ASX ANNOUNCEMENT

19 March 2020

ANT HILL MINERAL RESOURCE STATEMENT

The following updated Mineral Resource Statement is provided by Mineral Resources Ltd ("MRL/The Company") for the Ant Hill manganese deposit.

This announcement dated 19 March 2020 has been authorised for released to the ASX by Mark Wilson, Company Secretary of Mineral Resources Limited.

Ends

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About Mineral Resources
Mineral Resources Limited (ASX: MIN) is a Perth-based leading mining services provider, with a particular focus on the iron ore and hard-rock lithium sectors in Western Australia. Using technical know-how and an innovative approach to deliver exceptional outcomes, Mineral Resources has become one of the ASX's best-performing contractors since listing in 2006.
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MINERAL RESOURCES LIMITED

ANT HILL MINERAL RESOURCE STATEMENT

AS AT 31 DECEMBER 2019

MINERAL RESOURCE SUMMARY

The Ant Hill Mineral Resource, which has been reported in accordance with the JORC Code (2012) as at 31 December 2019, is estimated to be 3.1 million tonnes at 24.7% Mn, 23.7% Fe and 16.5% SiO_2, using a nominal Mn cut-off grade of 10%.

For the purpose of satisfying "reasonable prospects for eventual extraction" (JORC 2012), the Mineral Resources have been constrained by optimised open pit shells developed using operating costs, initial metallurgical test work, beneficiation parameters and a long term price assumption USD7.125/dmtu for a product grade of 37% Mn. Material occurring outside of these pit shells is unclassified and has not been reported anywhere in this statement.

