



Fast Facts

ASX: **ODM**

Shares on Issue: **153.7m**

Board of Directors & Management

Simon Mottram

Chief Executive Officer

Jason Bontempo

Executive Director

Aaron Bertolatti

Director & Co Secretary

Justin Tremain

Non-Executive Director

ODIN TO ACQUIRE ZINC DEPOSIT FROM VALE S.A

- Odin Metals Limited (ASX: ODM) ("Odin" or "Company") has signed an option to acquire 100% of the Monte Azul Zinc Project¹ in Brazil ("Monte Azul" or the "Project") from Vale S.A. ("Acquisition")
- The Board of Odin will be strengthened with the proposed appointment of Mr Simon Mottram and Mr Luis Azevedo as Executive Directors, both previously Executive Directors of Brazilian focussed copper producer Avanco Resources Ltd that was acquired by Oz Minerals (ASX: OZL) in 2018 for c.\$440m
- Historical resource estimate of 7.6Mt at 6.1% ZnEq^{2,3,4,*} including a higher-grade core of 3.6Mt @ 9.0% ZnEq⁴
- Drilling to date comprises of 57 diamond holes and 6 RC holes for 17,300m, over a strike length of approximately 1.4km
- Monte Azul remains open at depth and along strike, along with a significant 40km magnetic anomaly that remains underexplored
- Agreements to consolidate the broader region that includes the highly prospective Alto Alegre Zn prospect to the northeast signed
- Initial metallurgical test-work shows ore is amenable to conventional froth flotation, and produces high-grade concentrates with recoveries exceeding 80% in first pass tests
- Odin has also secured the entire regional strike extension in two separate deals, which include the highly prospective Alto Alegre zinc prospect to the northeast
- Significant existing infrastructure in the region with Nexa's Vazante and Morro Agudo zinc operations, and Tres Marias zinc smelter lie ~400km southwest
- Discovery Capital Partners acted as Lead Manager to the Capital Raising and Corporate Advisor to the Transaction and has received firm commitments for a placement of \$4.25m

Commenting on the acquisition, CEO Simon Mottram said, *"The Project represents an excellent opportunity for Odin to enhance its current portfolio with an advanced stage base metal project, with strong potential for resource expansion and near-term development. We have assembled a strong in-country team with a proven track record of execution and value creation in Brazil"*

* Odin cautions that the Monte Azul resource estimate is a foreign estimate and is not reported in accordance with the JORC Code. A competent person has not done sufficient work to classify the foreign estimate as a mineral resource in accordance with the JORC Code, and it is uncertain that following evaluation and/or further exploration work that the foreign estimate will be able to be reported as mineral resources in accordance with the JORC Code.

It is the Company's opinion that all the elements included in the metal equivalents calculation have a reasonable potential to be recovered and sold.

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MONTE AZUL PROJECT HIGHLIGHTS

Monte Azul provides Odin with exposure to a near term base metals development asset with significant resource upside at depth and along strike, along with a significant 40km magnetic anomaly that remains underexplored.

Figure 1: Location of the Monte Azul Project



Location

The Project is located in the established mining state of Minas Gerais, in an agriculture-based region in proximity to other operating mines and only 6km off national highway BR122. The Project is contained within a single freehold farm with drilling access in place.

Nexa's Vazante and Morro Agudo zinc operations, and Tres Marias zinc smelter lie ~400km southwest. Grid power and water are available locally, as are suppliers and mining services with the towns of Porteirinha (~40,000 inhabitants) and Janaúba (~70,000 inhabitants) both located ~18km away on the highway.

Rail facilities pass very close to the Project through the town of Janaúba, affording rail access to the local smelting facilities or alternatively to ports in the neighbouring states of Espírito Santo or Rio de Janeiro.



Resource

The Project reports a Foreign Resource Estimate of **7.6Mt at 6.1% Zn Eq^{2,3,4}**, including a **higher-grade core** of **3.6Mt @ 9.0% Zn Eq⁴** with significant Resource upside at depth and along strike. Drilling to date comprises of 57 diamond holes and 6 RC holes for 17,300m, over a strike length of approximately 1.4km.

The deposit is a relatively new discovery (c.2000) and has never been mined previously or disturbed. The deposit is interpreted to comprise of 3 lenses that are located closely within the known strike, with the majority of tonnage and higher grades found in the central lens. All 3 lenses are open at depth/plunge, with the added potential that the lenses may also join to make a single larger lens, since the gaps between the lenses are currently interpreted from only a couple of wide spaced drill holes or no drilling at all.

It is anticipated that early work will concentrate on the central lens, which contains the majority of metal tonnes, higher grades and greater thicknesses. The average thickness of the central lens is above the commonly regarded 4m minimum thickness required for full scale mechanised underground mining methods.

Foreign Resource Estimate – Grade/Tonnes Sensitivity

Resource Grade/Tonnes Sensitivity				
Cut-Off Zn%	Tonnage (x 1,000)	Zn %	Pb %	Zn Equivalent %
7.0	2,100	9.2%	1.4%	10.4%
6.0	2,800	8.6%	1.3%	9.8%
5.0	3,600	7.9%	1.2%	9.0%
4.0	4,900	7.0%	1.0%	7.9%
3.0	6,000	6.3%	0.9%	7.1%
2.0	6,900	5.8%	0.8%	6.5%
None	7,600	5.4%	0.8%	6.1%

Exploration Potential

In addition to near term potential to grow the existing Foreign Resource Estimate, the Company has expanded its regional land holding to cover the vast majority of the belt through two separate deals, which includes the highly prospective Alto Alegre Zinc prospect to the northeast where zinc mineralisation again outcrops at surface.

Outside of Monte Azul and the Alto Alegre target, the ~40km long belt has had no known exploration. This unexplored part of the belt is for the most part covered by younger sediments (Macaúbas Group) that can be up to 900m thick, however strongly ferruginous rocks (Banded Iron Formation) within the prospective (Riacho dos Machados) sequence that hosts Monte Azul and other known zinc occurrences clearly define the sequence in the airborne magnetics.



Metallurgy

Ore is of a SEDEX style with typical simple SEDEX Zn-Pb metallurgy. A single series of preliminary metallurgical testwork has been carried out in historical work based on a 100kg (See table below) composite sample which had an average grade that is considered typical.

Initial Metallurgical Testwork Sample (100kg) – Composite Grade of Sample

Sample	Zn %	Pb %	Fe %	S %
	6.8	1.2	7.9	6.2

Initial metallurgical results indicate excellent recoveries with first pass results of >80% recovery, which also produced consistent high-grade concentrates. The Company will complete detailed metallurgical testwork to continue to de-risk the Project.

