressure oxidation leaching ('POX'), cobalt solvent extraction ('CoSX') and crystallization. Before the HPAL process, barren free silica is removed from the ore via a beneficiation process that involves crushing, scrubbing, washing and separation by screening and hydro-cyclones. To avoid the accumulation of magnesium sulphate in the recycled process water, a portion is sent to the Kieserite (magnesium sulphate monohydrate,  $MgSO_4 \cdot H_2O$ ) crystallization area where Kieserite is recovered and crystallised for potential sale as fertiliser.

The process plant has been designed to process 4.34 Mt/a of ROM ore at 1.07% Ni. Of this total feed, 2.34 Mt/a is rejected as coarse, low-grade siliceous waste from the beneficiation plant. The 2 Mt/a beneficiated product at 1.85% Ni grade is then fed to the HPAL processing plant as upgraded feed (1 Mt/a per train). A common refining circuit treats the MSP produced from each train via POX, CoSX and crystallization.

The proposed process plant has been designed to recover 94.4% and 94.9% of nickel and cobalt from the HPAL feed at an acid consumption of 347 kg/t. The nickel and cobalt sulphate products are of high purity suitable for sale directly into the battery market. The Kieserite by-product is of appropriate quality to be sold to the local fertiliser market.

Extensive metallurgical test work and process design were undertaken on the Project by the former owner, Vale, at scoping, pre-feasibility and feasibility stages included drilling and pitting programs totalling 152,000 m, variability batch test work, full-scale pilot test work and detailed engineering studies. A five-year, exhaustive, metallurgical test work and pilot plant program demonstrated that a high degree of mined ore upgradable using a simple beneficiation process is possible. The resultant feed delivered 96% average leach extraction for nickel and cobalt via HPAL technology.

Additional test work has been completed by the current Project owner, HZM, during 2018 and 2019. This test work on selected samples from Vermelho validated the potential to produce high-grade sulphate products using the HPAL process.

The 6,000 plus samples totalling over 160t used for the Vale PFS and the Vale Final Feasibility Study (FFS) piloting were large diameter drill core and were representative (geographically, of depth, ore type and by lithology). Additionally, 10% of the samples (1 m from every 10 m) was used for variability testing so piloting and variability was related.

The processing plant consists of the following main process unit operations:

- Beneficiation
- HPAL
- Slurry neutralization and residue filtration
- MSP
- POX
- Impurity removal
- CoSX
- Nickel sulphate crystallization
- Cobalt sulphate crystallization
- Acid liquor neutralization
- Kieserite crystallization
- Sulphuric acid plant
- Reagents and utilities.

## VNP PFS Financial Evaluation

### VNP PFS Capital Cost

The VNP PFS Capex summary is shown in Table 11, below.

Table 11 VNP PFS Capex Summary

Capital cost component	Initial (US\$ M)	Train 2 (year 3) (US\$ M)	Remainder (US\$ M)	LOM (US\$ M)
Process plant	575.06	446.68		1,022
Mining pre-production	10.78	-		10.78
Tailings and sediment	24.12	-		24.12
Pumping	2.34	-		2.34
Powerline	14.16	-		14.16
Road	2.59	-		2.59
Permitting and land acquisition	23.19	-		23.19
Mining sustaining	-	-	21.58	21.58
Other sustaining (including land permitting and land)	-	-	1.33	1.33
Closure	-	-	29.37	29.37
<b>TOTAL</b>	<b>652.24</b>	<b>446.68</b>	<b>52.28</b>	<b>1,151</b>

The costs in Table 11 include all direct and indirect costs including owner costs, supply, shipping and site installation. The total contingency carried in the capex is US\$97.7 million, this represents 18% of the initial capex (excluding contingency) and 25% of the plant direct costs.

### VNP PFS Operational costs

The PFS opex estimate is shown in Table 12 (below) which represents the average over the LOM; actual costs for these vary from year to year depending on the fixed and variable costs as well as sustaining capital requirement for the given year. The operating costs cover the mine, process plant, ore preparation, social and environmental, royalties and general and administrative costs. The main contributors of the overall operating costs are power, sulphur, (for acid and power production) labour and mining costs, with additional consumables and other indirect costs, including G&A.

Table 12 VNP PFS opex summary (average)

Area	LOM total (US\$ M)	US\$/t nickel	US\$/t ore	Average annual (US\$ M)
Mining	981	1,062	6.94	25.81
Rejects and tails handling	414	448	2.93	10.89
Processing costs	5,785	6,261	40.93	152.23
Royalties (CFEM)	23	25	0.16	0.60
Royalty (Vale)	66	72	0.47	1.74
G&A and other costs	215	233	1.52	5.67
SHE	24	26	0.17	0.63
<b>TOTAL</b>	<b>7,508</b>	<b>8,127</b>	<b>53.12</b>	<b>197.57</b>

## VNP PFS Summary Economics

The VNP PFS financial model is based on 100% equity. The Base Case was developed using a flat nickel price of US\$16,400/t Ni for LOM. The second case was prepared; using the WM long term price of US\$19,800/t Ni.

The revenue breakdown by product is shown in Table 13.

Table 13 VNP PFS LOM Revenue by product

Revenue by product	LOM Revenue (US \$M)**	% of total
Ni Sulphate	17,001	89%
Co Sulphate	1,585	8%
Kieserite	448	2%
	<b>19,034</b>	<b>100%</b>

Note: \*\* A US\$2,000/t Ni premium for battery sulphate production has been added to Nickel revenue, US\$34,000/t for the cobalt produced as cobalt sulphate, and net revenue of US\$100/t of the by-product, kieserite

As shown in Table 14, the post taxation model for the Base Case has a 4.2-year payback period with cumulative gross revenues of US\$19,034 million. The economic analysis indicates a post-tax NPV of US\$1,722 million and an IRR of 26.3% using the Base Case of US\$16,400/t Ni. These figures increase to US\$2,373 million and 31.5% when using the Wood Mackenzie long term price of US\$19,800/t Ni.

Table 14 VNP Key PFS economic indicators (post taxation)

Item	Unit	Nickel price basis (US\$/t Ni)**	
		Base Case 16,400	Long Term 19,800
Net cash flow	US\$ M	7,304	9,546
NPV <sub>8</sub>	US\$ M	1,722	2,373
IRR	%	26.3%	31.5%
Breakeven (NPV <sub>8</sub> ) nickel price	US\$/t	7,480	7,480
C1 cost (Brook Hunt)	US\$/t Ni	8,029	8,029
C1 cost (Brook Hunt) years 1-10	US\$/t Ni	7,483	7,483
Production year payback	years	4.2	3.6
LOM nickel recovered	kt	924.0	924.0
LOM cobalt recovered	kt	46.61	46.61
LOM kieserite produced	kt	4,482	4,482
LOM Total revenue	US\$ M	19,034	22,175
LOM Total costs	US\$ M	11,729	12,629
Operating cash flow	US\$ M	8,451	10,693
Capital intensity - initial capex/t Ni	US\$/t Ni	635	635

Note: \*\* US\$2,000/t premium for battery sulphate production has been added to Nickel revenue, US\$34,000/t for the cobalt produced as cobalt sulphate, and net revenue of US\$100/t of the by-product, kieserite.