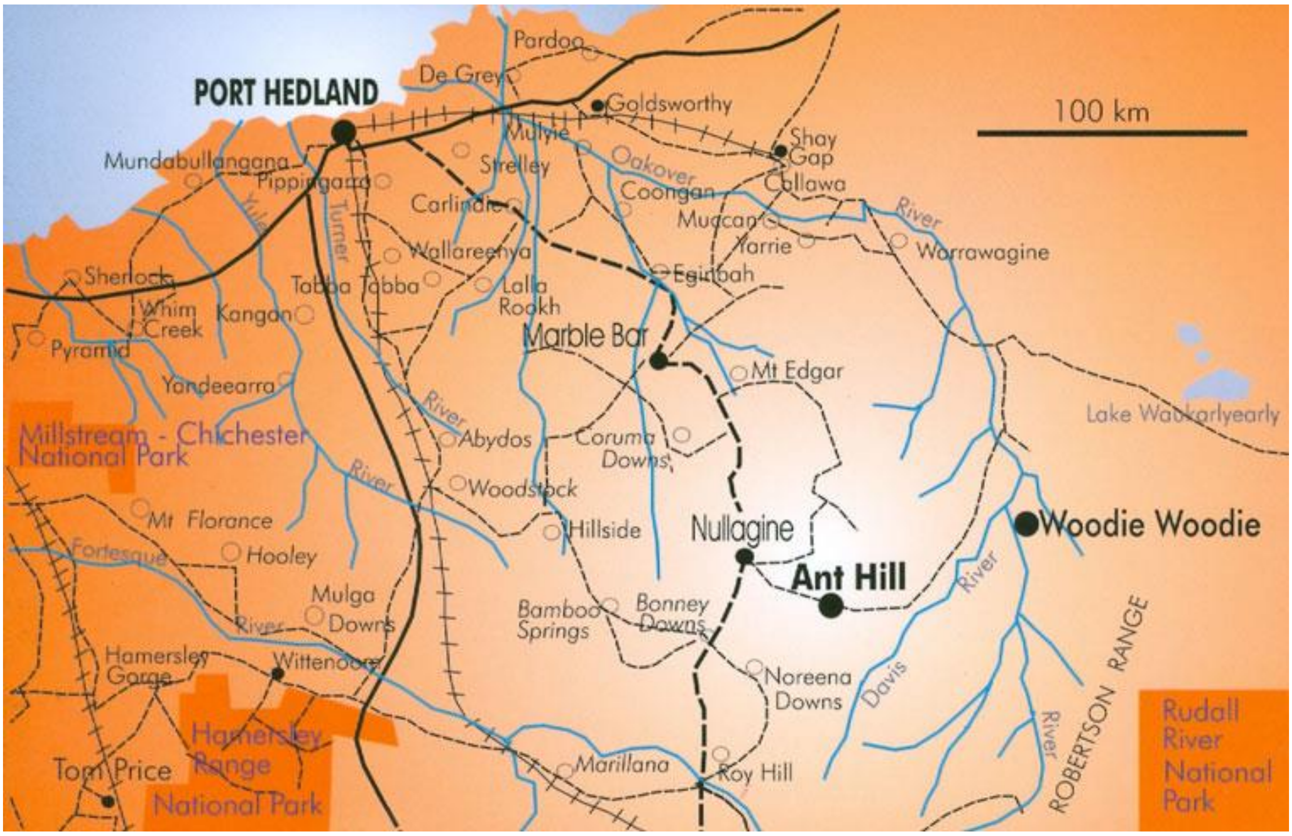

Figure 1 Regional Location of Ant Hill

Ant Hill Deposit Details

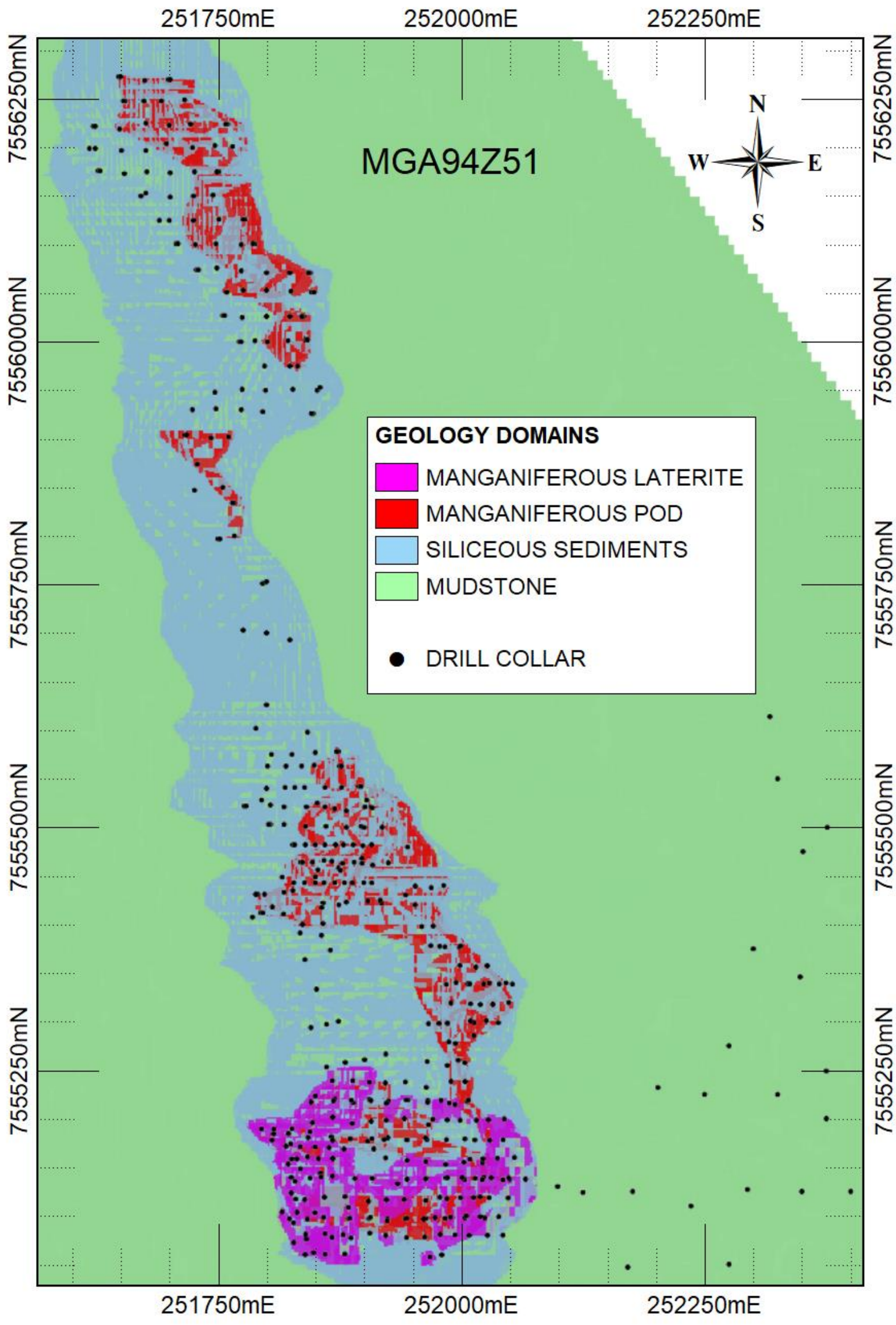

Figure 2 Ant Hill Geology Domains

Mineral Resource Estimate

The following Mineral Resource estimate was generated by Mr. Matthew Watson, who is a full-time employee of Mineral Resources Limited. Mr Watson is acting as the Competent Person as defined by JORC 2012.