Initial Metallurgical Testwork Results (100kg sample size)

Test #	Sample	Grade (%)				Recovery (%)	
		Zn	Pb	Fe	S	Zn	Pb
5	Zn Concentrate	48.6	0.54	8.4	33.0	83.0	5.1
	Pb Concentrate	7.3	63.8	2.2	16.5	1.7	80.9
7	Zn Concentrate	57.3	0.41	5.5	32.9	81.1	3.2
	Pb Concentrate	6.2	72.9	1.2	16.4	1.2	75.3

100kg Initial Metallurgical Testwork Sample – Work Index Results

Test	Work Index KWh/st	Work Index KWh/t
1	11.94	13.13
2	11.91	13.10

PLANNED WORK PROGRAMME FOR MONTE AZUL

The near-term project milestones to be undertaken in CY2020 include:

- Infill and extensional drilling within the known deposits to test the continuity of high-grade zones;
- Complete a maiden JORC 2012 Mineral Resource Estimate; and
- Metallurgical testwork and process route determination.



BOARD CHANGES

The Company is pleased to announce the appointment to the board of Mr Simon Mottram and Mr Luis Azevedo. Prior to Odin, Mr Mottram and Mr Azevedo were part of the successful executive team (Executive Directors) that advanced ASX listed Avanco Resources Limited in Brazil from discovery through to production, building a successful mining company with an impressive asset portfolio, that was subsequently purchased by Australian copper producer OZ Minerals (ASX: OZL) for circa \$440M in 2018. Mr Mottram and Mr Azevedo have extensive in country expertise in Brazil that Odin is excited to leverage as the Company progresses the Monte Azul Project.

Mr Simon Mottram – Proposed Executive Director

Mr Mottram is a geologist with over 25 years' experience predominantly in base and precious metals. Mr Mottram has held both executive and senior management positions with several successful mining companies both in Australia and overseas. He has progressed multiple discoveries through to commercial mine development and has been responsible for several significant exploration successes.

His experience aligns extremely well with Odin's zinc-copper strategy and future business plans. Mr Mottram is an expert in the application of modern exploration techniques, economic geology and development, large-scale drill programmes and feasibility studies. Mr Mottram is a graduate of Melbourne RMIT University, a Fellow of the AusIMM and is fluent in Portuguese.

Mr Luis Azevedo - Proposed Executive Director

Mr Azevedo is a Brazilian National with over 35 years' of international resource experience. Mr Azevedo qualified as a geologist at the University of Rio de Janeiro in 1985, and subsequent to working as a geologist, he completed a law degree at the University of Candido Mendes in 1992 and obtained his Master of Law from Pontifical Catholic University Rio de Janeiro in 1994.

Mr Azevedo has held senior positions with several major resource companies including Western Mining Corporation, Barrick Gold and Harsco. In 2004, he founded the very successful legal firm FFA Legal based in Rio de Janeiro, which provides specialist legal and technical support to resource companies operating in Brazil.

MONTE AZUL ACQUISITION - KEY TERMS

1. Vale grants Odin an exclusive option to purchase the Project until the later of 30 days from the date of execution of the sale and purchase agreement ("SPA") and 28 February 2020
2. Within 15 days of Odin notifying Vale that it wishes to exercise its option to purchase the Project, Odin shall pay Vale US\$500,000
3. Within 1 year after the payment in point 2 Odin to pay VALE US\$1,500,000 and the Project will be transferred to Odin
4. Within 2 years after the payment in point 2 Odin to pay VALE US\$2,000,000
5. Within 4 years after the payment in point 2 Odin to pay VALE US\$3,000,000



6. Odin to pay Vale 1% NSR on any zinc and lead production over and above the contained zinc metal equivalent of 470,000t as per the Foreign Resource Estimate

JOINT VENTURE AND OPTION AGREEMENTS – KEY TERMS

Odin has also entered into an exploration Joint Venture (“**JV**”) with IMS Engenharia Mineral Ltda (“**IMS**”) consisting of 8 granted exploration licences covering an area of approximately 105km². Key terms include:

- the JV is precedent on the Vale agreement becoming effective
- the exploration licences will be transferred to Odin upfront
- 1,000,000 Odin shares will be granted to the quota holders of IMS within 120 days of exercising the option (12 Months Escrow)
- Odin can earn 70% by expending AU\$2,000,000 in exploration over 3 years
- At Odin’s election it may acquire the remaining 30% by paying A\$2,000,000 (half of this amount can be paid through the issuance of Odin shares to the quota holders of IMS, subject to shareholder approval)
- 1% NSR is payable to IMS on production above 120,000t of zinc metal from the acquired license area

In addition, Odin has entered into a binding letter of intent with GRB Grafite Do Brasil Mineração Ltda (“**GRB**”), who has been granted the right to 15 exploration licences (12 granted and 3 applications), covering an area of approximately 260km². Key terms include:

- a due diligence period of 10 days, following which Odin can elect to exercise the option to purchase the 15 Exploration Licenses
- if Odin elects to exercise the option a definitive contract will be negotiated and entered into by both parties that will include payments to GRB of:
 - 5,000,000 Odin shares will be granted to GRB or its nominees (12 months escrow)
 - A 1-year deferred payment of A\$150,000 in Odin shares and A\$100,000 in cash
 - An underlying 1% NSR is payable on any production from the acquired licenses to Falcon Metais Ltda.

PLACEMENT

Discovery Capital Partners, in its capacity as Lead Manager, has received firm commitments for a placement of \$4.25m at a price of \$0.040 per share for a total of approximately 106.3m shares:

- The offer price represents a 33.3% discount to the last close of \$0.060 and a 44.8% discount to the 15-day VWAP of \$0.0724
- Tranche 1: ~\$0.92m for 23.1m shares under remaining ASX LR7.1 15% placement capacity
- Tranche 2: ~\$3.33m for 83.2m shares conditional on shareholder approval

Placement fees payable to the Lead Manager are 6% on all funds raised.



Subject to shareholder approval, Odin is to issue 30m Performance Options to Directors, Management and Advisors that will align key personnel to the successful progression of Monte Azul. The Performance Options are valid for 4 years from the date of issue with a strike price of \$0.0001 per Option. The Performance Options will be subject to a number of vesting conditions as follows:

- 7.5m Options (25%) to vest immediately upon shareholder approval;
- 7.5m Options (25%) vest upon the announcement of a JORC 2012 Inferred Resource on the Monte Azul Project; and
- 15.0m Options (50%) vest 24 months from the date of issue, subject to the 15-day VWAP of Odin exceeding \$0.20.

The full terms of the Performance Options will be disclosed in the notice of meeting.

In addition, Discovery Capital Partners in its capacity as Lead Manager and Corporate advisor, together with a syndicate of nominated brokers shall receive up to a total of 10m Advisor / Broker Facilitation Options on the following terms:

- 3.50m Options with a strike price of \$0.080 per Option expiring 31 December 2022;
- 3.25m Options with a strike price of \$0.100 per Option expiring 31 December 2022; and
- 3.25m Options with a strike price of \$0.120 per Option expiring 31 December 2022.