## VNP PFS Sensitivity Analysis

The PFS sensitivity analysis demonstrates how the NPV<sub>8</sub> is affected by changes to one variable while holding the other variables constant. The results of the sensitivity analysis are presented in

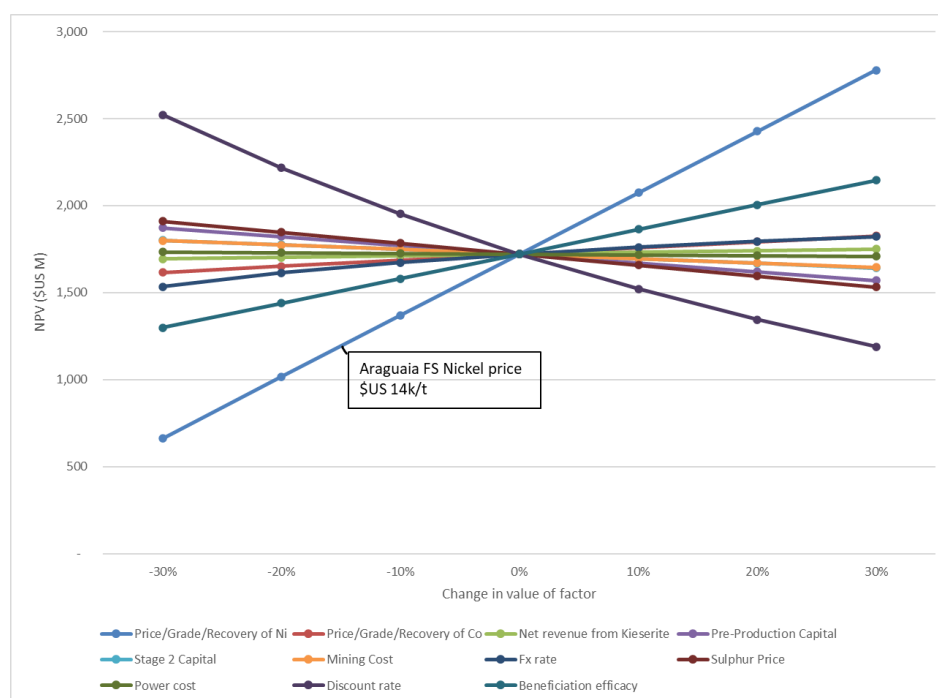
Table 15 and Figure 3.

Table 15 VNP PFS Sensitivity table for the Base Case (US\$16,400/t\*\*) NPV<sub>8</sub>, after taxation

Sensitivity parameter	-30%	-20%	-10%	0%	10%	20%	30%
Price/Grade/Recovery of Ni	661	1,016	1,369	1,722	2,074	2,427	2,779
Price/Grade/Recovery of Co	1,617	1,652	1,687	1,722	1,757	1,792	1,827
Net revenue from Kieserite	1,693	1,703	1,712	1,722	1,731	1,741	1,751
Pre-Production Capital	1,873	1,823	1,772	1,722	1,671	1,621	1,570
Stage 2 Capital	1,802	1,775	1,749	1,722	1,695	1,668	1,642
Mining Cost	1,799	1,773	1,748	1,722	1,696	1,670	1,645
Fx rate	1,535	1,613	1,674	1,722	1,761	1,794	1,821
Sulphur Price	1,911	1,848	1,785	1,722	1,659	1,596	1,532
Power cost	1,735	1,730	1,726	1,722	1,718	1,713	1,709
Discount rate	2,523	2,217	1,952	1,722	1,521	1,345	1,189
Beneficiation efficacy	1,298	1,439	1,581	1,722	1,863	2,004	2,146

Note: \*\* US\$2,000/t premium for battery sulphate production has been added to Nickel revenue, US\$34,000/t for the cobalt produced as cobalt sulphate, and a net revenue of US\$100/t of the by-product, kieserite.

Figure 3 VNP PFS NPV Sensitivity chart



Please see the image in the full version of the announcement at [www.horizonteminerals.com](http://www.horizonteminerals.com)

The sensitivity analysis shows that the Project is more sensitive to nickel price, nickel recovery and grade than it is to either opex or capex.

### **VNP Market Review and Nickel Pricing**

In June 2019, HZM commissioned Wood Mackenzie (WM) to develop a report on the market for nickel sulphate. As a consequence of that report, the following assumptions with respect to commodity pricing were used in the PFS.

- The consensus nickel price of US\$16,400/t (US\$7.44/lb) was used in the Base Case for the PFS along with a US\$2,000/t (US\$0.91/lb) nickel sulphate product premium. The nickel sulphate premium is driven by the battery market (where nickel sulphate is valued higher than class 1 nickel) and is supported by very strong growth in the EV car market. The US\$2,000/t (US\$0.91/lb) sulphate premium is the average value realised in the market over the last 12 months. The Wood Mackenzie long-term price currently stands at approximately US\$19,800/t (US\$8.98/lb); this was used as an alternative case for the PFS. A fixed price for nickel was applied over the LOM. The Qualified Person has reviewed the above and consider that the results support the assumptions in this Technical Report.
- The cobalt price assumption of US\$34,000/t (US\$15.43/lb) used in this study is significantly below the long-term consensus bank/broker forecasts which stand at US\$55,000/t (US\$25/lb).

### **Kieserite Market**

In July 2019, HZM commissioned a report on the market for kieserite in Brazil from Dr Fabio Vale (Director Técnico/Technical Manager) of Aduhai Consultoria Agronômica (Aduhai).

The study concludes that:

The fertilizer market in Brazil is large. In 2018, 35.6 Mt of fertilizer was sold, of this 77.5% was imported and 22.5% was manufactured locally. The most likely consumers of the kieserite produced at the Project are the palm oil growers in Pará state, as palm oil trees have a very high demand for both magnesium and sulphur, although it has been demonstrated that coffee and cotton would also benefit from kieserite. The location of the Vermelho plant in the centre of the Pará state gives its distribution a competitive advantage over the imported product. The Project will produce approximately 150,000 t of kieserite a year, which is 10 times the current market for imported kieserite. This means there would be oversupply which would be expected to dictate a lower realised price than the current market, and substitution of other agro-products would be required for all Project kieserite to be consumed in the local market. This suggests that it would be unlikely for current prices (approximately US\$380/t FOB Barcarena) to be realised. For the study, HZM has assumed a kieserite price of US\$180/t (delivered) – about half of the current price in Barcarena. The study assumes a cost of US\$80/t for the delivery and marketing of kieserite.

### **VNP Community, Environment and Permitting**

The Project is 3km from the town of Canaã dos Carajás, founded in 1994, which forms the southern limit of the Carajás Mining District (CMD) Pará state, north of Brazil. The CMD is host to several tier 1 iron, nickel and copper mines operated by Vale.

