

HORIZONTE MINERALS PLC MANAGEMENT'S DISCUSSION AND ANALYSIS

TWELVE MONTHS ENDED 31 DECEMBER 2020

BACKGROUND

This Management's Discussion and Analysis of the financial position and results of operations is prepared as at 31 March 2021 and should be read in conjunction with the Consolidated Financial Statements of Horizonte Minerals plc as at 31 December 2020 and which have been prepared in accordance with International Financial Reporting Standards and International Accounting Standards.

Horizonte Minerals plc (the 'Company') is a publicly listed company, the shares of which are listed on the London Stock Exchange on the AIM market ('AIM') and on 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 ("Araguaia" or the "Project")

Araguaia is an advanced nickel project being developed by Horizonte as the next ferronickel 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
- ☞ Transaction with Glencore completed in 2016 to acquire the adjacent Vale dos Sonhos deposit places the enlarged project among the largest high-grade undeveloped nickel saprolite projects globally

Feasibility Study ('FS') issued Q4 2018, has demonstrated:

- ☞ Robust economics based on a 28-year life of mine ('LOM') producing ~14,500 tonnes per annum (tpa) nickel in ferro-nickel from a single line Rotary Kiln Electric Furnace ('RKEF')
- ☞ The Project is expected to generate over US\$1.6 billion in free cash flow over LOM using a nickel price of US\$14,000/t
- ☞ NPV₈ of US\$401M and IRR of 20.1% using the base case of US\$14,000, increasing to US\$740M and 28.1% using the consensus price of US\$16,800
- ☞ High grade ore with 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\$6,784/t Ni years 1-10
- ☞ 43-101 Proven and Probable Mineral Reserve Estimate of 27.5 Mt grading 1.69% Ni

Vermelho Nickel-Cobalt Project ("Vermelho")

The Vermelho nickel-cobalt project 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 80 kilometres north west of the Company's Araguaia North ferronickel project. A Pre-Feasibility study ('PFS') was released in October 2019 which confirms Vermelho as a low cost, long life nickel sulphate project.

- ☞ The Study confirms Vermelho 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\$7.3billion¹;
- ☞ An estimated Base Case post-tax Net Present Value¹ ('NPV') of US\$1.7 billion² and Internal Rate of Return ('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 assume a flat nickel price of US\$16,400 per tonne ('/t') for the 38-year mine life
- ☞ C1 (Brook Hunt) cash cost of US\$8,020/t Ni (US\$3.64/lb Ni), defines Vermelho as a low-cost producer
- ☞ Initial Capital Cost estimate is US\$652 million (AACE class 4), including US\$97.7 million of contingencies (equating to approximately 18% of capital)
- ☞ Vermelho 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.

1 USD/BRL 1/3.8 exchange rate applied for life-of-mine

2 NPV calculated using 8% discount rate

HIGHLIGHTS FOR 2020

2020 was dominated by the Covid -19 pandemic, but Horizonte continued to advance its flagship Araguaia project and completed some key milestones during the year.

- ☞ Ms Sepanta Dorri was appointed to the board of Directors, replacing Alex Christopher and bringing with her a wealth of relevant experience in her capacity as Vice President, corporate development of Teck Resources.
- ☞ The Company executed a mandate to arrange a senior secured project finance facility of up to US\$325 million to fund the construction and development of its Araguaia ferro-nickel project. The execution of the mandate is a key milestone in the project financing process for the development of the Araguaia project. The banks under mandate: BNPP, ING, Mizuho, Natixis and Société Générale have extensive experience in providing project financing to greenfield mining projects and were chosen as Mandated Lead Arrangers due to their extensive Latin American project finance experience and the strength of their mining teams.

Highlights from the fourth Quarter of 2020:

The successfully completion of a value engineering exercise on the Araguaia project, demonstrating improvements to the plant design flowsheet to optimise performance. The operational readiness plan being well advanced and all permits in place for commencement of construction.

Ongoing Covid-19 Pandemic

During the period of these financial statements there has been an ongoing significant global pandemic which has had significant knock on effects for the majority of the world's population, by way of the measures governments are taking to tackle the issue. This represents a risk to the Group's operations by restricting travel, the potential to detriment the health and wellbeing of its employees, as well as the effects that this might have on the ability of the Group to finance and advance its operations in the timeframes envisaged. The Group has taken steps to try and ensure the safety of its employees and operate under the current circumstances and feels the outlook for its operations remains positive, however risk remain should the pandemic worsen or changes its impact on the Group. The assessment of the possible impact on the going concern position of the Group is set out in the going concern note above. In addition, because of the long term nature of the Group's nickel projects and their strong project economics management do not consider that COVID has given rise to any impairment indicators. The Group has not received any government assistance.

OBJECTIVES

In the short to medium term the Company's objectives are to:

- ☞ Progress the Araguaia project through to development by securing project financing
- ☞ Advance the newly acquired Vermelho project towards a Feasibility Study

REVIEW OF OPERATIONS

INTRODUCTION

Having completed a PFS in 2016 on the Araguaia project, the Company completed a FS for Araguaia during 2018, with a view to developing Araguaia through to production (subject to funding) around 2021. Work is currently focused around securing the required investment to undertake the construction of Araguaia.

During 2019 Horizonte published the results of a PFS on its 100% owned Vermelho Project.

The Company has a strong institutional shareholder structure, which includes Teck Resources Limited, Lombard Odier Asset Management, JP Morgan, Canaccord Genuity Group, City Financial and Glencore.

ARAGUAIA FERRO-NICKEL PROJECT

Araguaia 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 hydro-electric power. The Carajás Mining District, situated approximately 200km northwest of the Project, is host to a number of major iron and copper mines operated by mining major Vale SA.

The Araguaia Project 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.

Araguaia Feasibility Study Detailed Information

Section 1 - Project Summary

The Project 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 ferronickel ('FeNi') (containing an average of 14,500 tonnes of nickel) per year, for the 28-year mine life. The metallurgical process comprises a single line Rotary Kiln Electric Furnace (RKEF) to extract FeNi from the laterite ore. The RKEF plant and project infrastructure will be constructed over a 31-month period. 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 for the assumptions used, the key findings are highlighted in Table 1, below.

Table 1 Araguaia FS Key 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 ₈	US\$M	401	740
IRR	%	20.1	28.1
Breakeven (NPV ₈) 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 ³	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

3 Average over initial 28 years of processing

The results in Table 1 assumes 100% equity, providing scope for increased returns with the ability to leverage using commercial or other debt. The base case was developed using a flat nickel price of US\$14,000/t Ni in line with Wood Mackenzie's ('WM') short term forecast. Another case was prepared; using a market consensus forecast price of US\$16,800/t Ni representing an upside scenario.

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.

Section 2 – Resources / Reserves and Mining

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

Mineral Resources

The Project 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.

A number of phases of diamond drilling has 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 successfully 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 deposits under consideration for the FS are shown in Table 3. 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: Mineral Resources for ANS and ANN as of February 2017 by material type (0.90% Ni cut-off)

Araguaia	Category	Material type	Tonnage (kt)	Bulk density (t/m3)	Contained Ni metal (kt)	Ni (%)	Co (%)	Fe (%)	MgO (%)	SiO ₂ (%)	Al ₂ O ₃ (%)	Cr ₂ O ₃ (%)
		Limonite	1,232	1.39	15	1.20	0.15	37.43	2.00	17.15	11.07	2.98
Subtotal	Measured	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
Total	Measured	All	18,168	1.35	261	1.44	0.05	16.26	17.51	39.91	5.40	1.17
		Limonite	19,244	1.39	216	1.12	0.12	36.22	2.40	20.46	9.61	2.65
Subtotal	Indicated	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
Total	Indicated	All	101,169	1.30	1,264	1.25	0.06	19.39	16.90	36.26	5.06	1.39
Total	Measured + Indicated	All	119,337	1.30	1,525	1.27	0.06	18.91	16.99	36.81	5.11	1.36
		Limonite	2,751	1.37	30	1.08	0.10	34.92	3.04	22.84	9.23	2.50
Subtotal	Inferred	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
Total	Inferred	All	12,920	1.30	154	1.19	0.06	20.21	14.90	36.77	5.58	1.39

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).

Mineral Reserves

The Mineral Reserves were estimated by Snowden Using the JORC Code (2012 Edition) and quoted in accordance with CIM (2010) requirements.