Geology and Geological Interpretation

The Ant Hill manganese deposit is located 360 km by road from Port Hedland.

Ant Hill is a remnant basinal outlier of mid-Proterozoic sediments comprising the Manganese Group, the Pinjian Chert Breccia and the Hamersley Group. The sediments form a broad NW-plunging syncline and unconformably overlie the Fortescue Group, which is locally dominated by the volcanics of the Nymerina Basalt.

The manganese deposit occurs as a number of discrete podiform bodies of various sizes on the Ant Hill mesa. The mesa is a fault-bounded elongate feature, approximately 1.4km long and 400m wide, with a maximum topographic relief of 50m. There is a prominent cap of lateritic manganese and iron at surface on the southern portion of the mesa. Underlying the lateritic cap, and running the length of the mesa, is a package of iron and silica-rich chemical sediments which host several discrete sub-horizontal manganese rich bodies. Petrographic studies suggest that the manganese and iron oxides post-date the silicified host rock. The silicified host rock and the sub-horizontal manganese rich bodies have been cross-cut by a series of vertical faults, resulting in zones of mineralised fault breccia throughout the deposit.

Sampling and Sub-sampling

The majority of samples were collected via reverse circulation (RC) drilling. Drillholes were predominantly down-hole sampled at 1m intervals, with a minority at 2m. The RC sub-samples were generated using either a three-tier Jones riffle splitter or an inverted cone splitter.

Diamond drilling was carried out to collect HQ3 diamond core. Drillholes were collared at the surface and core was used for petrographic studies.

Sample Analysis Method

Analysis was carried out at the Intertek Genalysis laboratory in Perth. Analysis was via XRF for Mn, Fe, SiO_2, Al_2O_3, Na2O, K_2O, CaO and MgO analytes, along with thermogravimetric (TGA) analysis for loss on ignition (LOI) measurements. Some of the 2008 and 2014 drilling was additionally assayed for Cl, P, S and TiO_2.

Drilling Techniques

Post-1998 RC drilling was completed using face sampling hammers; pre-1998 drilling utilised open hole percussion. Diamond drilling used HQ3-sized core.

Estimation Methodology

The estimation methodology used was ordinary kriging (OK). Block model dimensions used were 5m (east) by 10m (north) by 3m (elevation,) with sub-blocking down to 1m (east) by 2m (north) by 0.5m (elevation).

The pre-1998 drilling was used as an interpretation guide only, with these assays being excluded from the estimation.

The estimation was constrained within manually generated manganiferous mineralisation domains defined from the resource drillhole dataset using a Mn cut-off grade of 10% and guided by the interpreted geology provided by Rudy Vooys of RAVEX Pty Ltd. The 10% Mn lower cut was chosen based on analysis of the grade distribution, and provided best fit with the interpreted geology.

Detailed statistical investigations were completed on the coded estimation data set, including exploratory data analysis and grade estimation trials. No high-grade cuts were applied to the composited sample data. The estimation employed a four-pass search strategy for Mn, Fe and SiO_2.

An inverse distance squared estimate was run to provide an independent check on the OK model. The check estimates confirmed the primary OK results.

A summary of the drillhole data by mineralisation domain is included in Table 1.