Mining and related industries in the CMD play a vital role in the socio-economic fabric of the region, with the municipality presenting considerable per capita income, the second-highest of the Pará state.

In 2004, Vale started to operate the Sossego Copper Mine after several infrastructure municipality improvements, and most recently (2017) ramped up the S11D project, one of the largest standalone iron operations in the world. As a result of the advances of mining in the region, there has been a significant influx of people and investment, which has, in turn, promoted changes and improvements in the areas of economic growth, cultural diversity and a more developed economy than nearby towns, heavily centred around mining-related activities.

Key environmental studies for the advancement of project licensing stages were completed by Vale. HZM will utilize the studies and baseline data collected by previous owners to inform and expedite new EIA RIMA studies.

The following mining and environmental permits were granted to Vale by the end of 2016:

- EIA/RIMA studies (Environmental Impact Study ('EIS') and Environmental Impact Report ('EIR')) issued
- Award of Preliminary Licence ('LP')
- Environmental Controls Plan issued
- Application for Installation Licence ('LI')
- Final Exploration Report approved
- Mine Plan (Plano de Aproveitamento Economico – PAE) approved

Whilst a new permit pathway is proposed, the previously awarded permits for Vermelho provide a solid basis from which to progress the project permitting

HZM will utilize the Vale studies and baseline data collected to inform and expedite new EIA RIMA studies. As HZM will recommence the licensing for Vermelho, the Company will both update studies and undertake new studies to accurately characterize the current physical environment, biological environment and social settings.

### **VNP Next Steps**

The PFS demonstrates that the Project is technically, economically viable, and is expected to obtain all the regulatory and permitting requirements. Consequently, the Project should progress to a Feasibility Stage.

### **Technical Disclosure**

*All scientific and technical information contained in this Management's Discussion and Analysis has been prepared by or under the supervision of Mr Anthony Finch BEng(Min), B Econ, P.Eng (APEGBC), MAusIMM(CP), a "qualified person" within the meaning of NI 43-101 for the Vermelho Project and Mr Frank Blanchfield, B.Eng, FAusIMM a "qualified person" within the meaning of NI 43-101 for the Araguaia Project. For further details on the Araguaia Project, please refer to "Amended NI 43-101 Technical Report Feasibility Study for the Araguaia Nickel Project Federative Republic of Brazil Project Number AU9867", dated 30 November 2018, amended 31 March 2021, with an effective date of 30 November 2018" available on the Company's website at [www.horizonteminerals.com](http://www.horizonteminerals.com) and on SEDAR at [www.sedar.com](http://www.sedar.com). For further details on the Vermelho project please refer to "Amended NI 43-101 Technical Report on the Vermelho Project, Pará State, Brazil" dated 31 October 2019, amended 31 March 2021 with an effective date of 31 October 2019" available on the Company's website at [www.horizonteminerals.com](http://www.horizonteminerals.com) and on SEDAR at [www.sedar.com](http://www.sedar.com)*



## Summary of Financial and Operating Performance

### Change in presentation currency

Horizonte Minerals Plc has decided to change its presentation currency from Pounds Sterling to US Dollars effective 1 January 2022.

The presentation currency has been revised as the financing package concluded by the Group to construct the Araguaia project is denominated in US Dollars and future revenues will also be in US Dollars. The board therefore believes that US Dollar financial reporting provides more relevant presentation of the group's financial position, funding and treasury functions, financial performance and its cash flows.

A change in presentation currency represents a change in an accounting policy in terms of IAS 8 Accounting Policies, Changes in Accounting Estimates and Errors requiring the restatement of comparative information. In accordance with IAS 21 The Effects of Changes in Foreign Exchange Rates, the following methodology was followed in restating historical financial information from Pounds Sterling to US Dollar:

- Assets and liabilities were translated at the relevant closing exchange rate at the end of the reporting period. Items of income and expenditure and cash flows were translated at average rates of exchange for the period;
- The foreign currency translation reserve was reset to nil as at 1 January 2006, the date on which the group adopted IFRS. Share capital and premium and other reserves, as appropriate, were translated at the historic rates prevailing at the dates of underlying transactions; and
- The effects of translating the group's financial results and financial position into US Dollar were recognised in the foreign currency translation reserve.

The exchange rates used were as follows:

<b>GBP/USD</b>	<b>31 December 2021</b>	<b>30 September 2021</b>
Closing rate	1.3477	1.3484
Average rate	1.3774	1.3866
<b>USD/BRL</b>		
Closing rate	5.5710	5.4490
Average rate	5.3810	5.3181

### Summary of Cashflows

>> 9 months ended	<b>30 September 2022</b>	30 September 2021
	<b>US\$</b>	<b>US\$ Restated</b>
>> Net cash (outflow)/inflow from operating activities	<b>(15,648,294)</b>	(4,886,263)
>> Net cash outflow from investing activities	<b>(128,430,673)</b>	(9,893,359)
>> Net cash inflow from financing activities	<b>83,633,780</b>	24,522,594
>> Net increase/(decrease) in cash and cash equivalents	<b>(60,445,187)</b>	9,742,972

The net cash flows used in operating activities for the nine months ended 30 September 2022 and 30 September 2021 are driven by activities in the management of the Araguaia Project and to a lesser extent Vermelho. These management activities were higher during 2022 as work levels increased as a result of increasing the operational team and financing workstreams to the construction of Araguaia. See 'Results from Operations' for further analysis.

Cash used in investing activities has increased to US\$128,430,673 from US\$9,893,359 in 2021 as a result of the increased level of expenditure related to advancing the construction of the Araguaia Project.

Net cash flows from financing activities amounted to US\$83.6million, raised through issuing convertible loan notes and the Vermelho royalty.

### Quarterly Financial Information

Quarter Ended	30 September 2022 US\$	30 June 2022 US\$	31 March 2022 US\$	31 December 2021 US\$ Restated	30 September 2021 US\$ Restated	30 June 2021 US\$ Restated	31 March 2021 US\$ Restated	31 December 2020 US\$ Restated	30 September 2020 US\$ Restated
Revenue	—	—	—	—	—	—	—	—	—
Profit/(Loss) from continuing operations	(6,580,040)	(670,946)	4,518,886	(6,436,088)	(3,711,923)	(1,876,678)	(1,364,838)	428,564	(2,394,331)
Total comprehensive income attributable to owners of the parent	(17,548,765)	(33,071,087)	22,492,220	(7,593,124)	(8,453,754)	5,624,496	(6,796,410)	3,388,594	(2,640,152)
Basic & diluted earnings/(loss) cents per share	(3.455)	(0.352)	0.119	(0.0015)	(0.0011)	(2.224)	(0.09)	0.0298	(0.1658)

Profit/(loss) from continuing operations in each of the periods disclosed is driven on an ongoing basis by administrative expenses together with (loss)/gain on foreign exchange and finance income and costs that are not capitalised.

The loss from continuing operations in Q3 2022 of US\$6,580,040 was after administrative expenses of US\$2,841,133, a loss on foreign exchange translation of US\$797,045 and charged for share options US\$508,529.