All economic Indicated Mineral Resources within the 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 mine life of 28 years based on the annual ore throughput to the RKEF plant of 900,000 t/a.

Table 3: Open Pit Mineral Reserves reported at October 2018

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

Notes

1.Mt – million dry metric tonnes.

2. Cut-off used was 1.4% Ni.

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 FAusIMM, an appropriate "Independent Qualified Person" as such term is defined in NI 43-101.

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 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 loss.

The pits were optimised to target the highest-grade material giving a mine life of approximately 28 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 average approximately 1.6% Ni for the remaining mine life.

Section 3 – Processing

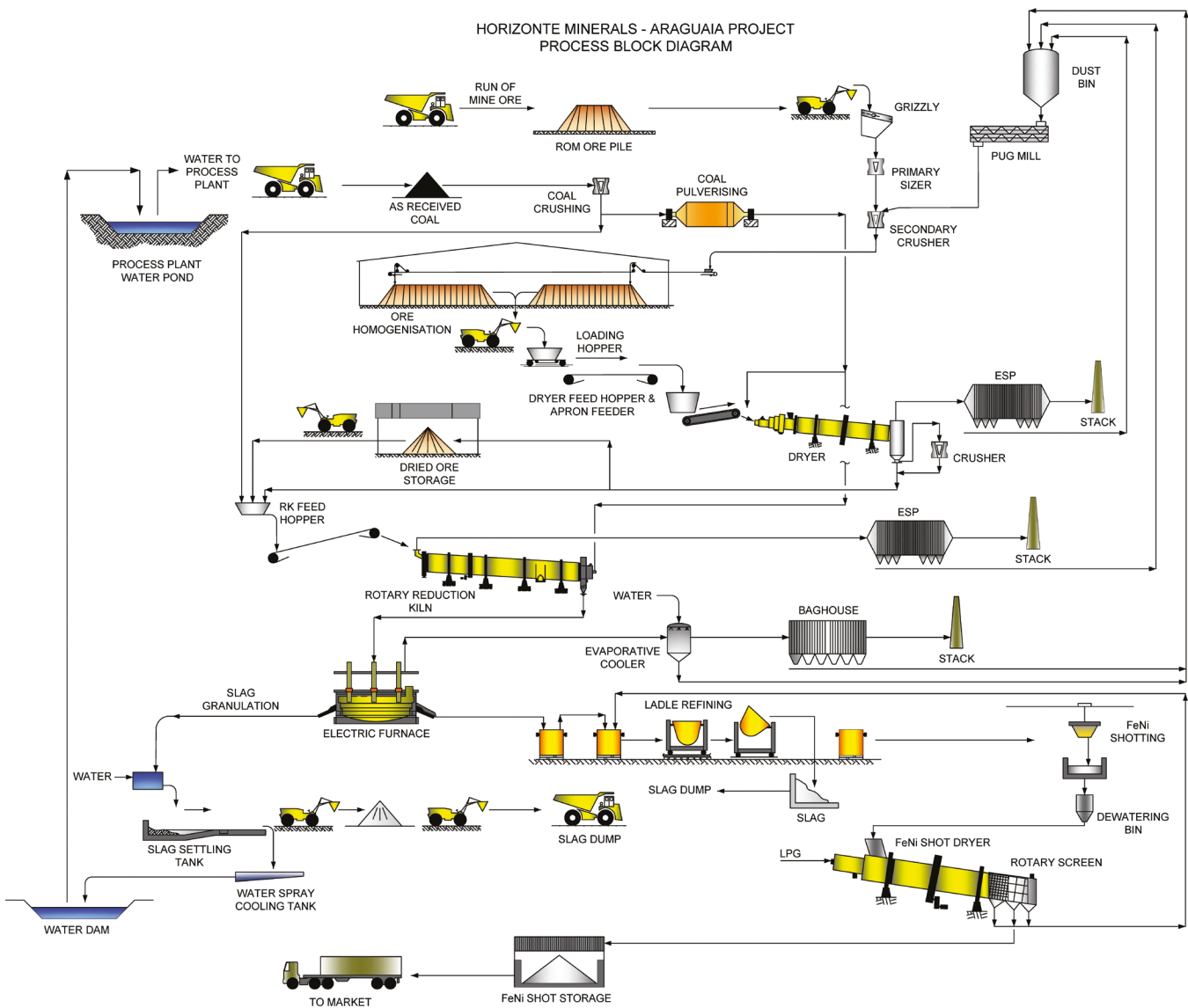
The process plant design, along with capital and operating cost estimates were completed by Ausenco Engineering Canada Inc ('Ausenco'). Ausenco is a global diversified engineering, construction and project management company providing consulting, project delivery and asset management solutions to the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

The Project will utilise a single RKEF processing line from ore receipts through to shotting of the FeNi product, Figure 2. 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 testwork 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 shotting with water, screened, dried and stockpiled prior to dispatch to the port on trucks where it 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



Section 4 – Financial Evaluation

Capital Cost

The 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 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 capex

WBS #	Area	US\$'000
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
Total Costs		443,076

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).

Operational costs

The 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 7(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 Operating cost estimate

Description	Cost/annum (US\$)	US\$/t nickel
Process Plant		
Directs		
Power	32,114,355	2,410
Coal	21,591,099	1,620
Other directs	17,965,039	1,348
Labour	7,831,286	588
Subtotal – Direct costs	79,501,779	5,966
Indirect costs	10,285,640	772
Mining costs	21,112,173	1,584
Total costs	110,889,592	8,322

Summary Economics

The financial model developed 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 forecast price of US\$16,800/t Ni representing upside scenario.

As shown in Table 1, the post 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 post-tax NPV of US\$401million and an IRR of 20.1% using the base case forecast of US\$14,000/t.

Table 6 shows the pre-taxation results.

Table 6: Project 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 ₈	US\$M	456	840
IRR	%	21.2	29.9
Breakeven (NPV ₈) Ni price	US\$/t	10,672	10,672
C1 Cost (Brook Hunt)	US\$/t Ni	8,193	8,193
Production year payback	years	4.0	3.0
Total costs	US\$M	4,137	4,137
Operating cash flow	US\$M	2,421	3,616

Sensitivity Analysis

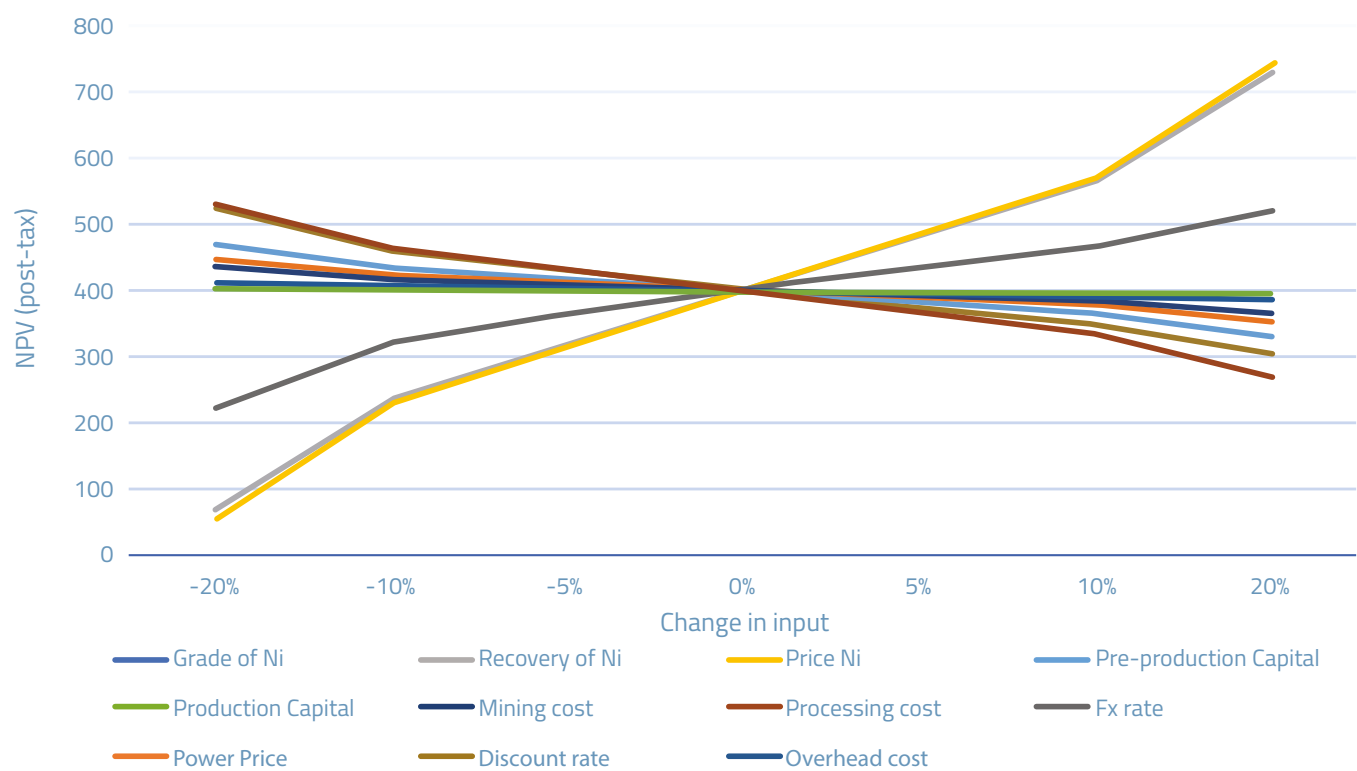
The sensitivity analysis that was completed as part of the FS demonstrates how the NPV₈ is affected by changes to one variable while holding the other variables constant. The results of the sensitivity analysis are presented in Table 7 and Figure 2. The breakeven ('B/E') indicates the change in the variable that will bring the project NPV₈ to US\$0.000 if all other variables remain unchanged. For example, if the grade of Ni reduces by 23.7% the Project will break even on NPV₈.