Disclosure required under Listing Rule 3.10.3

	Placement shares	Advisor / Broker Options	Performance Options
Class of securities	Fully paid ordinary shares	Unquoted options	Unquoted options
Number	Approximately 106.25 million	10.0 million	30.0 million
Principal terms	ODM quoted shares	<ul style="list-style-type: none"> • 3.50 million options exercisable at 8 cents expiring 31 December 2022 • 3.25 million options exercisable at 10 cents expiring 31 December 2022 • 3.25 million options exercisable at 12 cents expiring 31 December 2022 	Options are valid for 4 years from the date of issue with a strike price of 0.1 cent per Option
Issue price	\$0.040 per share	Nil issue price	Nil issue price
Purpose of the issue	Progress the transaction with Vale, exploration on the Monte Azul Project and working capital	Broker remuneration	Board, management and advisor performance options
Security holder approval required	<ul style="list-style-type: none"> • 23.1m shares under remaining LR7.1 – our 15% placement capacity 	Subject to shareholder approval at the general meeting	Subject to shareholder approval at the general meeting



	Placement shares	Advisor / Broker Options	Performance Options
	<ul style="list-style-type: none"> 83.2m shares conditional on shareholder approval 		
Class of security holders	Sophisticated and professional investors	Brokers to the placement – Discovery and syndicates	Board, management and advisors
Vesting conditions	Nil	Nil	<ul style="list-style-type: none"> 7.5 million Options (25%) to vest immediately upon shareholder approval 7.5 million Options (25%) vest upon the announcement of a JORC 2012 Inferred Resource on the Monte Azul Project 15.0 million Options (50%) vest 24 months from the date of issue, subject to the 15-day VWAP of Odin exceeding \$0.20

For further information please visit www.odinmetals.com.au or contact:

Simon Mottram - Chief Executive Officer

Email: info@odinmetals.com.au

1. Mineralisation at the Monte Azul Project is of a Sedimentary Exhalative (SEDEX) type
2. Zinc Equivalent "ZnEq"
3. Zinc Equivalent is calculated based on \$1.10/lb Zn and \$1.00/lb Pb (assuming 80% recovery for both). Recoveries are based on those recorded in first pass metallurgical testwork shown in Monte Azul Project Highlights – "Initial Metallurgical Testwork Results (100kg sample size)". $ZnEq = Zn\% + ((Pb\% * \$1.0) / \$1.1)$. ASX Listing Rule 5.12 is contained in Appendix 2
4. Individual grades for all metals are shown in the table Monte Azul Project Highlights – "Foreign Resource Estimate – Grade/Tonnes Table"
5. For complete table of results see Appendix 3
6. Grades are uncut. Depths and widths are downhole

Competent Persons Statement:

The information in this report that relates to Exploration Results, Metallurgical Results and Mineral Resources provided under ASX Listing Rule 5.12.2 through to 5.12.7 is an accurate representation of the available data supplied to Odin as part of the foreign resource.



Mr Mottram is a Fellow of the Australasian Institute of Mining and Metallurgy and a full-time employee of Odin Metals Limited. Mr Mottram has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person (CP) as defined in the 2012 Edition of the Joint Ore Reserves Committee (JORC) "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves". Mr Mottram consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.