Total comprehensive income attributable to equity holders of the company is driven by results from continuing operations, combined with finance income and costs and exchange differences arising on translating foreign operations.

Exchange differences arising on translating foreign operations arise as the values of the exploration assets of the Company are denominated in the currency of the country in which they are located.

During Q3 2022 the total comprehensive income attributable to equity holders of the company was after exchange differences arising on translating foreign operations of (US\$17,549,770) as the Brazilian Real depreciated against the US in the quarter and the mark to market revaluations on the non-deliverable forward contracts of (US\$7,845,763).

### Results from Operations

	9 months ended 30 September 2022 US\$	9 months ended 30 September 2021 Restated US\$
<b>&gt;&gt; Analysis of Operating Loss:</b>		
<b>&gt;&gt; General and Administration Costs</b>		
>> Compensation	(5,521,091)	(1,447,128)
>> Travel/Expenses	(895,189)	(380,324)
>> Exploration Costs Expensed	-	-
>> Professional Fees	(2,115,344)	(3,431,904)
>> Investor Relations	(816,495)	(294,738)
>> TSX fees and associated costs	(140,101)	(62,257)
>> Overheads/Other	(16,537)	23,250
<b>&gt;&gt; Total General and Administration Costs</b>	<b>(9,504,757)</b>	<b>(5,593,102)</b>
>> Change in fair value of derivative	4,360,500	-
>> Share based payments expense	(508,529)	
>> Change in fair value of special warrant liability	-	(1,616,120)
>> Gain / (Loss) on Foreign Exchange	8,586,024	483,286
<b>&gt;&gt; Profit/(Loss) before interest and tax</b>	<b>2,933,238</b>	<b>(6,725,936)</b>

General and Administration costs have increased during the nine-month period to 30 September 2022 compared to the same period in the prior year. This has been driven by an increase in headcount and ongoing construction of the Araguaia Project.

Within General and Administration costs:

- > Compensation of US\$5,521,091 was higher in 2022 versus 2021 when it amounted to US\$1,447,128 due to an increase in headcount as a result of building out a team to advance the Araguaia project construction.
- > Exploration costs incurred in 2021 have been capitalized to the Araguaia project mine development asset and Vermelho exploration and evaluation intangible asset.
- > Travel and office expenses of US\$895,189 was higher in 2022 versus 2021 when it amounted to US\$380,324 due to an increase in travel after Covid-19 travel restrictions were lifted
- > The level of professional fees has decreased to US\$2,115,344 for 2022 compared to US\$3,431,904 for 2021 as the level of activity around seeking to obtain project financing for the Araguaia project has decreased now that they financing has been secured. Professional fees include legal fees and fees from technical and specialist advisors as well as corporate advisory, accounting, audit and secretarial charges.
- > Investor relations charges were higher in 2022 at US\$816,495 compared to US\$294,738 in 2021. This is predominantly due to an overall increase in the level of investor-related activity after closing project financing for the ANP.

Additional movements:

- > The gain on foreign exchange is associated with movements arising on cash deposits and intercompany loan balances held by the Company in currencies other than the functional currency of the entities in the Group (Sterling for UK and Isle of Man entities and Brazilian Reals for the Brazilian subsidiaries).
- > The share-based payment expense relates to the share options granted on 12 July to executives and key personnel in the UK and Brazil
- > The change in fair value of derivatives relates to the conversion option embedded derivative on the convertible loan notes. The embedded derivative is measured at fair value through profit and loss.
- > The change in fair value of special warrant liability in 2021 related to the placement of 88,060,100 special warrants at a price of 7.5 pence per warrant on 9 March 2021. The Special Warrants have been classified as a financial instrument under IFRS and measured at fair value through profit and loss.

### **Analysis of Intangible Assets**

Exploration and evaluation costs comprise the costs capitalised to the Vermelho project. Exploration licences comprise the Vermelho licences which were acquired from Vale in 2017. Impairment reviews for exploration and evaluation assets are carried out either on a project-by-project basis or by geographical area.

	Goodwill US\$	Exploration licences US\$	Exploration and evaluation costs US\$	Software US\$	Total US\$
Cost					
At 1 January 2021	215,979	6,831,692	1,442,670	-	8,490,341
Additions	-	103,461	209,246	92,515	405,222
Amortisation for the year	-	-	-	(2,509)	(2,509)
Exchange rate movements	(14,844)	(480,024)	(88,701)	-	(583,569)
Net book amount at 31 December 2021	<b>201,135</b>	<b>6,455,129</b>	<b>1,563,215</b>	<b>90,006</b>	<b>8,309,485</b>
Additions	-	223,768	1,095,394	90,823	1,409,985
Amortisation for the year	-	-	-	(20,431)	(20,431)
Exchange rate movements	7,234	270,232	18,154	3,237	298,858
Net book amount at 30 September 2022	<b>208,369</b>	<b>6,949,129</b>	<b>2,676,762</b>	<b>163,635</b>	<b>9,997,895</b>

The accounting policies of the Group specify that intangible assets are to be denominated in the functional currency of the country in which the asset is located. The Vermelho project is therefore denominated in Brazilian Reais.

#### Analysis of Property, plant and equipment

	Mine Development Property US\$	Vehicles and other field equipment US\$	Office equipment US\$	Land acquisition US\$	Building improvement US\$	Total US\$
Cost						
At 1 January 2021	41,909,101	105,074	78,287	119,090	-	42,211,552
Additions	13,328,811	759,475	69,980	10,199,425	-	24,357,691
Transfers	-	648	(648)	-	-	-
Disposals	-	-	(1,385)	-	-	(1,385)
Capitalised interest	7,073,241	-	-	-	-	7,073,241
Exchange rate movements	(2,893,576)	(7,206)	(5,368)	(8,185)	-	(2,914,335)
At 31 December 2021	<b>59,417,577</b>	<b>857,991</b>	<b>140,866</b>	<b>10,310,330</b>	<b>-</b>	<b>70,726,764</b>
Additions	128,783,919	-	162,086	2,499,087	36,325	131,481,417
Environmental rehabilitation additions	98,036	-	-	-	-	98,036
Transfers	756,217	(787,730)	31,306	-	207	-
Capitalised interest	13,260,561	-	-	-	-	13,260,561
Disposals	-	-	(1,885)	-	-	(1,885)

Exchange rate movements	2,784,084	30,858	5,066	370,819	-	3,190,828
At 30 September 2022	<b>205,100,394</b>	<b>101,121</b>	<b>337,439</b>	<b>13,180,235</b>	<b>36,532</b>	<b>218,755,721</b>
Accumulated depreciation						
At 1 January 2021	-	78,036	42,719	-	-	120,755
Charge for the year	-	7,526	12,840	-	-	20,366
Transfer	-	222	(222)	-	-	-
Disposals	-	-	(168)	-	-	(168)
Exchange rate movements	-	(5,350)	(2,929)	-	-	(8,279)
At 31 December 2021	-	<b>80,434</b>	<b>52,240</b>	-	-	<b>132,674</b>
Charge for the period	-	5,720	29,072	-	393	35,186
Transfer	-	(720)	703	-	17	-
Disposals	-	-	(151)	-	-	(151)
Exchange rate movements	-	2,893	1,879	-	-	4,771
At 30 September 2022	-	<b>88,327</b>	<b>83,742</b>	-	<b>410</b>	<b>172,479</b>
Net book amount as at 30 September 2022	<b>205,100,394</b>	<b>12,794</b>	<b>253,697</b>	<b>13,180,235</b>	<b>36,122</b>	<b>218,583,242</b>
Net book amount as at 31 December 2021	<b>59,417,577</b>	<b>777,557</b>	<b>88,626</b>	<b>10,310,330</b>	-	<b>70,594,090</b>

In December 2018, a Canadian NI 43-101 compliant Feasibility Study ( “FS” ) was published by the Company regarding the enlarged Araguaia Project which included the Vale dos Sonhos deposit acquired from Glencore.