Table 7: Sensitivity table for the Base Case (US\$14,000/t) NPV₈ after taxation

	-20%	-10%	-5%	0%	5%	10%	20%	B/E ⁴
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	—

⁴ The breakeven change for the variable if all other variables remain unchanged. For example, if the grade of Ni reduces by 23.7% the Project will break even on NPV₈.

Figure 2: Sensitivity to NPV_g for changes in various key inputs



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.

Section 5 – Market Review and Nickel Pricing

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

World nickel demand is 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 purposes of the FS is therefore, US\$14,000/t (US\$6.35/lb).

The composition of ANP FeNi30 is comparable to 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. Forecast production in 2018 is 50.8 Mt, up 4.5% on 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.

Section 6 – Community and Environment

The 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 is working 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 work for the Construction Licence (Licença de Instalação ('LI')). All work has been undertaken to IFC Performance Standards, 1, 2 and 5 and Brazilian CONAMA (environmental) legislation.

The groups have conducted a number of new studies in 2017 and 2018 together with ongoing programs, these included:

- ☞ 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 base line 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.

Community 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

Table 8 Stage 1 capex

WBS	Area	Stage 1 FS Pre- production Capex (US\$ million)
1000	Mine	6.0
3000	Ore Preparation	39.0
4000	Pyrometallurgy	137.5
5000	Material Supply	21.4
6000	Utilities and Infrastructure	106.9
7000	Buildings	9.1
8000	Indirect Costs	82.4
	Contingency	41.0
	Total capex	443.1

The additional costs for the Stage 2 – Second RKEF line shown in Table 8 above, represent sustaining capital expenditure which would be financed once the Stage 1 operation is cash flow positive. Therefore, the pre-production capital costs would remain the same as the FS at US\$443.1 million.

Key additional items required within the plant area for Phase 2 included in Table 8 are ore preparation dryer, kiln and furnace. Items outside of the plant area include additional pumping capacity for the water abstraction pipeline, a second plant cooling water pipeline and an increase in the cooling water dam capacity.

The operating costs after the Stage 2 RKEF line becomes fully operational were estimated based on the FS operating cost estimate. A comparison of the physicals and the economics of the FS and the expansion opportunity are shown Table 9 below.

Table 9 Comparison of physicals and financial KPI's for the FS case

		FS Stage 1	
Item	Unit	Base Case (US\$14,00/t Ni)	Consensus case (US\$16,800/t Ni)
Physicals			
LOM plant feed ⁵	Mt	27.3	27.3
Process rate	kt/a	900	900
Year 1- 10 Ni grade	%	1.91	1.91
LOM Ni grade	%	1.69	1.69
LOM Nickel production	kt	426	426
Strip ratio	w:o	2.1	2.1
Mine life	years	28 ⁶	288
Economics			
Pre-production Capital	US\$ M	443	443
LOM Sustaining Capital cost	US\$ M	143	143
Capital Intensity – Initial capex/t Nickel	US\$/t Ni	1,041	1,041
C1 Cost (Brook Hunt)	US\$/t Ni	8,193	8,193
C1 Cost (Brook Hunt) Years 1- 10	US\$/t Ni	6,794	6,794
Breakeven (NPV8) Ni price	US\$/t	10,766	10,766
Total Revenue	US\$ M	5,970	7,164
Total cost	US\$ M	3,811	3,995
Operating cash flow	US\$ M	2,159	3,169
Net cash flow	US\$ M	1,572	2,582
NPV ₈	US\$ M	401	740
IRR	%	20.1	28.1

⁵ Includes low grade stockpiles processed at the end of the schedule

⁶ 28 years mining following by 3 years of low grade stockpile processing

Section 7 – Next Steps

Subject to Horizonte's Board of Directors' approvals, completion of project financing, and overall nickel market conditions, the Company will continue to advance the Project towards construction, the key development milestones will be split into two phases, with the next six to eight months focussed on Phase 1.

Phase 1

- ☞ Completion of any outstanding metallurgical test work;
- ☞ Completion of basic engineering and move to detailed design engineering;
- ☞ Early works site preparation; and,
- ☞ Commence negotiations with EPCM or EPC providers.

Phase 2

- ☞ Completion of detailed design;
- ☞ Specification, vendor selection, and contracts for all mechanical packages; and,
- ☞ Completion of EPCM or EPC activities scheduled to deliver the project based on a 31 month schedule.

To move the project into the construction phase the company is seeking project financing. Consequently, the company has appointed Endeavour Financial to provide advice in this area. Endeavour will be focusing on the debt and offtake development package for Araguaia. Endeavour Financial is a well-regarded firm with a strong track record of success in the mining industry, specialising in arranging multisource financing for single asset development companies, an example being the recently closed US\$750 million financing package for Lundin Gold's Fruta del Norte project in Ecuador.

VERMELHO NICKEL-COBALT PROJECT

Horizonte's 100% owned Vermelho nickel-cobalt project was acquired from Vale in late 2017, it is located in the eastern part of the Carajás mining district and approximately 80 kilometres north west of the Company's Araguaia North ferronickel project. The Carajás district is an established mining region with well-developed infrastructure in place, including rail, roads and hydro-electric power.

The Vermelho project was discovered by Vale with the objective of becoming its principal nickel-cobalt operation. Vale completed extensive work on the project, which included drilling programmes totalling 152,000 metres, full scale pilot test work and detailed engineering studies. The project was subsequently taken through a feasibility programme with Vale announcing a positive development decision in 2005. The project was designed around the construction of a high pressure acid leaching plant (HPAL) to process the nickel/cobalt laterite ore. The FS included a five-year metallurgical test work and pilot plant programme which delivered 96% and 95% average leaching extraction rates of nickel and cobalt respectively, in addition LME grade nickel – cathode was produced. The Vale 2005 FS showed production capacity of 46,000 tpa of metallic nickel, and 2,500 tpa of metallic cobalt, with an expected commercial life of 40 years.

- ☞ The Vermelho Nickel-Cobalt Mineral Resources, in the Measured and Indicated category, are estimated to be 167.8 million tonnes grading 1.01% Nickel and 0.06% Cobalt (at 0.9% nickel equivalent cut off1)
- ☞ The Measured and Indicated categories of the Mineral Resource are estimated to contain 1.68 million tonnes of nickel and 94,000 tonnes of cobalt

Vermelho Mineral Resources

Section 1 - Project Summary

The Project comprises 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 prior to being fed to a High-Pressure Acid Leach (HPAL) and refining Plant which produces the sulphates. The plant will 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 a 31-month period. 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 support capital ('capex') and operating expenditure ('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 PFS demonstrate that Vermelho shows positive economics (Table 1, below).