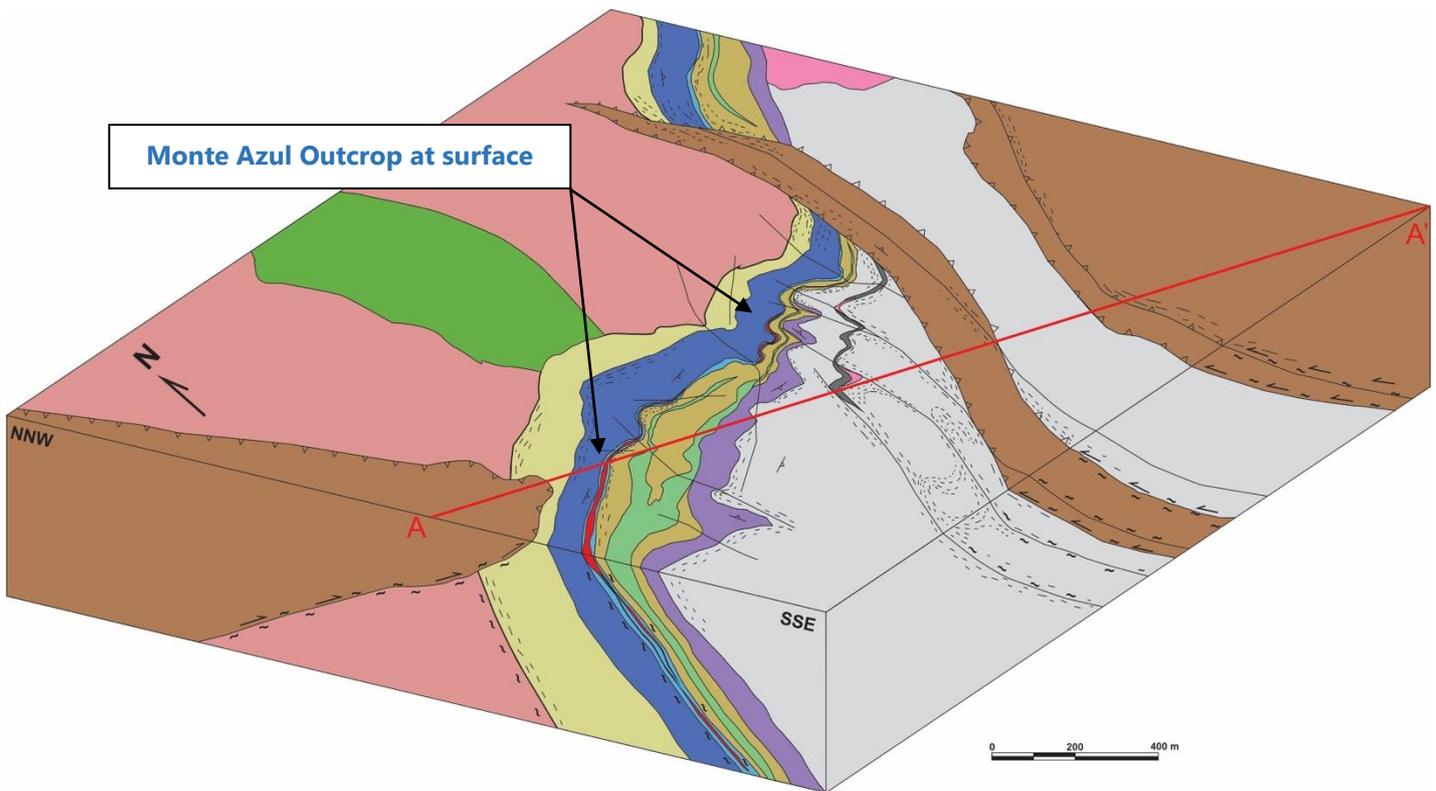
APPENDIX 1 – Additional Information

Geology and Mineralisation

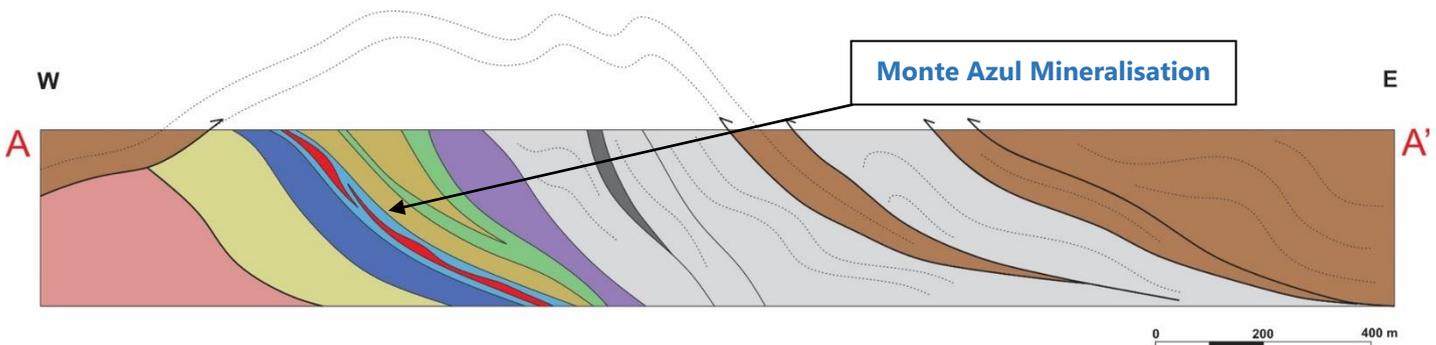
The Monte Azul project is considered to be typical of the SEDEX (Sedimentary Exhalative) model, where the sub-basin is controlled by syn-sedimentary faults which provide conduits for mineralising fluids. Fluid migration into sub-vertical feeder fractures, breccia zones then spreads laterally into permeable sediments.

Mineralization is mainly hosted in an amphibole metachert. Sphalerite (primary Zinc sulphide) and galena (primary Lead sulphide) occur as massive sulphides and disseminations. Mineralisation extends to the surface and outcrops in numerous locations along strike, while weathering extends to only approximately 30m below surface.

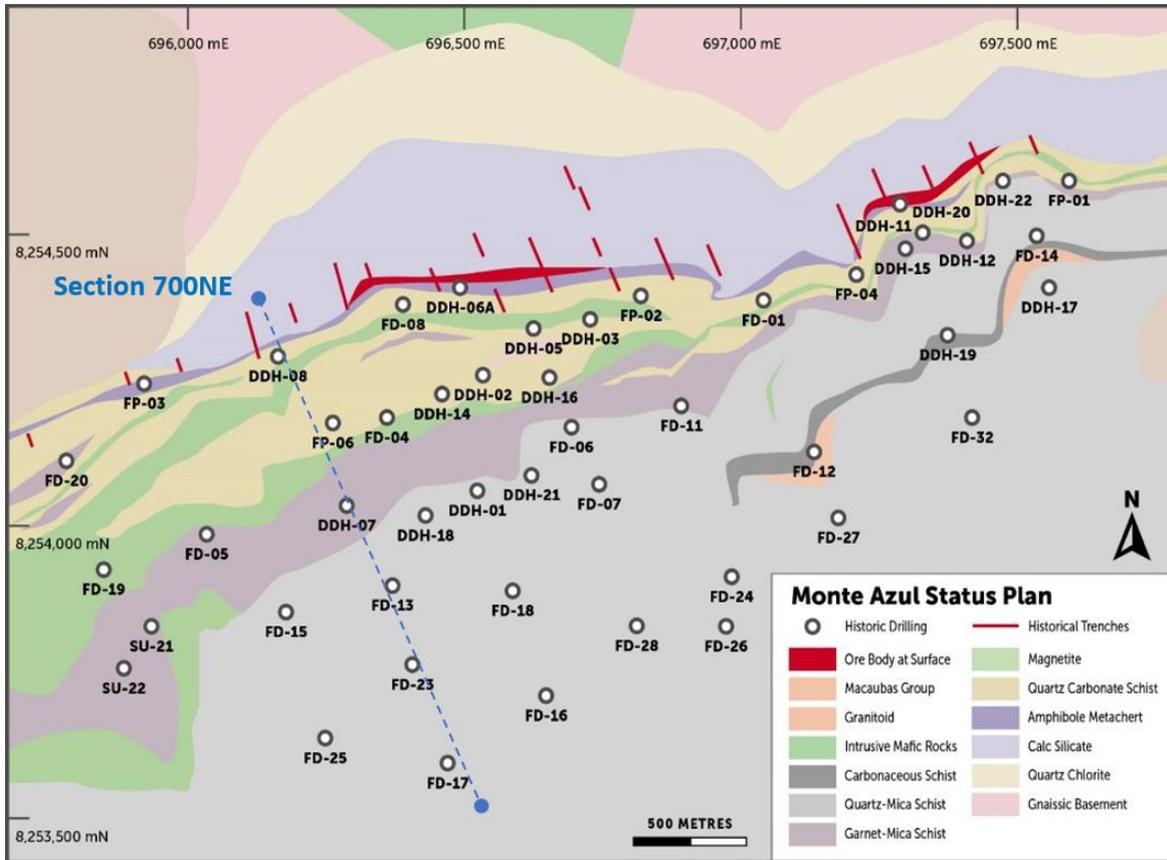
Monte Azul – Interpreted 3D Structural Model, with West to East Section annotated