The financial results and conclusions of the FS clearly indicate the economic viability of the Araguaia Project with an NPV of \$401M using a nickel price of \$14,000/t Ni. Nothing material had changed with the economics of the FS between the publication date and the date of this report and the Directors undertook an assessment of impairment through evaluating the results of the FS along with recent market information relating to capital markets and nickel prices and judged that there are no impairment indicators with regards to the Araguaia Project.

## Carrying value of Royalty financing arrangements

	Araguaia Royalty valuation US\$	Vermelho Royalty valuation US\$	Total US\$
Net book amount at 1 January 2021	30,131,755	-	30,131,755
Unwinding of discount	4,637,057	-	4,637,057
Change in carrying value	9,727,692	-	9,727,692
Effects of foreign exchange	-	-	-
Net book amount at 31 December 2021	44,496,504	-	44,496,504
Initial recognition	-	25,000,000	25,000,000
Embedded derivative – initial valuation	-	4,590,000	4,590,000
Transaction costs	-	(847,939)	(847,939)
Unwinding of discount	3,929,180	2,679,242	6,608,422
Change in carrying value	5,893,677	2,859,732	8,753,409
Effects of foreign exchange	-	-	-
Net book amount at 30 September 2022	54,319,361	34,281,035	88,600,396

### *Araguaia Royalty*

During 2019 the Group entered into a royalty funding arrangement with Orion Mine Finance ("OMF") securing a gross upfront payment of \$25,000,000 before fees in exchange for a royalty to be paid over the first 426k tonnes of nickel produced from the Araguaia Ferronickel project. The royalty is linked to production and therefore does not become payable until the project is constructed and commences commercial production; it is however accounted for as a long-term liability in accordance with the accounting treatment set out in the audited 2021 annual financial statements.

During the nine months ended 30 September 2022, there was an unwinding of the discount of US\$3,929,180 and a change in carrying value of US\$5,893,677.

### *Vermelho Royalty*

During 2021 the Group entered into a royalty funding arrangement with Orion Mine Finance ("OMF") securing a gross upfront payment of \$25,000,000 before fees in exchange for a royalty to be paid over the nickel and cobalt produced from the Vermelho Nickel Cobalt project over the life of mine. The royalty is linked to production and therefore does not become payable until the project is constructed and commences commercial production; it is however accounted for as a long-term liability in accordance with the accounting treatment set out in the condensed interim financial statements for Q2 2022.

During the nine months ended 30 September 2022, there was an unwinding of the discount of US\$2,679,242 and a change in carrying value of US\$2,859,732.

## Carrying value of Contingent and Deferred Consideration

	Companhia Brasileira de Alumínio (in respect of Araguaia project)	Xstrata Brasil Mineração Ltda (in respect of Araguaia project)	Vale Metais Basicos S.A. (in respect of Vermelho project)	Total
	US\$	US\$	US\$	US\$
At 1 January 2021				
Initial recognition	5,450,087	3,946,090	4,136,002	13,532,179
Unwinding of discount	19,256	276,226	289,520	585,002
Change in estimate	-	(1,913,705)	-	(1,913,705)
Change in carrying value and foreign exchange	6,195	-	(1)	6,194
At 31 December 2021	5,475,538	2,308,611	4,425,521	12,209,670
Unwinding of discount	233,264	119,834	224,567	577,665
Change in estimate	-	-	(299,399)	(299,399)
Change in carrying value and foreign exchange	(31,677)	-	1	(31,676)
At 30 September 2022	5,677,125	2,428,445	4,350,690	12,456,260

The contingent and deferred consideration comprises three transactions:

- the first relates to the acquisition of the Araguaia project and is a US\$5,000,000 consideration payable to Xstrata, ('Xstrata Contingent Consideration') as at the date of first commercial production from any of the resource areas covered in the purchase agreement, i.e., Vale dos Sonhos (VDS) and Serra do Tapa (SDT).
- the second relates to Vale, in respect of the purchase of the Vermelho project. A final payment of US\$6,000,000 in cash is payable by Horizonte within 30 days of first commercial sale of product from Vermelho. Management have assessed that given the finalisation and publication of a pre-feasibility study on the Vermelho project, the project is likely to have progressed to a stage where this final payment can be considered probable and have therefore recognised this contingent consideration within liabilities.
- The third relates to CBA, in respect of the purchase of the ferronickel processing equipment. The Agreement provides for an upfront cost of US\$600,000 payable in cash on signing (contract signed in December 2021) with total potential consideration of up to US\$7,000,000, with the balance payable upon the achievement of future milestones related to the development and operation of the Araguaia project.



### Carrying value of Convertible loan notes liability

	Embedded derivative	Convertible loan notes liability	Total
	US\$	US\$	US\$
Initial recognition	19,161,400	42,101,100	61,262,500
Transaction costs	-	(1,612,944)	(1,612,944)
Unwinding of discount	-	3,767,306	3,767,306
Change in fair value	(4,360,500)	-	(4,360,500)
Value as at 30 September 2022	14,800,900	44,255,462	59,056,362

On 29 March 2022 the Company issued convertible loan notes to the value of \$65 million at an interest rate of 11.75% with interest accruing quarterly in arrears. The convertible loan notes were issued at a discount of 5.75%. At any time until the Maturity Date, the Noteholder may, at its option, convert the notes, partially or wholly, into a number of ordinary shares up to the total amount outstanding under the Convertible Note divided by the Conversion Price.

The convertible loan is a hybrid financial instrument, whereby a debt host liability component and an embedded derivative liability component was determined at initial recognition. As the convertible loan notes was issued close to the quarter end date, the fair value of the financial instrument approximates the cash received.

### Carrying value of non-deliverable forward foreign exchange contracts

	Total US\$
<i>Derivatives designated as hedging instruments</i>	
Non-deliverable forward contracts	7,845,763
Value as at 30 September 2022	7,845,763

In January 2022 the Group's Board approved the budget for the development of the Araguaia Ferronickel Project (Project). With the funding base being primarily US Dollars, the Project budget includes a significant portion of spend in local currency, the Brazilian Real (BRL). The Group and its senior lenders agreed to implement a foreign exchange hedging strategy that ensures that at least 70% of its BRL denominated capital expenditure to be incurred between 14 May 2022 and 31 March 2025 is hedged to reduce the exposure of future BRL foreign exchange risk.