Table 1: Key Feasibility Study Project 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 ₈	US\$ M	1,722	2,373
IRR	%	26.3%	31.5%
Breakeven (NPV ₈) nickel price	US\$/t	7,483	7,483
C1 cost (Brook Hunt)	US\$/t Ni	8,029	8,029
C1 cost (Brook Hunt) years 1–10	US\$/t Ni	7,286	7,286
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 a net revenue of US\$100/t of the by-product, kieserite.

The 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 Wood Mackenzie long term Nickel price of US\$19,800/t Ni was also developed

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\$19,034 million. The economic analysis indicates a post-tax NPV8 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.

Section 2 – Resources / Reserves and Mining

The Vermelho nickel 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 in 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 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.

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 2.

Table 2 V1 + V2 – combined classified Mineral Resource report for Vermelho above 0.7% Ni cut-off within the mining licence

Classification	Tonnage (Mt)	Ni %	Ni metal (kt)	Co %	Co metal (kt)	Fe ₂ O ₃ %	MgO ₂ %	SiO ₂ %
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
Measured + Indicated	145.7	1.05	1,526	0.05	77.3	30.9	11.2	41.3
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 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).

Mineral Reserves

Mineral Reserves were prepared for the Project as part of the PFS, using the CIM Definition Standards (2014).

In accordance with the CIM Definition Standards on Mineral Resources and Mineral Reserves (as adopted and amended), Mineral Reserves are classified as either “Probable” or “Proven” Mineral Reserves and are based on Indicated and Measured Mineral Resources only in conjunction “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 3.

Table 3 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. A site inspection on was completed four occasions between March 2017 and September 2019 by Mr Anthony Finch P. Eng. MAusIMM (CP Min.), an appropriate “independent qualified person” as such term is defined in NI 43-101.

Mining

Snowden were commissioned by Horizonte to produce the mining plans of the PFS.

Mining at Vermelho 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 m³ heavy tipper 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. 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.

Section 3 – 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 testwork, 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. Prior to the HPAL process, barren free silica is removed from the ore via a beneficiation process which involves crushing, scrubbing, washing and separation by screening and hydrocyclones. To avoid accumulation of magnesium sulphate in the recycled process water, a portion is sent to the Kieserite (magnesium sulphate monohydrate, MgSO₄•H₂O) 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 the 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 testwork and process design was undertaken on the Project by the former owner, Vale, at scoping, prefeasibility and feasibility stages, included drilling and pitting programs totalling 152,000 m, variability batch testwork, full-scale pilot testwork and detailed engineering studies. A five-year, exhaustive, metallurgical testwork and pilot plant program demonstrated that a high degree of mined ore upgradable using a simple beneficiation processes was possible. The resultant feed delivered 96% average leach extraction for nickel and cobalt via HPAL technology.

Additional testwork has been completed by the current Project owner, HZM, during 2018 and 2019. This testwork 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 PFS and 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 were 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.

Section 4 – Financial Evaluation

Capital Cost

The estimate is based on the AACE class 4 standard, with an estimated accuracy range between -25% and +20% of the final project cost (excluding contingency).

The largest capital item is the HPAL plant. In order to manage initial capital, this is constructed in two phases. The first phase (Stage 1) has a capacity of 1 Mt/a autoclave feed. Stage 2 is brought online in year 3 of production and effectively doubles the HPAL feed rate to 2 Mt/a.

The capex estimate 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 PFS. The estimate is based on an Engineering Procurement and Construction Management ('EPCM') implementation approach and the is the contracting strategy expected to be utilised for the Project.

The total estimated initial (pre-production) capex for the project is US\$652.2 million (after tax, including contingency, excluding growth and escalation). A summary of the capex is shown in Table 4.

Table 4: Summary of capex

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
TOTAL	652.24	446.68	52.28	1,151

The costs in Table 4 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.

Operational costs

The operating costs shown in Table 5 (below) represent 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 5: Summary of opex

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
TOTAL	7,508	8,126	53.13	197.57

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

Summary Economics

The financial model 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 Wood Mackenzie long term price of US\$19,800/t Ni.

The revenue breakdown by product is shown in Table 6.

Table 6 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%
	19,034	100%

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 a net revenue of US\$100/t of the by-product, kieserite

As shown in Table 1, the post taxation model for the Base Case has a 4.6-year payback period with cumulative gross revenues of US\$19,034 million. The economic analysis indicates a post-tax NPV of US\$1,722million 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 7 shows the pre-taxation results.

Table 7: Project economic performance (pre-taxation)

Item	Unit	Nickel price basis (US\$/t Ni)**	
		Base Case (consensus) 16,400	WM Long Term 19,800
Net cash flow	US\$ million	10,379	13,509
NPV ₈	US\$ million	2,342	3,185
IRR	%	28.8%	34.5%
Breakeven (NPV ₈) Ni price	US\$/t	6,946	6,946
C1 Cost (Brooke Hunt)	US\$/t	8,029	8,029
Production year payback	Years	4.0	3.5
Cash costs	US\$ million	7,508	7,520
Operating cash flow	US\$ million	11,526	14,655

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.

Sensitivity Analysis

The sensitivity analysis demonstrates how the NPV₈ is affected by changes to one variable while holding the other variables constant. The results of the sensitivity analysis are presented in Table 8 and Figure 1.

Figure 1: Sensitivity chart

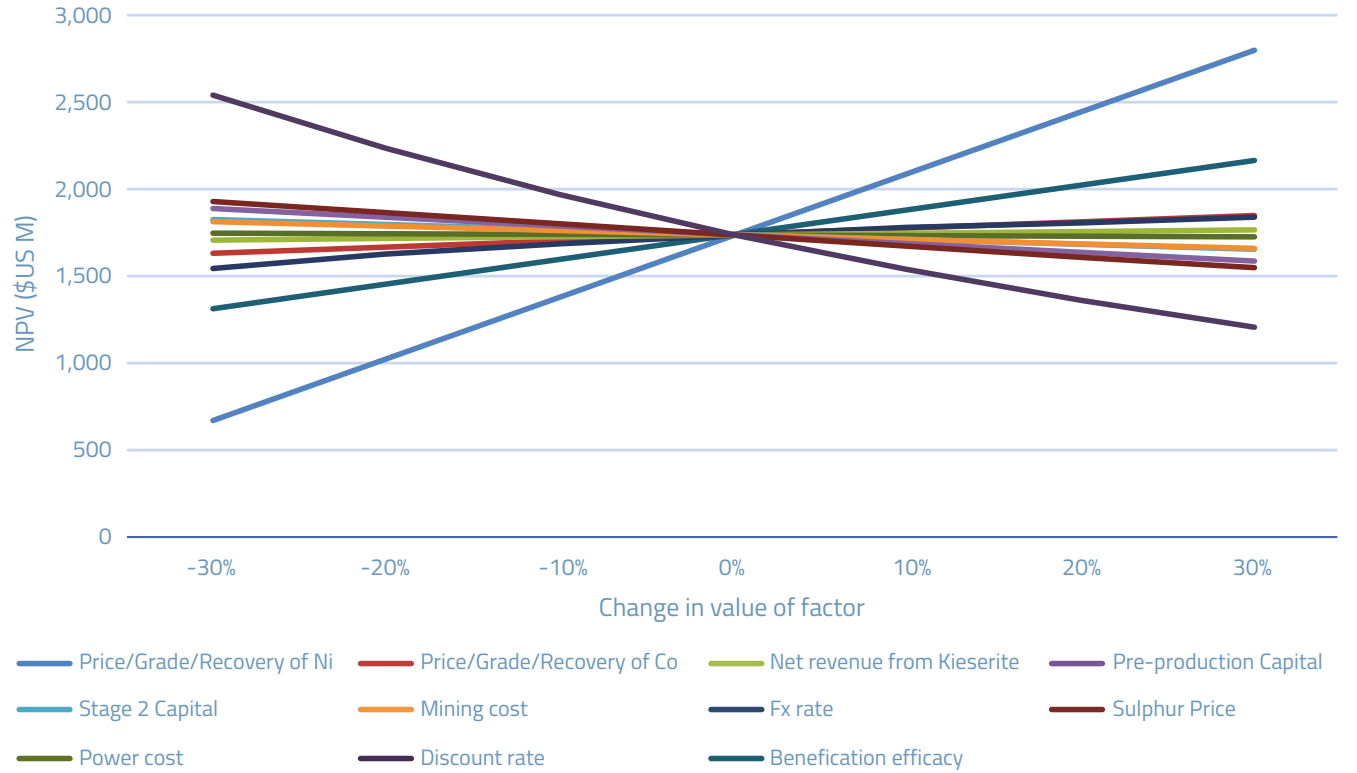


Table 8: Sensitivity table for the Base Case (US\$ 16,400/t) NPV_g after taxation

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

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.