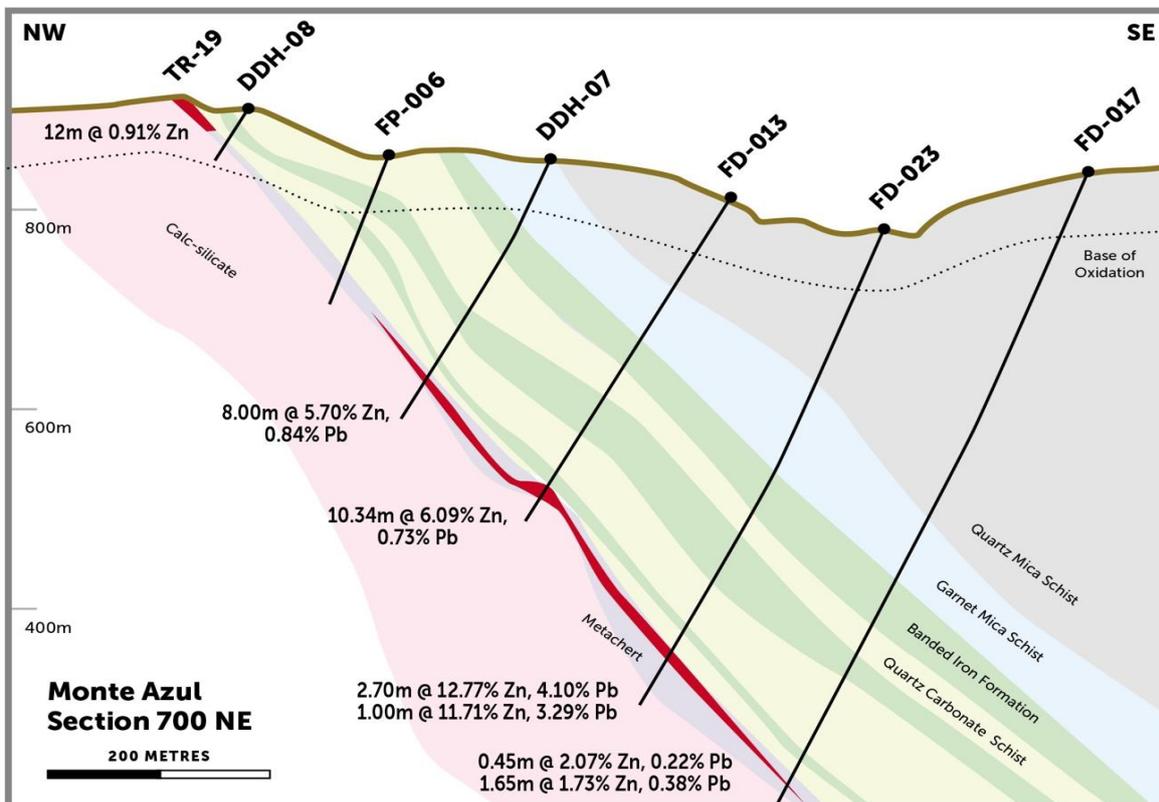
West to East Section A-A' showing two or more deformational events



Monte Azul – Drill Status Plan



Monte Azul – Section 700NE

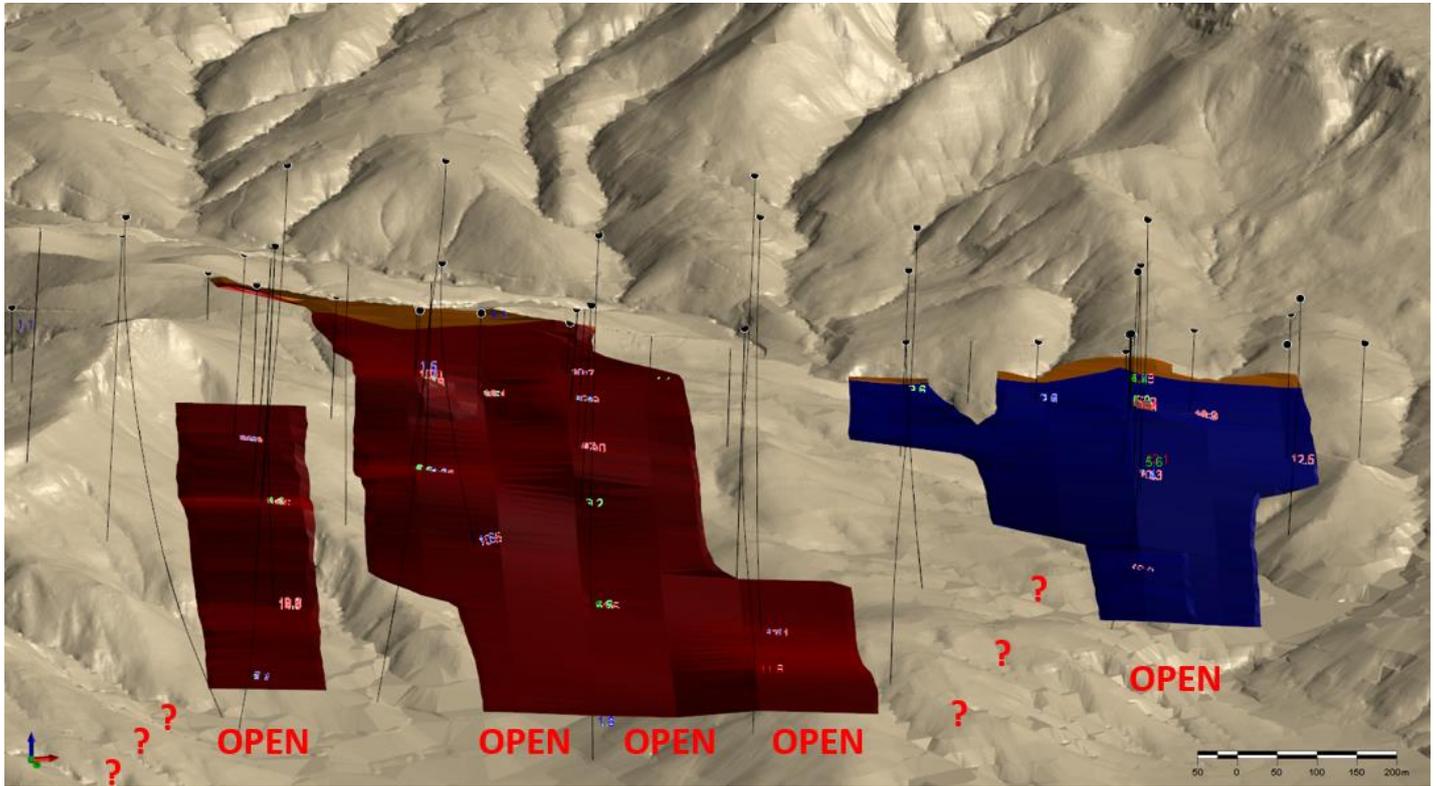


* For complete table of results see Appendix 3. Grades are uncut. Depths and widths are downhole.



The deposit is interpreted to comprise of 3 lenses, with the majority of tonnes and better grades found in the central lens. All 3 lenses are open at depth/plunge as shown below, with the added potential that the lenses may also join to make a single larger lens, since the gaps between them are interpreted from only a couple of wide spaced drill holes or no as shown below.

Below Topographic Surface – Mineralisation 3D Model



Tenure

The Monte Azul Project is located within two Mining Lease Applications owned 100% by Vale S.A.