The Group has therefore entered into a series of monthly non-deliverable forward transactions ("NDFs") which will lock in a series of future USD: BRL rates based on the Group's projected spend profile at the time of entering into those transactions. NDFs by definition are non-

deliverable and so the Group would either pay or receive an amount of BRL to ensure that it ultimately achieves the hedged rate.

The effects of the cash flow non-deliverable forward contract hedging relationship are as follows:

	US\$
Carrying amount of the derivatives	(7,845,763)
Change in fair value of designated hedging instruments	(7,845,763)
Change in fair value of designated hedged item	7,845,763
Notional amount	278,032,760
Maturity date	31/10/2022 – 28/03/2024
Hedge ratio	1:1

### Other Information

	2022 Number	2022 US\$	2021 Number	2021 US\$
Group and Company				
<b>Issued and fully paid</b>				
Ordinary shares				
At 1 January	190,118,279	52,215,236	72,468,864	20,666,053
Issue of ordinary shares	350,000	90,140	8,135,918	2,281,637
Conversion of special warrants into shares	-	-	4,403,005	1,213,556
At 30 September	190,468,279	52,305,376	85,007,786	24,161,246
Issue of ordinary shares	77,945,627	17,927,494	-	-
At 8 November	268,413,906	70,232,870	85,007,786	24,161,246

On 11 April 2022 the Group issued 6,000,000 new ordinary shares (after share consolidation 300,000 shares) at a price of 4.33 pence per share (86.6 pence per share after share consolidation) in relation to the exercise of options by an employee of the Company.

On 31 May 2022 the Group completed a share consolidation on the basis of 1 new share for every 20 existing shares. As a result of the share consolidation, the Company's issued share capital consists of 190,418,279 ordinary shares of £0.20 each. The number of shares in 2022 and 2021, as presented in the table above, have been adjusted according to the share consolidation ratio.

On 5 July an option holder exercised 50,000 share options at an exercise price of £1.20 per share.

The Company completed a private placement on 4 October 2022. Gross proceeds of approximately £70.5million (approximately US\$80million) was raised at a Placing Price of 90.5 pence per share from existing and new investors representing the issue of 77,945,627 new Ordinary Shares in the Company. The Fundraise was completed on the 8th November 2022.

### Stock Options in the Company

Total options outstanding as at the date of this document amount to 14,716,250 with a weighted average exercise price of £1.41, of which 5,070,000 are fully vested.

The Group awarded new share options on 12 July 2022 (the "Award Date") over 9,736,250 ordinary shares of £0.20 each in the capital of the Company to executives (PDMRs) and key personnel in the UK and Brazil. Each share option is exercisable in return for one ordinary share in the Company and will vest in three tranches on the 12-month, 18-month and 28-month anniversaries of the Award Date at a ratio of 25%, 25% and 50%, with exercise prices of £1.68, £1.72 and £1.76 for each one third of the Awards.

Movements on number of share options and their related exercise price are as follows:

	Number of options (before share consolidation)	Weighted average exercise price (before share consolidation) £	Number of options (after share consolidation)	Weighted average exercise price (after share consolidation) £
Outstanding at 1 January 2022	114,300,000	0.0425	5,715,000	0.85
Exercised	(7,000,000)	0.0433	(350,000)	0.83
Issued but not vested	194,725,000	0.086	9,736,250	1.72
Expired	(7,700,000)	0.064	(385,000)	1.28
Outstanding at 30 September 2022	294,325,000	0.071	14,716,250	1.41
<b>Exercisable at 30 September 2022</b>	<b>101,400,000</b>	<b>0.042</b>	<b>5,070,000</b>	<b>0.833</b>

The Company recognises as an expense the cost of stock-based compensation based upon the estimated fair value of new stock options granted. The fair value of each stock option is estimated on the date of grant using the Black-Scholes option-pricing model and is expensed over the vesting period.

### Liquidity, Capital Reserves and Financing Activities

The Company is not in commercial production on any of its properties and accordingly, it does not generate cash from operations and finances its activities by raising capital through equity issues and more recently the issue of a royalty financing arrangement as previously noted. As at 30 September 2022, the Company had US\$131,203,868 in cash at bank and on deposit, as at 31 December 2021 cash at bank and on deposit amounted to US\$210,492,280.

All of the Company's cash and cash equivalents as at 30 September 2022 are held in either current or interest-bearing accounts. The Company has not invested in any short-term commercial paper, asset backed securities or other financial instruments.

The Company has no immediate debt repayment requirements as the deferred and contingent consideration and the Orion royalties only become payable upon commencement of production. The Group has a non-material level of current liabilities that occur in the ordinary course of business.

The condensed consolidated interim financial statements have been prepared on a going concern basis. Although the Group's assets are not generating revenues, the Directors consider that the Group has access to sufficient funds to undertake its operating activities for a period of at least the next 12 months including any additional expenditure required in relation to its current development and exploration projects. The Group has cash reserves and access to liquidity which are considered sufficient by the Directors to fund the Group's committed expenditure both operationally and on its exploration project for the foreseeable future.

The Group concluded a comprehensive funding package of US\$633 million in December 2021. The net proceeds of the fundraising will be used towards the construction of the Araguaia project as well as for general working capital purposes. In addition, the Group has also concluded a US\$25million royalty on the Vermelho Project, the net proceeds from the sale of this royalty will be used to advance a feasibility study and permitting work streams on the Vermelho project. The equity fundraise (US\$197million of the US\$633 million) was finalized and funds received in December 2021 with a further equity fund raise being completed in November 2022 for a gross US\$80 million. The debt elements of the funding package include Convertible Loan Notes (US\$65 million), a Cost Overrun Facility (US\$25 million) and a Senior Debt Facility (US\$346.2 million).

Funds from the convertible loan notes and the royalty were received in March 2022. The first drawdown under the Senior Debt Facility is expected to occur in the fourth quarter of 2022 following the satisfaction of certain conditions precedent customary to a financing of this nature. Subsequent drawdowns under the Senior Debt Facility are expected to follow monthly during the remainder of the construction period, again following the satisfaction of certain conditions precedent customary to a financing of this nature. As the senior debt is conditional, there is no guarantee that the conditions of this element of the debt package will be satisfied.

The funds held at the end of the period along with those to be raised post period end following the satisfaction of any condition's precedent for the successful draw down of the Senior Debt Facility (Including access to any of the funds secured as part of the Cost Overrun Facility), means the Group has cash reserves which are considered sufficient by the Directors to execute the construction of the Araguaia Project and fund its general working capital requirements for the foreseeable future. The drawdown of the Senior Debt Facility is conditional upon the expenditure of a certain level of equity amongst other conditions precedent, by which time the Group is expected to have made significant financial commitments. There exists a risk that the Senior Debt Facility is not able to be drawn due to unforeseen circumstances or noncompliance with any conditions precedent which may or may not be within the control of the Group. Should the Senior Debt not be drawn then the Group might require alternative sources of funding to meet its commitments.