Section 5 – Market Review and Nickel Pricing

In June 2019, HZM commissioned Wood Mackenzie to develop a report on the market for nickel sulphate. As 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

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 suggest 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 delivery and marketing of Kieserite.

Section 6 – Community and Environment

The Project is located 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 a number of 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.

Next Phase of Vermelho Project Development

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.

Summary of Financial and Operating Performance

The Company reports in Pounds Sterling.

	Year ended 31 December 2020 £	Year ended 31 December 2019 £
Loss before taxation	(2,277,364)	(3,171,214)
Cash and cash equivalents	10,935,563	17,760,330
Exploration assets	6,222,872	7,057,444
Mine Development Property	30,706,812	32,260,061
Royalty Liability	(22,053,341)	(20,570,411)
Fair Value of Derivative Asset	1,756,553	2,246,809
Net assets	21,410,700	31,747,057

The loss before taxation of the Group of £2,277,364 for the year ended 31 December 2019 (year ended 31 December 2019: £3,171,214) was after the following principal items:

- ☞ Administrative costs of £2,949,689 (year ended 31 December 2019: £2,563,880) – see 'Results from Operations'
- ☞ Changes in fair value of contingent consideration of £468,766 (year ended 31 December 2019: £598,660) – see 'Results from Operations'
- ☞ A non-cash charge for share based payments of £nil (year ended 31 December 2019: £326,413).
- ☞ A gain on foreign exchange movement of £741,313 (year ended 31 December 2018: loss of £56,261) driven by a weakening of sterling during the year against the US Dollar, Canadian Dollar and volatility in the Brazilian Real, which overall weakened considerably during the year.

Further analysis of Operating Loss is contained in the section 'Results from Operations'.

Also included in Loss before taxation are:

- ☞ Finance income of £nil for the year ended 31 December 2020 (year ended 31 December 2019: £110,036), comprising interest earned on cash deposits and was capitalised to the Mine Development Property during the year in line with the newly adopted policy for borrowing costs. During the year there were finance costs of £231,780 for the year ended 31 December 2020 which solely comprised the unwinding of contingent consideration payable Vale. All other interest charges from the were capitalised to the Mine Development Property during the year. In the year ended 31 December 2019 this was £933,351 which comprised the of £344,952 for the unwinding of discount on both the Xstrata and the Vale deferred consideration, as well as the new unwinding of discount charge and change in fair value of liability and associated derivative asset due to the Orion Royalty of £588,399 (see 'Contingent consideration' in 'Critical Accounting Estimates').

The cash levels of the Group as at 31 December 2020 and 31 December 2019 vary due to the timing and quantum of financing obtained by the Group as well as the level of expenditures by the Group on exploration and administrative activities. The Group secured a royalty investment of \$25 million from Orion Mine Finance during 2019 which positioned the Group well to advance the Araguaia project towards construction. During 2020 the Group was undertaking value engineering work on the Araguaia project which resulted in significant expenditure on the Mine Development asset as well and increased overheads as a result of the work towards closing project financing.

The change in exploration assets between 31 December 2020 and 31 December 2019 is a function of exploration expenditure during the year, together with foreign exchange movements and any asset impairments or revaluations during the period.

The \$25 million upfront payment for a royalty secured from Orion Mine Finance during 2019 and has been valued using the amortised cost basis and is valued as a liability of £22,053,341 at 31 December 2020. This funding is not repayable until the project enters into commercial production and following that payments are made at a fixed percentage of revenue. The royalty is due on revenue less some associated costs on a quarterly basis and has been fair valued based on the expectation of the future payments under the agreement. Included in the agreement are certain embedded derivatives which can under certain circumstances result in the Company having the ability to buy back certain levels of the royalty, the purchase price is driven by the holder obtaining certain milestones on its return on investment. The result of these derivatives are a fair value of derivative asset being recognised on the balance sheet of £1.8 million.

Summary of Cashflows

	31 December 2020	31 December 2019
12 months ended	£	£
Net cash flows used in operating activities	[(3,170,447)]	(2,403,943)
Net cash used in investing activities	(4,001,739)	(4,121,422)
Net cash flow generated from financing activities	93,000	18,241,205
Net increase/(decrease) in cash and cash equivalents	(7,079,186)	11,715,840

The net cash flows used in operating activities for the twelve months ended 31 December 2020 and 31 December 2019 are driven by activities in the management of the Araguaia and Vermelho Projects. These management activities were broadly similar during both period as a result of higher expenditure during 2019 as a result of the Vermelho Pre-Feasibility Study work streams, with increased levels of expenditure during 2020 as a result of greater levels of work to advance Araguaia towards being construction ready and securing the required project finance package. See 'Results from Operations' for further analysis.

Cash used in investing activities has decreased to £4,001,739 in the twelve months ended 31 December 2020 when compared to £4,121,422 in the twelve months ended 31 December 2019. The expenditure was entirely on the groups Araguaia project during the period as a result of undertaken value engineering work to advance the project towards being construction ready.

Cashflows from financing activity in 2020 were due to an employee exercising options, where as in 2019 it was driven the closing of a royalty on the Araguaia project of \$25 million.

Analysis of Selected Financial Information

	31 December 2020	31 December 2019	31 December 2018
	£	£	£
Gross Profit	Nil	Nil	Nil
Operating Loss	(2,277,364)	(2,347,899)	(1,939,663)
Total comprehensive income for the year attributable to equity holders in the Company	(10,429,358)	(5,798,153)	(4,967,669)
Total Assets	50,023,475	59,459,854	42,290,446
Total non current liabilities	(27,980,368)	(27,570,411)	(3,690,524)
Dividend per share	Nil	Nil	Nil

Analysis of the drivers behind the change in Operating Loss from £2,347,899 in 2019 to £2,277,364 in 2020 are set out in the section 'Results from Operations'. The Operating Loss in each of the years principally comprises on-going general and administration costs, exploration costs expensed and foreign exchange movements on cash deposits, coupled with certain one-off items.

Total comprehensive loss attributable to equity holders in the Company for the year ended 31 December 2020 of £10,429,358 included exchange differences arising on translation of foreign operations of £8,151,994 – this is due to the Brazilian Real weakening against Sterling as at 31 December 2020 when compared to 31 December 2019.

Total comprehensive loss attributable to equity holders in the Company for the year ended 31 December 2019 of £5,798,153 included exchange differences arising on translation of foreign operations of £2,626,939 – this is due to the Brazilian Real weakening against Sterling as at 31 December 2019 when compared to 31 December 2018.

Total comprehensive loss attributable to equity holders in the Company for the year ended 31 December 2018 of £4,967,669 included exchange differences arising on translation of foreign operations of £3,028,006 – this is due to the Brazilian Real weakening against Sterling as at 31 December 2018 when compared to 31 December 2017.

The intangible assets of the Company are held in Brazil and are denominated in the currency of that country.

The decrease in total assets from 2019 to 2020 of £9,436,379 from £59,459,854 as at 31 December 2019 to £50,023,475 as at 31 December 2020 is principally due to the retranslation of assets denominated in Brazilian Rael during the year in addition to the loss and exploration expenditure during the year.

The increase in total assets from 2018 to 2019 of £17,169,408 from £59,459,854 as at 31 December 2018 to £42,290,446 as at 31 December 2019 is principally due to the additional cash received from the Orion Royalty Investment of \$25m obtained during the year, offset by the loss and exploration expenditure during the year.

The decrease in total assets from 2017 to 2018 of £1,982,589 from £43,867,259 as at 31 December 2017 to £42,290,446 as at 31 December 2018 is principally reflected by the loss recorded for the year, the loss as a result of retranslating the foreign operations, offset by the addition equity issued as a result of the £2.2M fund raise which was completed in January 2018.

The remainder of the movement in total assets in each of 2020, 2019 & 2018 is due to foreign exchange movements on other assets and liabilities.

Total long-term liabilities as at 31 December 2020 comprises the contingent consideration payable to Vale & Glencore of £5.9 million as well as the £22.1 million royalty liability. In 2019 it comprised the contingent consideration payable to Vale & Glencore of £6.3 million as well as £20.5 million royalty liability. In 2018 the long term liabilities comprise solely the contingent consideration.