Table 1 Mineralisation Intercepts by Geological Domain

HOLE_ID	EASTING MGA94Z51	NORTHING MGA94Z51	RL AHD	AZI	DIP	FROM M	TO M	Mn %	Fe %	SiO2 %	INTERVAL M	MINZONE
BAH001	251962.5	7555078.1	470.2	0	-90	13	15	20.8	22.7	21.6	2	PODIFORM MN
BAH002	251961.6	7555096.6	471.0	0	-90	14	18	18.3	32.3	13.0	4	PODIFORM MN
BAH003	251963.3	7555115.8	472.1	0	-90	15	19	20.2	27.3	13.8	4	PODIFORM MN
BAH004	251963.2	7555137.9	473.3	0	-90	0	4	26.7	20.9	15.6	4	LATERITIC MN
BAH004	251963.2	7555137.9	473.3	0	-90	12	18	30.1	20.8	10.6	6	PODIFORM MN
BAH005	251963.5	7555155.8	474.1	0	-90	0	5	24.0	23.5	16.1	5	LATERITIC MN
BAH005	251963.5	7555155.8	474.1	0	-90	10	19	31.9	25.6	5.0	9	PODIFORM MN
BAH006	251963.1	7555180.2	475.0	0	-90	5	13	28.8	25.8	8.7	8	PODIFORM MN
BAH007	251966.2	7555193.7	475.6	0	-90	11	13	40.2	16.2	3.0	2	PODIFORM MN
BAH008	251965.5	7555216.9	476.5	0	-90	0	1	24.8	22.1	13.4	1	LATERITIC MN
BAH010	251943.8	7555077.7	470.7	0	-90	0	1	17.9	24.1	20.3	1	LATERITIC MN
BAH010	251943.8	7555077.7	470.7	0	-90	11	13	19.3	24.6	18.3	2	PODIFORM MN
BAH011	251944.2	7555097.4	471.6	0	-90	0	2	22.2	30.4	14.4	2	LATERITIC MN
BAH011	251944.2	7555097.4	471.6	0	-90	10	15	20.3	25.6	18.7	5	PODIFORM MN
BAH012	251941.4	7555116.9	473.2	0	-90	0	3	26.7	21.4	19.1	3	LATERITIC MN
BAH012	251941.4	7555116.9	473.2	0	-90	11	16	19.5	21.0	19.6	5	PODIFORM MN
BAH013	251944.2	7555137.5	474.6	0	-90	0	12	31.1	19.9	11.6	12	LATERITIC MN
BAH013	251944.2	7555137.5	474.6	0	-90	14	18	21.9	20.8	19.1	4	PODIFORM MN
BAH014	251944.4	7555157.1	475.5	0	-90	0	9	23.9	30.5	10.6	9	LATERITIC MN
BAH014	251944.4	7555157.1	475.5	0	-90	13	21	26.7	29.7	5.8	8	PODIFORM MN
BAH015	251943.7	7555178.2	476.3	0	-90	5	17	25.3	32.5	4.7	12	PODIFORM MN
BAH016	251941.6	7555200.1	477.2	0	-90	0	3	34.3	16.7	9.3	3	LATERITIC MN
BAH016	251941.6	7555200.1	477.2	0	-90	7	9	18.1	18.7	20.3	2	PODIFORM MN
BAH017	251943.3	7555219.3	478.1	0	-90	0	2	25.1	13.0	19.4	2	LATERITIC MN
BAH019	251922.4	7555079.7	471.7	0	-90	0	2	22.8	12.5	32.8	2	LATERITIC MN
BAH020	251923.9	7555094.9	472.3	0	-90	0	3	35.0	15.0	12.7	3	LATERITIC MN
BAH020	251923.9	7555094.9	472.3	0	-90	10	16	24.3	24.4	13.4	6	PODIFORM MN
BAH021	251923.1	7555116.6	473.6	0	-90	0	5	39.8	12.4	8.4	5	LATERITIC MN
BAH021	251923.1	7555116.6	473.6	0	-90	12	17	27.3	23.3	13.0	5	PODIFORM MN
BAH022	251908.8	7555138.4	472.5	0	-90	0	8	11.7	30.8	30.4	8	LATERITIC MN
BAH022	251908.8	7555138.4	472.5	0	-90	10	15	11.7	26.8	32.1	5	PODIFORM MN
BAH023	251904.6	7555115.0	473.9	0	-90	11	16	17.6	27.5	17.3	5	PODIFORM MN
BAH024	251884.0	7555108.6	475.0	0	-90	0	5	19.3	26.3	18.6	5	LATERITIC MN
BAH024	251884.0	7555108.6	475.0	0	-90	8	11	21.8	27.0	11.1	3	PODIFORM MN
BAH025	251885.7	7555097.5	474.9	0	-90	0	6	13.2	22.2	28.9	6	LATERITIC MN
BAH025	251885.7	7555097.5	474.9	0	-90	8	11	13.5	36.4	15.2	3	PODIFORM MN
BAH026	251906.6	7555098.3	473.6	0	-90	11	15	19.7	21.4	23.7	4	PODIFORM MN