Process	Area (Ha)	Status	Holder
831.911	718.58	Application for Mining Concession	Vale S.A.
831.912	419.17	Application for Mining Concession	Vale S.A.



Monte Azul mineralisation outcropping in creek bed and on top of the ridge line



View from the hills hosting Monte Azul toward agricultural hinterland



Monte Azul Office and Core Yard onsite

APPENDIX 2

ASX Listing Rule 5.12

Listing Rule	Criteria	Commentary
5.12.1	<ul style="list-style-type: none"> ▪ The source and date of the historical estimates or foreign estimates. 	<ul style="list-style-type: none"> ▪ The foreign resource estimate is contained in an unpublished report "Mineral Resource Update, August 2018".
5.12.2	<ul style="list-style-type: none"> ▪ Whether the historical estimates or foreign estimates use categories of mineralisation other than those defined in Appendix 5A (JORC Code) and if so an explanation of the differences. 	<ul style="list-style-type: none"> ▪ The August 2018 foreign resource estimate for the Monte Azul project was classified as an Inferred Mineral Resource. Odin's competent person considers that the foreign resource estimate is comparable to the Inferred category under the JORC Code. ▪ Odin's competent person considers that the foreign resource estimate does not currently meet the requirements of the JORC Code for reporting Mineral Resources. ▪ Odin's competent person has not yet completed sufficient work to classify Mineral Resources in accordance with the JORC Code. It is uncertain that following evaluation or further work that the foreign resource estimate will be able to be reported as mineral resources in accordance with the JORC Code. ▪ This foreign resource estimate is the most recent Mineral Resource estimate on the Monte Azul project.
5.12.3	<ul style="list-style-type: none"> ▪ The relevance and materiality of the historical estimates or foreign estimates to the entity. 	<ul style="list-style-type: none"> ▪ The foreign resource estimate illustrates the potential value to the Company, and thus is material to the Company.
5.12.4	<ul style="list-style-type: none"> ▪ The reliability of the historical estimates or foreign estimates, including by reference to any of the criteria in Table 1 of Appendix 5A (JORC CODE) which are relevant to understanding the reliability of the historical estimates or foreign estimates. 	<ul style="list-style-type: none"> ▪ The Company believes that the foreign resource estimate is sufficiently reliable, and that its methodology and estimation parameters are appropriate for the style of mineralisation and comparable with those defined in Table 1 of Appendix 5A of the JORC code.
5.12.5	<ul style="list-style-type: none"> • To the extent known, a summary of the work programs on which the historical estimates or foreign estimates are based, and a summary of the key assumptions, mining and processing parameters and methods used to prepare the historical estimates or foreign estimates. 	<ul style="list-style-type: none"> ▪ The Monte Azul foreign resource estimate was estimated using Ordinary Kriging (OK) to estimate Zinc and Lead. ▪ The Mineral Resource is based on 17,300 metres of drilling in 57 diamond drill holes and 6 RC holes. Holes are drilled on 160 to 200m spaced centres on 100m and 200m spaced sections, over a strike length of approximately 1.4km. ▪ QA/QC were utilised the drilling programmes, along with limited twin-hole drilling. Data integrity checks were performed, and the data stored in an industry standard database. ▪ A 3D geological model was constructed using modern industry accepted software, and the modelled boundaries used to constrain grade estimations. 3 Domains were used in the model, with a block size of 10m x 2m x 2m. ▪ Drill hole assays were composited to one metre samples. Variography was used to determine search ellipse sizes and orientations, and a 3D blockmodel produced to estimate Zinc and Lead grades and block volumes.



Listing Rule	Criteria	Commentary
		<ul style="list-style-type: none"> Densities were based on the average for each mineralised domain.
5.12.6	<ul style="list-style-type: none"> Any more recent estimates or data relevant to the reported mineralisation available to the entity. 	<ul style="list-style-type: none"> The August 2018 foreign resource estimate is the most recent estimate. There is no additional relevant data that the Company is aware of.
5.12.7	<ul style="list-style-type: none"> The evaluation and/or exploration work that needs to be completed to verify the historical estimates or foreign estimates as mineral resources or ore reserves in accordance with Appendix 5A (JORC Code). 	<ul style="list-style-type: none"> It is the Company's intention to commence work as soon as practical, following the acquisition, including but not limited to the verification of historical work, verification and infill drilling to confirm geological continuity and grade distribution within the project, and verify the foreign resource estimate in accordance with Appendix 5A (JORC Code).
5.12.8	<ul style="list-style-type: none"> The proposed timing of any evaluation and/or exploration work that the entity intends to undertake and comment on how the entity intends to fund that work 	<ul style="list-style-type: none"> The evaluation work is planned to commence as soon as practicable, funded by existing cash and future capital raising by share placement.
5.12.9	<ul style="list-style-type: none"> A cautionary statement proximate to, and with equal prominence as, the reported historical estimates or foreign estimates. 	<ul style="list-style-type: none"> ODM cautions that the Monte Azul resource estimate is a foreign estimate and is not reported in accordance with the JORC Code. A competent person has not done sufficient work to classify the foreign estimate as a mineral resource in accordance with the JORC Code, and it is uncertain that following evaluation and/or further exploration work that the foreign estimate will be able to be reported as mineral resources in accordance with the JORC Code. This statement has been made proximal to, and with equal prominence as the reported foreign estimate on the front page of this document.
5.12.10	<ul style="list-style-type: none"> A statement by a named competent person or persons that the information in the market announcement provided under rules 5.12.2 to 5.12.7 is an accurate representation of the available data and studies for the material mining project. The statement must include the information referred to in rule 5.22(b) and (c). 	<ul style="list-style-type: none"> Mr Simon Mottram confirms that the information in this market announcement provided under rules 5.12.2 to 5.12.7 is an accurate representation of the available data and studies provided to the Company. Mr Simon Mottram is a Fellow of the Australasian Institute of Mining and Metallurgy and a full-time employee of Odin Metals Limited. Mr Mottram has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person (CP) as defined in the 2012 Edition of the Joint Ore Reserves Committee (JORC) "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves". Mr Mottram consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.