These events are outside of the Group's control, and as such, a material uncertainty exists which may cast significant doubt about the Group's continued ability to operate as a going concern and its ability to realise its assets and discharge its liabilities in the normal course of business.

If additional projects are identified and the Vermelho project advances, additional funding may be required.

These factors indicate the existence of a material uncertainty which may cast significant doubt over the Group and the Company's ability to continue as a going concern and therefore they may be unable to realise its assets and discharge their liabilities in the normal course of business. The financial statements do not include any adjustments that would result if the Group were unable to continue as a going concern.

The uncertainty as to the future impact of the Covid-19 pandemic has been considered as part of the Group's adoption of the going concern basis. In response to the easing of Covid-19 restrictions, employees are working from the Group's offices in London and Brazil and are adhering to government guidelines. International travel has resumed and site work for the two projects has been resumed.

To date, the Group has not been materially adversely affected by the COVID-19 pandemic. However, the ongoing nature and uncertainty of the pandemic in many countries including the measures and restrictions put in place (travel bans and quarantining in particular) continue to have the ability to impact the Group's business continuity, workforce, supply-chain, business development and, consequently, future revenues.

In addition, any infections occurring on the Group's premises could result in the Group's operations being suspended, which may have an adverse impact on the Group's operations as well as adverse implications on the Group's future cash flows, profitability and financial condition. Supply chain disruptions resulting from the COVID-19 pandemic and measures implemented by governmental authorities around the world to limit the transmission of the virus (such as travel bans and quarantining) may, in addition to the general level of economic uncertainty caused by the COVID-19 pandemic, also adversely impact the Group's operations, financial position and prospects.

As a result of considerations noted above, the Directors consider the impact of COVID-19 could delay the drawdown of the senior debt facility.

#### **Off-Balance sheet arrangements**

The Company does not engage in off-balance-sheet accounting to structure any of our financial arrangements and do not have any interests in unconsolidated special-purpose or structured finance entities.

#### **Related party transactions**

The key management personnel of the Company at 30 September 2022, are the directors, including the Chairman and Chief Executive Officer and the Chief Financial Officer. Information about the remuneration of the key management personnel and the shares and options held by each director is included in the audited financial statements for the year ended 31 December 2021.

The nature of related party transactions of the Group has not changed between 31 December 2021 and 30 September 2022.

## **Responsibilities, controls and policies**

### **Evaluation of disclosure controls and procedures**

The Chairman, Chief Executive Officer and Chief Financial Officer have designed disclosure controls and procedures, or have caused them to be designed under their supervision, in order to provide reasonable assurance that:

- material information relating to the Group is made known to the Chairman, Chief Executive Officer and Chief Financial Officer by others, particularly during the period in which the interim and annual filings are being prepared; and
- information required to be disclosed by the Group in its annual filings, interim filings or other reports filed or submitted by it under securities legislation is recorded, processed, summarised and reported within the time periods specified in securities legislation.

### **Evaluation of internal controls over financial reporting**

Our Chairman, Chief Executive Officer and Chief Financial Officer have designed internal controls over financial reporting, or have caused them to be designed under their supervision, in order to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with IFRS.

Due to their inherent limitations, internal controls over financial reporting may not prevent or detect misstatements. Therefore, even those systems determined to be effective can provide only reasonable assurance with respect to financial statement preparation and presentation. There have been no changes in our internal controls over financial reporting for the quarter ended 30 September 2022.

### **Risks and uncertainties**

Please refer to the information presented in the heading “Risk Factors” on pages 44 to 53 of our Annual Information Form for the year ended December 31, 2021.

### **Critical Accounting Policies and Estimates**

The financial information disclosed within this document was prepared on a going concern basis using accounting policies consistent with International Financial Reporting Standards (IFRS).

The preparation of financial statements requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the end of each reporting period.

Significant items subject to such estimates and judgements include:

### **Valuation of derivative financial assets**

Valuing derivatives inherently relies on a series of estimates and assumptions to derive what is deemed to be a fair value estimate for a financial instrument. The royalty financing arrangements entered into by the Group includes Buyback options, embedded derivatives which were valued using a Monte Carlo simulation method. This methodology of determining fair value is reliant upon estimations including the probability of certain scenarios occurring, the estimated production rate and timeline of production from the Araguaia and Vermelho projects, future commodity prices as well as discount factors. The most important estimates in determining the valuation of the Buyback options are the future nickel and cobalt prices and its price volatility.

### **Impairment of exploration and evaluation costs**

Exploration and evaluation costs which relate solely to Vermelho have a carrying value at 31 December 2021 of US\$9,625,891 (31 December 2021: US\$8,018,344). Each exploration project is subject to an annual review by either a consultant or senior company geologist to determine if the exploration results returned to date warrant further exploration expenditure and have the potential to result in an economic discovery. This review takes into consideration long-term metal prices, anticipated resource volumes and grades, permitting and infrastructure. In the event that a project does not represent an economic exploration target and results indicate there is no additional upside, a decision will be made to discontinue exploration. The judgement exercised by management relates to whether there is perceived to be an indicator of impairment and that management have concluded that there is not, due to the recovery in the Nickel prices, favourable economics of the Pre-Feasibility Study as well as the fundamentals of the nickel market and expected supply gap in the mid-term.

### **Contingent and deferred consideration**

Contingent consideration has a carrying value of US\$6,779,135 (31 December 2021: £6,734,132). and deferred consideration has a carrying value of US\$5,677,125 at 30 September 2022 (31 December 2021: US\$5,475,538). There are two contingent consideration arrangements in place as at 30 September 2022:

- A contingent consideration arrangement that requires the Group to pay Xstrata Brasil Mineração Ltda the remaining consideration of US\$5,000,000 to be paid in cash, as at the date of first commercial production from the Vale dos Sonhos resource areas within the Enlarged Project area. As of 30 September 2022, this had a carrying value of US\$2,428,445
- A contingent consideration payable to Vale Metais Basicos S.A. comprising US\$6,000,000 consideration in cash as at the date of first commercial production from the Vermelho project and was recognised for the first time in December 2019, following the publication of a PFS on the project. As of 30 September 2022, this had a carrying value of US\$4,350,690.

The deferred consideration arrangement in place as at 30 September 2022 is payable to Companhia Brasileira de Alumino (CBA) in respect of plant equipment.

The critical assumptions relating to the assessment of both the contingent consideration amounts are presented in further detail in the 2021 audited annual report and MD&A as at 31 December 2021.

### **Current and deferred taxation**

The Group is subject to income taxes in numerous jurisdictions. Judgment is required in determining the worldwide provision for such taxes. The Group recognises liabilities for anticipated tax issues based on estimates of whether additional taxes will be due. Where the final tax outcome of these matters is different from the amounts that were initially recorded, such differences will affect the current and deferred income tax assets and liabilities in the period in which such determination is made.