The contingent consideration comprises two parts, the first in relation to the Glencore Transaction and payable to Xstrata, ('Xstrata Contingent Consideration'). It comprises two elements: US\$1,000,000 due after the date of issuance of a joint feasibility study for the combined Enlarged Project areas (this was settled during 2019), together with US\$5,000,000 consideration as at the date of first commercial production from any of the resource areas within the Enlarged Project area.

The second is in relation 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 key assumptions underlying the treatment of the contingent consideration of the US\$5,000,000 Xstrata and US\$6,000,000 Vale are the same (see 'Contingent consideration' in 'Critical Accounting Policies and Estimates').

The contingent consideration at the end of 2020 is carried at £5,927,026 and comprises £2,893,876 regarding the amounts payable to Xstrata under the contingent consideration arrangement and £3,033,148 payable to Vale under a contingent consideration arrangement.

The contingent consideration at the end of 2019 is carried at £6,246,071 and comprises £2,975,935 regarding Xstrata Contingent Consideration and £3,270,134 in relation to Vale.

The contingent consideration at the end of 2018 was £4,933,760 and was comprised of only the Xstrata Contingent Consideration.

Deferred tax liabilities had a value of £nil during the current year as the company to which they related was shut down during the year. The deferred tax liability balances were £212,382 as at 31 December 2019 and £228,691 as at 31 December 2018.

Quarterly Financial Information

Quarter Ended	31 December 2020	30 September 2020 Amended	30 June 2020 Restated	31 March 2020 Restated	31 December 2019	30 September 2019	30 June 2019	31 March 2019	31 December 2018
	£	£	£	£	£	£	£	£	£
Revenue	—	—	—	—	—	—	—	—	—
Profit/(Loss) from continuing operations	359,275	(1,882,583)	(724,173)	(29,883)	(920,620)	(1,119,612)	(677,512)	(453,470)	(389,412)
Total comprehensive income attributable to owners of the parent	1,440,257	(3,047,883)	(2,181,977)	(6,639,755)	(3,131,209)	(2,678,997)	1,560,085	(1,548,032)	1,517,988
Basic earnings/(loss) pence per share	0.248	(0.13)	(0.050)	(0.002)	(0.064)	(0.078)	(0.047)	(0.031)	(0.027)

Profit/(loss) from continuing operations in each of the periods disclosed is driven on an on-going basis by administrative expenses, including exploration costs expensed, together with stock option charges, (loss)/gain on foreign exchange and finance income and costs that are not capitalised.

The loss from continuing operations in the first quarter of 2020 of £(29,883) was after administrative expenses of £674,458 and a loss on fair value of contingent consideration of £(296,642) due to a weakening of Sterling against the United States Dollar, in which the contingent consideration is denominated. There was no share-based payment charge and a gain on foreign exchange translation of £941,446.

The loss from continuing operations in the second quarter of 2020 of £(742,173) was after administrative expenses of £890,648 and a gain on fair value of contingent consideration of £91,849 due to a strengthening of Sterling against the United States Dollar, in which the contingent consideration is denominated. There was no share-based payment charge and a gain on foreign exchange translation of £185,376.

The loss from continuing operations in the third quarter of 2020 of £(1,882,583) was after administrative expenses of £777,847 and a gain on fair value of contingent consideration of £163,209 due to a strengthening of Sterling against the United States Dollar, in which the contingent consideration is denominated. There was no share-based payment charge and a loss on foreign exchange translation of £716,018.

The profit from continuing operations in the fourth quarter of 2020 of £359,275 was after administrative expenses of £606,702 and a gain on fair value of contingent consideration of £468,766 due to a strengthening of Sterling against the United States Dollar, in which the contingent consideration is denominated. There was no share-based payment charge and a gain on foreign exchange translation of £340,509.

The loss from continuing operations in the first quarter of 2019 of £(453,470) was after administrative expenses of (£517,987), and a gain on fair value of contingent consideration of £311,048 due to a strengthening of Sterling against the United States Dollar, in which the contingent consideration is denominated. There was also a share based payment charge of £129,993 and a loss on foreign exchange translation of £56,241.

The loss from continuing operations in the second quarter of 2019 of (£6,77,512) was after administrative expenses of (£450,930), and a loss on fair value of contingent consideration of £118,847 due to a weakening of Sterling against the United States Dollar, in which the contingent consideration is denominated. There was also a share-based payment charge of £107,178 and a gain on foreign exchange translation of £52,192.

The loss from continuing operations in the third quarter of 2019 of £1,119,612 was after administrative expenses of £941,996, and a loss on fair value of contingent consideration of £46,640 due to a weakening of Sterling against the United States Dollar, in which the contingent consideration is denominated. There was also a share-based payment charge of £53,662 and a loss on foreign exchange translation of £17,657.

The loss from continuing operations in the fourth quarter of 2019 of £920,620 was after administrative expenses of £688,642, and a loss on fair value of contingent consideration of £446,678 due to a weakening of Sterling against the United States Dollar, in which the contingent consideration is denominated. There was also a share-based payment charge of £35,580 and a loss on foreign exchange translation of £481,030.

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 the first quarter of 2020 the total comprehensive income attributable to equity holders of the company was £(6,639,755) after exchange differences arising on translating foreign operations of (£6,609,872) as the Brazilian Real weakened against Sterling in the quarter.

During the second quarter of 2020 the total comprehensive income attributable to equity holders of the company was £(2,181,977) after exchange differences arising on translating foreign operations of (£1,457,804) as the Brazilian Real continued to weakened against Sterling in the quarter.

During the third quarter of 2020 the total comprehensive income attributable to equity holders of the company was £(3,047,883) after exchange differences arising on translating foreign operations of (£1,165,299) as the Brazilian Real continued to weakened against Sterling in the quarter.

During the fourth quarter of 2020 the total comprehensive income attributable to equity holders of the company was £1,440,257 after exchange differences arising on translating foreign operations of £1,080,981 as the Brazilian Real strengthened against Sterling in the quarter.

During the first quarter of 2019 the total comprehensive income attributable to equity holders of the company was (£1,548,032) after exchange differences arising on translating foreign operations of (£1,094,562) as the Brazilian Real weakened against Sterling in the quarter.

During the second quarter of 2019 the total comprehensive income attributable to equity holders of the company was £882,573 after exchange differences arising on translating foreign operations of £1,560,085 as the Brazilian Real strengthened against Sterling in the quarter.

During the third quarter of 2019 the total comprehensive income attributable to equity holders of the company was (£2,678,997) after exchange differences arising on translating foreign operations of (£1,101,298) as the Brazilian Real weakened against Sterling in the quarter.

During the final quarter of 2019 the total comprehensive income attributable to equity holders of the company was (£3,131,209) after exchange differences arising on translating foreign operations of (£1,991,164) as the Brazilian Real weakened against Sterling in the quarter.

Results from Operations

	12 months ended 31 December 2020 £	12 months ended 31 December 2019 £
Cash expenditure on Exploration activities	4,153,198	3,992,757
Net Movement in PPE & Intangible Assets		
Expenditure (cash + non-cash)	6,253,719	5,928,916
Foreign exchange movement	(8,537,270)	(1,317,887)
Impairment		
Net Movement	(2,283,551)	4,611,029
Analysis of Operating Loss:		
General and Administration Costs		
Compensation	(1,067,047)	(744,128)
Indemnity for loss of office	—	—
Travel/Expenses	(199,352)	(217,925)
Exploration Costs Expensed	(557,283)	(723,628)
Professional Fees	(888,137)	(615,579)
Investor Relations	(181,942)	(184,993)
TSX fees and associated costs	(17,587)	(67,183)
Overheads/Other	(38,342)	(10,444)
Total General and Administration Costs	(2,949,689)	(2,563,880)
Charge for share options granted (non-cash)	—	(326,413)
Fair value movement	(424,500)	—
Changes in fair value of contingent consideration	468,766	598,660
Gain/(Loss) on Foreign Exchange	751,313	(56,261)
Operating Loss	(2,154,109)	(2,347,899)

Cash expenditure on exploration activities has increased slightly from £3,992,757 in the year ended 31 December 2019 to £4,153,198 in the year ended 31 December 2020. The expenditure comprises spend on the Araguaia Project whilst advancing the project through to being construction ready, involving an exercise of value engineering. In the prior year it related to both the pre-feasibility study on the Vermelho project as well and continued development of the Araguaia project.