APPENDIX 3

Table of Results – Monte Azul Historic Drilling

Hole ID	UTM-E	UTM-N	RL (m)	Dip	Az	Depth (m)	Status	From (m) Downhole Depth	To (m) Downhole Depth	Width (m) Downhole Depth	Zn (%)	Pb (%)
FD-009	696510.26	8254066.50	818.65	338.0	-70.0	298.80	Complete	262.50	276.42	13.92	10.39	2.13
FD-013	696354.89	8253896.54	807.14	338.0	-60.0	376.95	Complete	328.24	338.58	10.34	6.09	0.72
FD017	696459.32	8253598.640	829.420	337.7	-70.0	726.89	Complete	651.70	652.15	0.45	2.07	0.22
And								654.10	654.65	1.65	1.73	0.38
FD-023	696392.31	8253769.65	776.19	338.0	-70.0	526.40	Complete	457.80	460.50	2.70	12.77	4.10
And								483.00	483.97	1.00	11.71	3.29
DDH-07	696275.00	8254035.00	845.00	338.0	-66.0	293.15	Complete	239.50	247.50	8.00	5.70	0.84
Including								240.00	244.00	4.00	8.82	1.48
DDH-08	696151.00	8254293.00	900.00	338.0	-61.0	61.05	Complete				No Significant Result	
FP-006	696247.31	8254180.65	846.36	338.0	-70.0	155.00	Complete				No Significant Result	
TR-19							Complete	Surface trench - Section 600NE		12.00	0.91	



Appendix 4

Monte Azul Project - JORC Code (2012) Edition Table 1

Section 1 Sampling Techniques and Data

Criteria	JORC Code explanation	Commentary
Sampling techniques	<ul style="list-style-type: none"> ▪ Nature and quality of sampling (e.g. cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling. ▪ Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used. ▪ Aspects of the determination of mineralisation that are Material to the Public Report. In cases where 'industry standard' work has been done this would be relatively simple (e.g. 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay'). In other cases, more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (e.g. submarine nodules) may warrant disclosure of detailed information. 	<ul style="list-style-type: none"> ▪ Historical drilling consists 57 diamond holes and 6 RC holes for 17,300m. Diamond drill core is typically continuously sampled at 0.5m or 1m intervals. Throughout the ore zones and their periphery, where required by changes in lithology, mineralisation, or alteration, core samples may be shorter or longer than typical but not beyond a minimum core length of 20cm, and a maximum core length of 2.0m. ▪ Drill collar locations are initially by handheld GPS, and accurately surveyed after completion. Drill samples were logged for lithology, weathering, structure, mineralogy, mineralisation, colour and other features. Half diamond core was collected and placed in marked plastic sacks with a sample ID tag, sealed and shipped to the assay laboratory. ▪ At the laboratory drill samples were dried and crushed to 95% passing 4 mm; then homogenized split and pulverized to 0.105 mm.
Drilling techniques	<ul style="list-style-type: none"> ▪ Drill type (e.g. core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (e.g. core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc). 	<ul style="list-style-type: none"> ▪ Diamond core diameters were consistently NQ from surface to the end of hole, except where drilling was for metallurgical sampling where it is HQ or PQ in size. ▪ A small number of shallow RC holes were completed, and little detail is known of the testing of RC drilling. Following this test, no RC further RC drilling was carried out. The CP considers this data not to be material to the foreign resource.
Drill sample recovery	<ul style="list-style-type: none"> ▪ Method of recording and assessing core and chip sample recoveries and results assessed. ▪ Measures taken to maximise sample recovery and ensure representative nature of the samples. ▪ Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material. 	<ul style="list-style-type: none"> ▪ Fresh rock recoveries generally exceed 98%. ▪ The drilling company takes appropriate measures when drilling to ensure sample recovery is maximised ▪ No relationship between sample recovery and grade is known to exist.
Logging	<ul style="list-style-type: none"> ▪ Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies. ▪ Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography. ▪ The total length and percentage of the relevant intersections logged. 	<ul style="list-style-type: none"> ▪ Drill samples were logged for lithology, weathering, structure, mineralogy, mineralisation, alteration, colour and other features. ▪ Drilling was geologically logged on-site to a qualitative standard. Core photography was taken on site. ▪ All drill holes are logged in full, from start to finish of the hole.



Criteria	JORC Code explanation	Commentary
Sub-sampling techniques and sample preparation	<ul style="list-style-type: none"> ▪ If core, whether cut or sawn and whether quarter, half or all core taken. ▪ If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry. ▪ For all sample types, the nature, quality and appropriateness of the sample preparation technique. ▪ Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples. ▪ Measures taken to ensure that the sampling is representative of the in-situ material collected, including for instance results for field duplicate/second-half sampling. ▪ Whether sample sizes are appropriate to the grain size of the material being sampled. 	<ul style="list-style-type: none"> ▪ Where sampled, core is cut in half onsite using an industry standard core saw, to produce two identical halves. ▪ Historical drill results discussed in this report are all from diamond core. ▪ Sample preparation is according to industry standard, including oven drying, coarse crush, and pulverisation to 95% passing 0.105 mm or better. ▪ An industry standard QAQC program involving Certified Reference Materials “standards” for Zinc (with grades ranging from low to high), which are introduced in the assay batches at an approximate rate of 1 control sample per 20 normal samples, as well as blanks (course and fine) and duplicate samples, which are inserted at an approximate rate of 1 per 20 samples. ▪ Sample sizes are considered to be appropriate and correctly represent the style and type of mineralisation.
Quality of assay data and laboratory tests	<ul style="list-style-type: none"> ▪ The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total. ▪ For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc. ▪ Nature of quality control procedures adopted (e.g. standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (e.g. lack of bias) and precision have been established. 	<ul style="list-style-type: none"> ▪ At the laboratory drill samples were dried and crushed to 95% passing 4 mm; then homogenized split and pulverized to 0.105 mm. Ore-grade analysis for principal base metals is completed using a combination of a multi-acid digest ICP-AES method for Zn and Pb. Historically 31 element analysis has been performed on selected holes for the purposes of quantifying other metals or deleterious elements. ▪ No instruments were used. ▪ An industry standard QAQC programme involving Certified Reference Materials “standards” (with grades ranging from low to high), blank samples (course and fine), duplicates and Umpire Laboratory check sampling was used.
Verification of sampling and assaying	<ul style="list-style-type: none"> ▪ The verification of significant intersections by either independent or alternative company personnel. ▪ The use of twinned holes. ▪ Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols. ▪ Discuss any adjustment to assay data. 	<ul style="list-style-type: none"> ▪ Senior geologists or field personnel visually verify significant intersections and results. ▪ No twin holes are discussed or relevant to this report. ▪ All primary data is now stored in the Odin Office in Perth, WA. ▪ No adjustments or calibrations are made to assay data.
Location of data points	<ul style="list-style-type: none"> ▪ Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation. ▪ Specification of the grid system used. ▪ Quality and adequacy of topographic control. 	<ul style="list-style-type: none"> ▪ Collar locations are initially surveyed with handheld GPS. Easting, northing and elevation values are recorded in meters, using the SIRGAS-2000 23S Datum. ▪ SIRGAS-2000 23S ▪ Regional Topographic control (5 m contours) and Digital Terrain Models are used. Drill collars are accurately surveyed after completion. <p>Drill hole orientation (azimuth and dip) is measured every 3 m downhole using Deviflex or Reflex digital downhole survey equipment.</p>
Data spacing and distribution	<ul style="list-style-type: none"> ▪ Data spacing for reporting of Exploration Results. ▪ Whether the data spacing, and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied. 	<ul style="list-style-type: none"> ▪ Holes are drilled on 160 to 200m spaced centres on 100m and 200m spaced sections. ▪ The resource discussed in this report is a foreign resource estimate, which is yet to be reported under the JORC Code (2012).