HOLE_ID	EASTING MGA94Z51	NORTHING MGA94Z51	RL AHD	AZI	DIP	FROM M	TO M	Mn %	Fe %	SiO2 %	INTERVAL M	MINZONE
BAH028	251886.8	7555077.1	473.6	0	-90	0	7	16.6	22.0	24.0	7	LATERITIC MN
BAH029	251867.2	7555077.9	473.5	0	-90	0	1	17.9	18.7	23.8	1	LATERITIC MN
BAH030	251841.0	7555075.9	473.6	0	-90	0	2	19.8	31.9	11.1	2	LATERITIC MN
BAH031	251827.7	7555092.6	474.7	0	-90	0	2	30.7	18.4	9.1	2	LATERITIC MN
BAH032	251829.8	7555117.3	477.5	0	-90	0	1	21.0	17.1	20.8	1	LATERITIC MN
BAH033	251827.9	7555072.4	473.0	0	-90	0	2	25.2	20.9	14.6	2	LATERITIC MN
BAH034	251859.4	7555119.1	478.3	0	-90	0	7	21.1	26.5	16.7	7	LATERITIC MN
BAH034	251859.4	7555119.1	478.3	0	-90	10	14	20.0	23.1	19.7	4	PODIFORM MN
BAH035	251858.5	7555098.2	475.4	0	-90	0	2	31.4	13.0	15.4	2	LATERITIC MN
BAH035	251858.5	7555098.2	475.4	0	-90	10	15	14.9	29.3	19.3	5	PODIFORM MN
BAH036	251841.8	7555096.5	475.4	0	-90	0	2	27.1	17.5	16.1	2	LATERITIC MN
BAH036	251841.8	7555096.5	475.4	0	-90	10	16	20.6	26.9	12.6	6	PODIFORM MN
BAH037	251839.1	7555116.7	477.7	0	-90	0	3	28.3	15.0	18.6	3	LATERITIC MN
BAH037	251839.1	7555116.7	477.7	0	-90	12	16	20.7	28.3	13.6	4	PODIFORM MN
BAH038	251829.3	7555135.5	479.4	0	-90	0	6	20.2	21.2	17.2	6	LATERITIC MN
BAH040	251831.1	7555158.6	482.6	0	-90	0	19	27.9	22.8	12.6	19	LATERITIC MN
BAH040	251831.1	7555158.6	482.6	0	-90	21	25	21.7	28.9	9.9	4	PODIFORM MN
BAH041	251822.4	7555184.8	483.9	0	-90	0	8	15.1	18.8	39.7	8	LATERITIC MN
BAH041	251822.4	7555184.8	483.9	0	-90	18	23	3.7	6.1	80.1	5	PODIFORM MN
BAH042	251824.7	7555174.2	483.6	0	-90	0	12	31.3	17.8	15.3	12	LATERITIC MN
BAH042	251824.7	7555174.2	483.6	0	-90	17	28	19.2	19.3	28.6	11	PODIFORM MN
BAH043	251842.1	7555160.7	483.4	0	-90	0	16	38.4	15.7	6.3	16	LATERITIC MN
BAH043	251842.1	7555160.7	483.4	0	-90	18	24	20.0	21.7	17.2	6	PODIFORM MN
BAH044	251842.7	7555180.5	485.9	0	-90	0	11	33.8	14.1	15.9	11	LATERITIC MN
BAH044	251842.7	7555180.5	485.9	0	-90	21	28	15.2	18.5	41.2	7	PODIFORM MN
BAH045	251847.2	7555195.9	486.4	0	-90	0	19	19.2	16.4	38.3	19	LATERITIC MN
BAH045	251847.2	7555195.9	486.4	0	-90	19	22	20.1	16.6	36.0	3	PODIFORM MN
BAH046	251845.8	7555217.1	485.2	0	-90	0	5	35.9	8.3	25.9	5	LATERITIC MN
BAH046	251845.8	7555217.1	485.2	0	-90	25	28	23.1	28.5	12.8	3	PODIFORM MN
BAH047	251867.9	7555177.7	485.3	0	-90	0	27	27.6	24.9	9.7	27	PODIFORM MN
BAH048	251867.9	7555201.6	485.8	0	-90	0	20	28.4	16.3	18.8	20	LATERITIC MN
BAH048	251867.9	7555201.6	485.8	0	-90	21	26	16.7	15.4	22.0	5	PODIFORM MN
BAH049	251868.7	7555218.3	484.7	0	-90	0	12	15.5	27.1	22.1	12	LATERITIC MN
BAH049	251868.7	7555218.3	484.7	0	-90	15	28	22.4	21.8	25.4	13	PODIFORM MN
BAH050	251867.6	7555239.1	484.8	0	-90	0	2	30.5	17.8	16.8	2	LATERITIC MN
BAH050	251867.6	7555239.1	484.8	0	-90	21	25	22.1	16.3	34.5	4	PODIFORM MN
BAH051	251887.0	7555218.9	483.2	0	-90	0	14	26.9	22.2	12.7	14	LATERITIC MN
BAH051	251887.0	7555218.9	483.2	0	-90	15	28	21.1	29.1	11.0	13	PODIFORM MN
BAH052	251888.5	7555239.2	482.9	0	-90	0	11	20.8	22.4	17.2	11	LATERITIC MN
BAH052	251888.5	7555239.2	482.9	0	-90	25	28	21.2	11.3	43.5	3	PODIFORM MN
BAH053	251886.1	7555179.3	482.5	0	-90	0	27	27.2	26.3	10.5	27	PODIFORM MN
BAH054	251910.1	7555168.8	478.6	0	-90	5	23	12.9	27.8	28.9	18	PODIFORM MN
BAH055	251907.5	7555197.3	480.4	0	-90	6	23	19.5	28.8	15.8	17	PODIFORM MN
BAH056	251908.3	7555179.4	479.8	0	-90	1	21	26.0	26.4	9.5	20	PODIFORM MN
BAH057	251888.0	7555195.0	482.4	0	-90	0	6	17.5	29.4	19.0	6	LATERITIC MN
BAH057	251888.0	7555195.0	482.4	0	-90	21	25	19.5	30.3	14.5	4	PODIFORM MN
BAH058	251907.2	7555218.6	480.9	0	-90	22	28	32.9	20.9	8.0	6	PODIFORM MN
BAH059	251905.8	7555237.4	481.5	0	-90	0	14	20.5	27.2	11.9	14	LATERITIC MN
BAH059	251905.8	7555237.4	481.5	0	-90	22	28	27.5	22.0	14.0	6	PODIFORM MN
BAH060	251922.0	7555236.7	480.4	0	-90	22	28	26.4	33.8	4.1	6	PODIFORM MN
BAH061	251923.1	7555215.9	479.4	0	-90	0	2	19.2	19.7	18.8	2	LATERITIC MN
BAH061	251923.1	7555215.9	479.4	0	-90	24	28	21.6	31.6	8.6	4	PODIFORM MN
BAH062	251922.9	7555198.4	478.9	0	-90	0	1	31.5	21.0	6.3	1	LATERITIC MN
BAH062	251922.9	7555198.4	478.9	0	-90	6	10	27.8	23.8	7.6	4	PODIFORM MN