General and Administration costs have increased by about 15% to £2,949,689 from £2,563,880 for the 12 months ended 31 December 2020 as compared to 2019.

Within General and Administration costs:

- ☞ Compensation of £1,067,047 was higher in 2020 versus 2019, when it amounted to £744,128 due to an overall increase in head count due to the work undertaken on the value engineering exercise as well as increasing the team to prepare Araguaia for development.
- ☞ Exploration costs expensed amounted to £557,283 in 2020 compared to £723,628 in 2019. More costs were capitalised during 2020 compared to 2019 as the Araguaia project entered the development phase, whilst a lot of 2019 was spent securing the Orion Royalty financing.
- ☞ The level of professional fees has increased significantly in 2020 to £888,137 as compared to 2019 when it was £615,579. This is due to the additional costs involved in professional advisory work undertaken to advance the project financing work streams. 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 remained broadly constant during 2020, despite the lack of travel to investor events, significantly increased investor activity was undertaken in preparation for the closure of project finance for Araguaia.
- ☞ The charge for stock options has decreased to £nil during 2020 compared to £326,413 during 2019 as all of the options are now fully vested and no new options were granted during the year. These are non-cash charges.

There have also been a number of non-cash cost items which impacted Profit / (Loss) from operations and which arose in 2020 and 2019, as follows:

- ☞ The change in fair value of contingent consideration in 2020 resulted in a gain of £468,766 as a result of the movement in USD rate during the period, this relates purely to the Vale consideration as the Xstrata finance charges are capitalised to the Mine Development Property under the newly adopted borrowing costs accounting policy.
- ☞ The change in fair value of contingent consideration in 2019 resulted in a gain of £598,660 primarily as a result of the movement in the USD foreign exchange rate during the period. The contingent consideration for Glencore and Vale are both priced in USD and so has decreased in value when denominated in GBP.
- ☞ The embedded derivative within the Royalty agreement is fair valued through the P&L and during the year ended 2020 there was a loss on fair value of £424,500 as a result of the change in some macro economic factors and other drivers of the expected value of such derivatives.

See 'Contingent consideration' in 'Critical Accounting Policies and Estimates' for further analysis and explanation.

Additional movements:

- ☞ The (loss)/gain on foreign exchange is associated with movements arising on cash deposits held by the Company in currencies other than Sterling.

Analysis of Intangible Assets

Group	Goodwill £	Exploration Licenses £	Exploration and evaluation costs £	Total £
Cost				
At 1 January 2019	226,757	6,130,296	29,380,849	35,737,903
Transfer to PPE	—	(3,483,363)	(29,808,123)	(33,291,486)
Additions	—	3,324,005	2,604,911	5,928,916
Exchange rate movements	(16,172)	(813,572)	(488,143)	(1,317,887)
At 31 December 2019	210,585	5,157,366	1,689,495	7,057,444
Additions	—	—	—	—
Exchange rate movements	(52,337)	(151,785)	(632,451)	(836,574)
Net book amount at 31 December 2019	158,248	5,005,581	1,057,044	6,220,872

Exploration and evaluation costs comprise the Vermelho project as the Araguaia project was transferred to PPE as a mine development property in a prior period.

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 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 Araguaia / Vermelho Projects are thus denominated in Brazilian Reais.

Analysis of Property, plant and equipment

Group	Mine Development Property £	Vehicles and other field equipment £	Office equipment £	Land acquisition £	Total £
Cost					
At 31 December 2018	—	106,722	14,424	—	121,146
Foreign exchange movements	(1,270,125)	—	—	—	(1,270,125)
Transfer from exploration and evaluation assets ¹	33,291,486	—	—	—	33,291,486
Additions	238,701	—	—	—	238,701
At 31 December 2019	32,260,061	106,722	14,424	—	32,260,061
Foreign exchange movements	(7,662,482)	(25,162)	(13,052)	—	(7,700,696)
Disposals	—	(5,806)	—	—	(5,806)
Interest capitalised	2,100,521	—	—	—	2,100,521
Additions	4,008,719	1,234	55,989	87,257	4,153,198
At 31 December 2020	30,706,818	76,988	57,361	87,257	30,928,424
Accumulated depreciation					
At 31 December 2018	—	105,536	14,424	—	119,960
Charge for the year	—	703	—	—	703
Foreign exchange movements	—	—	—	—	—
At 31 December 2019	—	106,239	14,424	—	120,663
Foreign exchange movements	—	(16,959)	(8,399)	—	(25,358)
Disposals	—	(38,224)	—	—	(38,224)
Charge for the year	—	6,121	25,275	—	31,396
At 31 December 2020	—	57,177	31,300	—	88,477

Net book amount as at 31 December 2020	30,706,818	19,810	26,061	87,257	30,839,947
Net book amount as at 31 December 2019	32,260,061	483	—	—	32,260,544
Net book amount as at 1 January 2019	—	1,186	—	—	1,186

Other Information Outstanding Share Data

Group and Company	2020 Number	2020 £	2019 Number	2019 £
Issued and fully paid				
Ordinary shares of 1p each				
At 1 January	1,446,377,287	14,463,773	1,432,521,800	14,325,218
Issue of ordinary shares	3,000,000	30,000	13,855,487	138,555
At 31 December	1,449,377,287	14,493,773	1,446,377,287	14,463,773

On 3 September 2020 the Group issued 3,000,000 new ordinary shares at a price of 3.1 pence per share in relation to the exercise of options by an employee of the Company.

On 22 January 2019 the Company issued 13,855,487 as settlement for \$330,000 of deferred contingent consideration that became payable following the issuance of a Feasibility Study including the Vale do Sonhos deposit originally acquired from Glencore.

On 23 February 2021 the company announced a £18.8 million fund raise comprising approximately £12.2m received for the issue of 162,718,353 new ordinary shares by way of a placing, alongside approximately £6.6m for the issue of 88,060,100 special warrants, which entitled the holder to convert the warrants into ordinary shares in the company following the publication of a prospectus to meet the requirement of the Toronto Stock Exchange.

As at the date of this document the number of shares in issue was 1,612,095,640.

Stock Options in the Company

Total options outstanding as at the date of this document amount to 125,350,000 with exercise prices ranging from 3.00 pence to 15.5 pence, a weighted average exercise price of 5.1p and which are all fully vested. There is no other share-based compensation paid by the Company.

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.

As at 31 December 2020 the Company had £10,935,563 in cash at bank and on deposit. As at 31 December 2019 cash at bank and on deposit amounted to £17,760,330.

All of the Company's cash and cash equivalents as at 31 December 2020 are held in interest bearing accounts. The Company has not invested in any short-term commercial paper, asset backed securities or other financial instruments.

The Financial Statements have been prepared on a going concern basis. Although the Group's assets are not generating revenues and an operating loss has been reported, the Directors consider that the Group has 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 exploration and development projects. The Group raised \$26.2 million in February 2021 by way of issuing new shares and special warrants that are convertible into equity upon the publication of a short for prospectus in Canada. The funds held at the year end along with those raised post year end means the Group has cash reserves 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. However, as additional projects are identified and the Araguaia project moves towards production, additional funding will be required.

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 government instructions the Group's offices in London and Brazil have been closed with staff working from home, international travel has stopped and all site work for the two projects has been restricted to a minimum level. However, a number of the key project milestones are still advancing and are currently on track being run by the teams in a virtual capacity.

Whilst the board considers that the effect of Covid-19 on the Group's financial results at this time is constrained to inefficiencies due to remote working, restrictions on travel and some minor potential delays to consultants work streams, the Board considers the pandemic could delay the Araguaia project financing timeline by a number of months (this will be dependent on the duration of the effects of the Covid-19 virus across global markets). However, the additional funding described above provides sufficient financing to enable the Company to continue its operations for at least 12 months should any additional cost arise as a result of any potential deterioration in the global Covid-19 situation.

As a result of considerations noted above, the Directors have a reasonable expectation that the Group and Company have adequate resources to continue in operational existence for the foreseeable future. Thus, they continue to adopt the going concern basis of accounting in preparing these Financial Statements.