Criteria	JORC Code explanation	Commentary
	<ul style="list-style-type: none"> ▪ Whether sample compositing has been applied. 	<p>Additional infill and extensional drilling is required before JORC compliant resource estimation can be undertaken.</p> <ul style="list-style-type: none"> • No sample compositing has been applied.
Orientation of data in relation to geological structure	<ul style="list-style-type: none"> ▪ Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type. ▪ If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material. 	<ul style="list-style-type: none"> ▪ Drilling has been angled to achieve the most representative intersections through the ore zones. ▪ The company does not believe that any sample bias has been introduced.
Sample security	<ul style="list-style-type: none"> ▪ The measures taken to ensure sample security. 	<ul style="list-style-type: none"> ▪ All historical samples were placed in pre-numbered plastic samples bags with a samples ticket inside and send to the laboratory. All sampling and work on the samples was carried out within the confines of this secure facility constructed onsite. <p>Remnant half core is stored securely onsite at the same facility onsite.</p>
Audits or reviews	<ul style="list-style-type: none"> ▪ The results of any audits or reviews of sampling techniques and data. 	<ul style="list-style-type: none"> ▪ There are no known recent audits or reviews of sampling techniques, however work performed is believed to be of industry standard.



Section 2 Reporting of Exploration Results

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	<ul style="list-style-type: none"> ▪ Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings. ▪ The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area. 	<ul style="list-style-type: none"> ▪ The Vale S&P Agreement consists of 2 Mining Lease applications (831.911/1993 and 831.912/1993) covering approximately 1,140 Ha, in which Odin has the right to acquire 100%. <p>The exploration Joint Venture (JV) with IMS consists of 8 granted exploration licences covering an area of approximately 105km². 1,000,000 Odin shares will be granted to IMS within 120 days of signing. Odin can earn 70% ownership by expending AU\$2,000,000 in exploration over 3 years. If Odin wishes to purchase the remaining 30%, it may at its discretion by paying AU\$2,000,000 in cash. A 1% NSR is payable on any production above 120,000t on Zinc metal.</p> <p>The option agreement with GRB consists of 15 exploration licences (12 granted and 3 applications) covering an area of approximately 260km². 5,000,000 Odin shares will be granted to GRB or its nominees, and after 1 year a further payment of AU\$150,000 in shares in Odin together with AU\$100,000 in cash will be paid. An existing underlying 1% NSR is payable on production to Falcon Metais Ltda.</p> <p>All mining projects in Brazil are subject to a Government (CFEM) royalty of 2% on base metals.</p> <p>Landowners are entitled to a royalty of 50% of the CFEM royalty.</p> <p>The project is covered in scrub and semi-arid style vegetation in low lying hills, currently not being exploited in any way.</p> <p>There are no known environmental impediments or protection zones that would prevent mining development.</p>
Exploration done by other parties	<ul style="list-style-type: none"> ▪ Acknowledgment and appraisal of exploration by other parties. 	<ul style="list-style-type: none"> ▪ The Company's CP has determined that the quality and integrity of historical work is adequate for inclusion, consideration and interpretation with any newly completed work.
Geology	<ul style="list-style-type: none"> ▪ Deposit type, geological setting and style of mineralisation. 	<ul style="list-style-type: none"> ▪ The Monte Azul Project is considered a typical SEDEX (sedimentary exhalative) deposit.
Drill hole Information	<ul style="list-style-type: none"> ▪ A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes: <ul style="list-style-type: none"> ○ easting and northing of the drill hole collar ○ elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar ○ dip and azimuth of the hole ○ down hole length and interception depth ○ hole length. ▪ If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case. 	<ul style="list-style-type: none"> ▪ "Appendix 3 - Table of Results – Monte Azul Historic Drilling" contained within this report includes the Information relating to Points "A" through to "E" inclusive. ▪ No information relating to to Points "A" through to "E" has been excluded.
Data aggregation methods	<ul style="list-style-type: none"> ▪ In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade 	<ul style="list-style-type: none"> ▪ Where results are reported, averaging of mineralised intervals are calculated by the following parameters <ul style="list-style-type: none"> ○ Weighted averaging of grade/thickness



Criteria	JORC Code explanation	Commentary
	<p>truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated.</p> <ul style="list-style-type: none"> ▪ Where aggregate intercepts incorporate short lengths of high-grade results and longer lengths of low-grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail. ▪ The assumptions used for any reporting of metal equivalent values should be clearly stated. 	<ul style="list-style-type: none"> ○ A maximum of 2 continuous metres of internal dilution ○ No top-cuts have been used ▪ Where results are reported and intercepts incorporate lengths of “high grade” (in the context of surrounding results), these “high grade” results are detailed transparently and separately in any reported results, both in the text of the report and in any attached tables. ▪ Where Zn Equivalents have been used, calculations are based on the ratio of \$1.1/lb Zn and \$1.0/lb Pb.
Relationship between mineralisation widths and intercept lengths	<ul style="list-style-type: none"> ▪ These relationships are particularly important in the reporting of Exploration Results. ▪ If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported. ▪ If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (e.g. ‘down hole length, true width not known’). 	<ul style="list-style-type: none"> ▪ Mineralisation discussed in this report, at Monte Azul, is comprised of three lenses that are side by side and have the same geometry (dip/strike). It is possible that they join along strike, however a sufficient amount of drilling has not yet been completed to prove or disprove this. ▪ Downhole lengths have been used and this is clearly stated in the text and tables.
Diagrams	<ul style="list-style-type: none"> ▪ Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views. 	<ul style="list-style-type: none"> ▪ An appropriate location plan has been included, which also shows the location of the representative section presented in the report.
Balanced reporting	<ul style="list-style-type: none"> ▪ Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results. 	<ul style="list-style-type: none"> ▪ All results of significance that are relevant to the drilling discussed in this report have been included.
Other substantive exploration data	<ul style="list-style-type: none"> ▪ Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances. 	<ul style="list-style-type: none"> ▪ All material and meaningful data, relevant to the scope of work in this report, has been included in this report. There is no other information, which is available and/or in the opinion of the Company’s CP is lacking in this report.
Further work	<ul style="list-style-type: none"> ▪ The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling). ▪ Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive. 	<ul style="list-style-type: none"> ▪ It is expected that infill drilling on the foreign resource estimate will commence as soon as practicable in 2020. ▪ Potential for extension at Monte Azul exists at depth, both down dip and down plunge.