HOLE_ID	EASTING MGA94Z51	NORTHING MGA94Z51	RL AHD	AZI	DIP	FROM M	TO M	Mn %	Fe %	SiO2 %	INTERVAL M	MINZONE
BAH063	251920.7	7555178.5	478.5	0	-90	6	20	23.6	28.2	11.1	14	PODIFORM MN
BAH064	251922.3	7555159.7	477.7	0	-90	11	19	17.0	34.0	14.4	8	PODIFORM MN
BAH065	251985.2	7555117.7	471.2	0	-90	0	9	37.4	14.6	9.4	9	LATERITIC MN
BAH065	251985.2	7555117.7	471.2	0	-90	15	21	21.1	23.4	19.7	6	PODIFORM MN
BAH066	251985.8	7555139.2	472.2	0	-90	0	12	23.1	14.4	34.6	12	LATERITIC MN
BAH066	251985.8	7555139.2	472.2	0	-90	14	20	30.1	22.8	9.7	6	PODIFORM MN
BAH067	251984.0	7555152.8	473.0	0	-90	0	3	24.1	23.5	16.0	3	LATERITIC MN
BAH067	251984.0	7555152.8	473.0	0	-90	12	17	25.5	27.1	11.3	5	PODIFORM MN
BAH068	252002.7	7555155.1	472.1	0	-90	0	3	31.2	17.0	11.8	3	LATERITIC MN
BAH068	252002.7	7555155.1	472.1	0	-90	10	16	30.9	23.3	8.7	6	PODIFORM MN
BAH069	252000.9	7555139.4	471.5	0	-90	0	9	35.5	14.6	12.4	9	LATERITIC MN
BAH069	252000.9	7555139.4	471.5	0	-90	10	15	18.0	33.6	13.9	5	PODIFORM MN
BAH070	251999.4	7555118.6	470.9	0	-90	0	6	29.0	17.7	17.9	6	LATERITIC MN
BAH070	251999.4	7555118.6	470.9	0	-90	18	22	19.3	27.2	16.9	4	PODIFORM MN
BAH074	251855.9	7555139.9	482.1	0	-90	0	11	30.5	16.4	14.5	11	LATERITIC MN
BAH074	251855.9	7555139.9	482.1	0	-90	16	20	18.6	29.2	16.3	4	PODIFORM MN
AHRC001	251849.8	7555170.9	485.4	0	-90	0	19	31.9	23.3	8.1	19	LATERITIC MN
AHRC001	251849.8	7555170.9	485.4	0	-90	19	28	23.7	23.5	13.9	9	PODIFORM MN
AHRC002	251864.2	7555170.2	485.4	0	-90	0	12	36.0	18.5	7.4	12	LATERITIC MN
AHRC002	251864.2	7555170.2	485.4	0	-90	19	27	16.1	25.0	21.9	8	PODIFORM MN
AHRC003	251794.8	7555189.3	481.9	270	-60	0	14	25.9	17.3	22.6	14	LATERITIC MN
AHRC004	251860.0	7555081.5	474.2	0	-90	0	3	15.5	32.9	14.1	3	LATERITIC MN
AHRC005	251840.2	7555080.9	474.1	0	-90	0	2	24.9	24.6	9.7	2	LATERITIC MN
AHRC006	251839.7	7555060.1	472.6	0	-90	0	2	26.9	22.4	11.0	2	LATERITIC MN
AHRC007	251823.6	7555096.9	474.8	272	-60	0	7	32.0	14.7	13.3	7	LATERITIC MN
AHRC008	251825.4	7555123.6	477.7	270	-60	0	5	24.5	21.5	14.5	5	LATERITIC MN
AHRC009	251878.8	7555080.7	473.5	0	-90	0	10	22.5	20.8	18.9	10	LATERITIC MN
AHRC010	251880.5	7555060.7	473.0	0	-90	0	6	26.8	19.3	16.6	6	LATERITIC MN
AHRC011	251860.2	7555060.4	473.4	0	-90	0	3	11.0	21.3	34.6	3	LATERITIC MN
AHRC012	251848.2	7555062.0	472.8	0	-90	0	3	23.9	21.2	17.2	3	LATERITIC MN
AHRC013	251825.4	7555139.6	478.8	270	-60	0	9	30.7	17.9	10.6	9	LATERITIC MN
AHRC014	251867.6	7555140.8	482.4	0	-90	0	14	29.0	23.2	10.7	14	LATERITIC MN
AHRC014	251867.6	7555140.8	482.4	0	-90	16	20	22.4	25.8	11.2	4	PODIFORM MN
AHRC015	251868.1	7555159.0	484.4	0	-90	0	16	31.4	23.7	6.8	16	LATERITIC MN
AHRC015	251868.1	7555159.0	484.4	0	-90	16	25	20.9	24.9	14.5	9	PODIFORM MN
AHRC016	251807.5	7555189.0	482.6	271	-61	0	16	14.8	13.4	48.2	16	LATERITIC MN
AHRC017	251834.5	7555171.2	484.2	0	-90	0	16	34.1	15.3	12.3	16	LATERITIC MN
AHRC017	251834.5	7555171.2	484.2	0	-90	17	28	16.8	31.8	20.5	11	PODIFORM MN
AHRC018	251805.6	7555177.9	482.0	270	-60	0	18	19.6	18.8	32.5	18	LATERITIC MN
AHRC018	251805.6	7555177.9	482.0	270	-60	23	30	24.8	20.8	22.7	7	PODIFORM MN
AHRC019	251820.0	7555171.5	482.8	0	-90	0	11	30.5	21.6	12.1	11	LATERITIC MN
AHRC019	251820.0	7555171.5	482.8	0	-90	18	26	25.7	20.6	16.4	8	PODIFORM MN
AHRC020	251853.3	7555158.9	484.3	0	-90	0	16	25.2	25.2	13.1	16	LATERITIC MN
AHRC020	251853.3	7555158.9	484.3	0	-90	17	24	16.2	32.4	14.4	7	PODIFORM MN
AHRC021	251825.7	7555158.4	481.8	270	-60	0	20	30.1	19.9	12.8	20	LATERITIC MN
AHRC022	252012.6	7555118.7	470.4	0	-90	0	2	17.3	11.9	40.7	2	LATERITIC MN
AHRC022	252012.6	7555118.7	470.4	0	-90	18	24	20.6	24.3	18.7	6	PODIFORM MN
AHRC023	252048.2	7555118.3	468.4	0	-90	0	1	19.4	21.6	20.4	1	LATERITIC MN
AHRC024	252028.7	7555118.6	469.7	0	-90	18	25	18.3	32.8	12.7	7	PODIFORM MN
AHRC025	252014.2	7555138.6	471.0	0	-90	0	1	17.4	23.8	19.2	1	LATERITIC MN
AHRC025	252014.2	7555138.6	471.0	0	-90	6	12	27.1	26.9	9.9	6	PODIFORM MN
AHRC026	252030.7	7555139.2	470.3	0	-90	0	5	26.2	23.2	12.3	5	LATERITIC MN
AHRC026	252030.7	7555139.2	470.3	0	-90	11	18	33.6	18.8	9.2	7	PODIFORM MN
AHRC027	252048.7	7555139.0	469.6	0	-90	0	4	22.5	21.3	20.7	4	LATERITIC MN