Contractual commitments

	2020	2019
Group	£	£
Mine Development Property	7,314,000	—

The Company has conditional capital commitments totalling £7.3 million (\$10m) relating to certain items of plant and equipment. These commitments remain subject to a number of conditions precedent which have not been met at the date of this report. \$1.5m of the purchase will be payable upon completion with the remaining amounts payable over future periods with \$5m payable after commencement of sales by the Araguaia project.

For details concerning the commitments associated with the purchase of GAP, refer to 'Details of Glencore Transaction'. For details of the contingent consideration payable to the former owners of Vermelho, refer to 'Contingent consideration payable'

Transactions with Related Parties

The charges levied during the nine months ended 31 December 2020 and the comparative period in 2019 are as follows and cancel out upon consolidation:

	Brazil		Total	
	12 m/e 31 December 2020 £	12 m/e 31 December 2019 £	12 m/e 31 December 2020 £	12 m/e 31 December 2019 £
Intragroup charges	219,944	171,710	219,944	171,710

Responsibilities, controls and policies

Evaluation of disclosure controls and procedures

Our Chairman and CEO, and Interim Chief Financial Officer are responsible for establishing and maintaining disclosure controls and procedures for the Company. As such, we maintain a set of disclosure controls and procedures designed to ensure that information required to be disclosed in filings is recorded, processed, summarized and reported within the time periods specified by the Canadian Securities Administrators rules and forms. In designing and evaluating the disclosure controls and procedures, management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving the desired control objectives, and management necessarily is required to apply its judgment in evaluating the cost benefit relationship of possible controls and procedures.

Our internal controls over financial reporting are designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with IFRS. Because of 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.

Control weakness

As part of a review of the control environment the requirement for some non cash restatements to the interim financial statements for the quarter ended 30 September 2020 were required under IFRS, it also became clear that the Company did not have sufficient accounting resources with relevant technical accounting skills to address issues related to the financial statement close process. Because of the size of the Company and its staff complement, we were not able to sufficiently design internal controls to provide the appropriate level of oversight regarding the financial recordkeeping and review of the Company's financial reporting. This weakness has been identified and is in the process of being address and will continue to be addressed through 2021 with an increase and restructure of the finance function. As the Company continues to improve its internal controls over financial reporting, we have engaged outside consultants, expert in the valuation of complex financial instruments.

Risks and uncertainties

Please refer to the information presented in the heading "Risk Factors" on pages [41] to [49] of our Annual Information Form for the year ended December 31, 2020.

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 include:

Impairment of exploration and evaluation costs

Exploration and evaluation costs have a carrying value at 31 December 2020 of £6,062,624 (2019: £7,057,444). Management tests annually whether exploration projects have future economic value in accordance with the accounting policy. 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 Directors have reviewed the estimated value of each project prepared by management and do not consider any impairment is necessary.

Estimated impairment of goodwill

Goodwill has a carrying value at 31 December 2020 of £158,248 (2019: £212,382). The Group tests annually whether goodwill has suffered any impairment, in accordance with the accounting policy.

Management has concluded that there is no impairment charge necessary to the carrying value of goodwill.

Contingent consideration

Contingent consideration comprises two separate arrangements and has a carrying value of £5,927,025 at 31 December 2019 (2018: £6,246,069).

Contingent Consideration payable to Xstrata Brasil Mineração Ltda

The first relates to a contingent consideration arrangement that requires the Group to pay Xstrata Brasil Mineração Ltda consideration after the date of issuance of a Feasibility Study ('FS') comprising the Araguaia project and the Vale dos Sonhos ('VdS') (US\$330,000) and Serra do Tapa ('SdT') (US\$670,000) project areas ('GAP') (together the 'Enlarged Project'), to be satisfied in shares in the Company (at the 5 day volume weighted average price taken on the tenth business day after the date of such issuance) or cash, at the election of the Company. The VdS project area was included in the FS published in October 2018 and this contingent consideration was satisfied by the issue of shares in the Company in January 2019, the SdT deposit is not currently included in the Araguaia project development plan as so no contingent consideration has been recognised in respect of the US\$670,000 that might become payable; and

Remaining contingent consideration of US\$5,000,000 to be paid in cash, as at the date of first commercial production from any of the resource areas within the Enlarged Project area. Given the recent publication of the Feasibility Study which includes an area purchased from Glencore and the securing of the royalty funding for the development of the project, this continues to be recognised as contingent consideration as it will become payable when the project enters commercial production. It is carried at £2,893,876, reflecting that it is discounted to reflect its current value. The carrying value has been adjusted to reflect that the date of commercial production has been reassessed in the year.

A key judgement in determining the estimated value of the contingent consideration for Glencore is the timing of the assumed date of first commercial production.

Deferred consideration payable to Vale S.A

The second contingent consideration arrangement relates to the acquisition of Vermelho.

On 19 December 2017 the Company announced that it had reached agreement with Vale S.A ("Vale") to indirectly acquire through wholly owned subsidiaries in Brazil, 100% of the advanced Vermelho nickel-cobalt project in Brazil ("Vermelho").

The terms of the Acquisition required Horizonte to pay an initial cash payment of US\$150,000 with a further US\$1,850,000 in cash payable on the second anniversary of the signing of the asset purchase agreement. This was paid by the Group in December 2019 and is no longer included in deferred consideration.

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 with the publication of the Pre-Feasibility Study during 2019 for the Vermelho project, there is a reasonable probability that the project will advance through to production and therefore have recognised this contingent consideration within liabilities for the first time during the year. It is carried at £3,033,148, reflecting that it is discounted to reflect its current value.

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.

Deferred tax liabilities have been recognised on the fair value gains in exploration assets arising on the acquisitions of Araguaia Niquel Mineração Ltda (formerly Teck Cominco Brasil S.A) and Lontra Empreendimentos e Participações Ltda. A deferred tax asset has been recognised on acquisition of Araguaia Niquel Mineração Ltda to the extent that it can be set against the deferred tax liability arising on the fair value gains. In determining whether a deferred tax asset in excess of this amount should be recognized management must make an assessment of the probability that the tax losses will be utilized and a deferred tax asset is only recognised if it is considered probable that the tax losses will be utilized.

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 arrangement entered into by the Group includes a Buyback option, an embedded derivatives which was 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 project, future nickel prices as well as discount factors. The most important estimates in determining the valuation of the Buyback option are the future nickel price and its price volatility.

Property plant and Equipment

Mine development property

Following determination of the technical feasibility and commercial viability of a mineral resource, the relevant expenditure is transferred from exploration and evaluation assets to mine development property.

Further development costs are capitalised to mine development properties, if and only if, it is probable that future economic benefits associated with the item will flow to the entity and the cost can be measured reliably. Cost is defined as the purchase price and directly attributable costs. Once the asset is considered to be capable of operating in a manner intended by management, commercial production is declared, and the relevant costs are depreciated. Evaluated mineral property is carried at cost less accumulated depreciation and accumulated impairment losses.

Depreciation and amortisation

Mine development property is not depreciated prior to commercial production but is reviewed for impairment annually.

Upon commencement of commercial production, mine development property is transferred to a mining property and is depreciated on a units-of-production basis. Only proven and probable reserves are used in the tonnes mined units of production depreciation calculation.

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 treatment of this financing arrangements as a financial liability, calculated using the effective interest rate methodology is a key judgement that has been made by the Company and which has been taken following obtaining independent expert advice. The carrying value of the financing liability is also sensitive to assumptions regarding the royalty rate and future nickel prices. Further information relating to the accounting for this liability and the sensitivity of the carrying value to these estimates is provided in note 18a) in the audited financial statements for the year ended 31 December 2020.

The future price of nickel 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 price and, volatility of the nickel prices are key estimates that are critical in the fair value of the Buy Back Option associated with the Royalty financing.

Borrowing costs

Borrowing costs are expensed except where they relates to the financing of construction or development of qualifying assets.

Borrowing costs directly related to financing of qualifying assets in the course of construction are capitalised to the carrying value of the Araguaia mine development property. Where funds have been borrowed specifically to finance the Project, the amount capitalised represents the actual borrowing costs incurred net of all interest income earned on the temporary re-investment of these borrowings prior to utilisation. Borrowing costs capitalised include:

- ☞ Interest charge on royalty finance
- ☞ Adjustments to the carrying value of the royalty finance
- ☞ Unwinding of discount on contingent consideration payable for Araguaia

All other borrowing costs are recognized as part of interest expense in the year which they are incurred.

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 SEDAR at 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; 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.