### **Accounting for the royalty finance arrangements**

The Group has a \$25m royalty funding arrangement which was secured in order to advance the Araguaia project towards construction. The royalty pays a fixed percentage of revenue to the holder for production from the first 426k tonnes of nickel produced from the Araguaia project.

The Group also a \$25m royalty funding arrangement which was secured in order to advance the Vermelho project towards feasibility. The royalty pays a fixed percentage of revenue to the holder for production over the life of the mine based on the tonnes of nickel and cobalt produced from the Vermelho project.

The treatment of these financing arrangements as financial liabilities, calculated using the effective interest rate methodology is a key judgement that was made by the Company in prior years and which was taken following obtaining independent expert advice. The carrying value of the financing liability is driven by the expected future cashflows payable to the holder on the basis of the production profile of the mine property. It is also sensitive to assumptions regarding the royalty rate, which can vary based upon the start date for construction of the project and future nickel and cobalt prices. The contract includes certain embedded derivatives, including Buy Back Options which has been separated and carried at fair value through profit and loss.

The future prices of nickel and cobalt and date of commencement of commercial production are key estimates that are critical in the determination of the carrying value of the royalty liability.

The future expected nickel and cobalt prices and, volatility of the nickel and cobalt prices are key estimates that are critical in the fair value of the Buy-Back Options associated with the Royalty financing. The Buy-Back Options gives rise to a derivative financial asset.

Further information relating to the accounting for this liability and the sensitivity of the carrying value to these estimates is presented in the analysis of the carrying value earlier in this document.

### **Accounting for the convertible loan note liability**

The Group has issued US\$65 million of convertible loan notes which was secured in order to advance the Araguaia project towards construction. The convertible loans notes issued by the Group are hybrid financial instruments.

A derivative financial instrument that grants the holder of the instrument an option to convert it into a variable number of ordinary shares of the entity is a hybrid financial instrument. A hybrid financial instrument will have a debt host liability component and an embedded derivative component. The debt host liability and embedded derivative option are required to recognised and measured separately with derivative component being required to be measured first and the residual allocated to the debt host liability.

### **Determination of commencement of capitalisation of borrowing costs**

The date at which the Group commenced capitalisation of borrowing costs was determined to be the point at which the Araguaia Project moved forwards with undertaking an exercise of value engineering to get the project construction ready. This was deemed by management to be at the start of 2020.

### **Hedge accounting**

The Group has entered into a series of monthly non-deliverable forward transactions to reduce the exposure of future BRL foreign exchange risk on the BRL denominated capital expenditure on the Araguaia project.



The Group has elected to adopt the hedge accounting requirements of IFRS 9 Financial Instruments, in respect of its foreign exchange hedging strategy. The Group enters into hedge relationships where the critical terms of the hedging instrument and the hedged item match, therefore, for the prospective assessment of effectiveness a qualitative assessment is performed. Hedge effectiveness is determined at the origination of the hedging relationship. Quantitative effectiveness tests are performed at each period end to determine the continuing effectiveness of the relationship. In instances where changes occur to the hedged item which result in the critical terms no longer matching, the hypothetical derivative method is used to assess effectiveness.

Foreign exchange risk arises when the Group enters into transactions denominated in a currency other than their functional currency. Where the risk to the Group is considered to be significant, the Group will enter into a matching non-deliverable forward foreign exchange contracts with a reputable bank.

The hedged forecast transactions denominated in foreign currency are expected to occur between 14 May 2022 ad 31 March 2024. Gains and losses recognised in the hedging reserve in equity on non-deliverable forward foreign exchange contracts are recognised in the consolidated statement of comprehensive income in the period during which the hedged forecast transaction affects the consolidated statement of comprehensive income, unless the gain or loss is included in the initial carrying value of non-current assets through a basis adjustment (immediate transfer from cash flow hedging reserve to cost of asset) in which case recognition is over the lifetime of the asset as it is depreciated. The ineffective portion of the cash flow hedge is recognised immediately in the profit or loss.

### **Additional Information**

Additional information relating to the Company, including its annual financial statements for its most recently completed fiscal year as well as its annual information form are available on the Company's website at [www.horizonteminerals.com](http://www.horizonteminerals.com) and are also available on SEDAR at [www.sedar.com](http://www.sedar.com).

### **Forward Looking Statements**

*Except for statements of historical fact relating to the Company, certain information contained in this management's discussion and analysis constitutes 'forward-looking information' under Canadian securities legislation. Forward-looking information includes, but is not limited to, statements with respect to the potential of the Company's properties; the future price of minerals; grant of key permits; success of exploration activities; cost and timing of future exploration and development; the estimation of mineral resources; requirements for additional capital and other statements relating to the financial and business prospects of the Company. Generally, forward-looking information can be identified by the use of forward-looking terminology such as 'plans', 'expects' or 'does not expect', 'is expected', 'budget', 'scheduled', 'estimates', 'forecasts', 'intends', 'anticipates' or 'does not anticipate', or 'believes', or variations of such words and phrases or statements that certain actions, events or results 'may', 'could', 'would', 'might' or 'will be taken', 'occur' or 'be achieved'. Forward-looking information is inherently subject to known and unknown risks, uncertainties and other factors that may cause the actual results, level of activity, performance or achievements of the Company to be materially different from those expressed or implied by such forward-looking information, including but not limited to risks related to:*

*The Company's goal of creating shareholder value by concentrating on the acquisition and development of properties that have the potential to contain economic mineral deposits;*

- *future plans for the Araguaia Project and other property interests held by the Company or which may be acquired on a going forward basis, if at all;*
- *management's outlook regarding future trends;*
- *the Company's ability to meet its working capital needs at the current level in the short term; and*
- *governmental regulation and environmental liability.*

*Forward-looking information is based on the reasonable assumptions, estimates, analysis and opinions of management made in light of its experience and its perception of trends, current conditions and expected developments, as well as other factors that management believes to be relevant and reasonable in the circumstances at the date that such statements are made, and are inherently subject to known and unknown risks, uncertainties and other factors that may cause the actual results, level of activity, performance or achievements of the Company to be materially different from those expressed or implied by such forward-looking information, including but not limited to risks related to: unexpected events and delays during permitting; the possibility that future exploration results will not be consistent with the Company's expectations; timing and availability of external financing on acceptable terms and in light of the current decline in global liquidity and credit availability; uncertainty of mineral resources; future prices of minerals; currency exchange*

*rates; government regulation of mining operations; failure of equipment or processes to operate as anticipated; risks inherent in mineral exploration and development including environmental hazards, industrial accidents, unusual or unexpected geological formations; and uncertain political and economic environments. Although management of the Company has attempted to identify important factors that could cause actual results to differ materially from those contained in forward-looking information, there may be other factors that cause results not to be as anticipated, estimated or intended. There can be no assurance that such statements will prove to be accurate, as actual results and future events could differ materially from those anticipated in such statements. Accordingly, readers should not place undue reliance on forward-looking information. The Company does not undertake to update any forward-looking information, except in accordance with applicable securities laws.*