HOLE_ID	EASTING MGA94Z51	NORTHING MGA94Z51	RL AHD	AZI	DIP	FROM M	TO M	Mn %	Fe %	SiO2 %	INTERVAL M	MINZONE
AHRC028	252066.0	7555137.7	468.4	0	-90	0	1	23.6	20.0	18.2	1	LATERITIC MN
AHRC029	252008.8	7555158.3	472.0	0	-90	0	3	18.7	16.9	24.5	3	LATERITIC MN
AHRC029	252008.8	7555158.3	472.0	0	-90	8	14	34.7	17.2	8.6	6	PODIFORM MN
AHRC030	252022.3	7555158.7	471.5	0	-90	0	2	20.4	19.2	23.0	2	LATERITIC MN
AHRC030	252022.3	7555158.7	471.5	0	-90	11	14	24.4	28.3	11.5	3	PODIFORM MN
AHRC031	252037.2	7555159.2	470.8	0	-90	0	5	30.7	19.3	10.9	5	LATERITIC MN
AHRC031	252037.2	7555159.2	470.8	0	-90	9	14	23.4	28.2	13.2	5	PODIFORM MN
AHRC032	252054.7	7555160.0	469.8	0	-90	0	5	21.4	20.6	19.5	5	LATERITIC MN
AHRC034	252029.2	7555177.8	471.8	0	-90	0	6	25.5	19.8	16.1	6	LATERITIC MN
AHRC034	252029.2	7555177.8	471.8	0	-90	8	14	27.4	20.2	15.9	6	PODIFORM MN
AHRC035	252042.8	7555178.3	471.0	0	-90	0	8	31.8	21.7	9.9	8	LATERITIC MN
AHRC036	252015.7	7555198.3	473.0	0	-90	0	1	15.3	21.6	29.3	1	LATERITIC MN
AHRC036	252015.7	7555198.3	473.0	0	-90	15	22	34.8	19.3	7.5	7	PODIFORM MN
AHRC037	252027.9	7555198.8	471.8	0	-90	0	6	19.1	10.2	41.5	6	LATERITIC MN
AHRC037	252027.9	7555198.8	471.8	0	-90	15	19	37.5	15.9	7.5	4	PODIFORM MN
AHRC038	252005.2	7555100.0	469.9	0	-90	0	1	17.3	18.6	26.0	1	LATERITIC MN
AHRC038	252005.2	7555100.0	469.9	0	-90	17	23	25.6	21.9	16.2	6	PODIFORM MN
AHRC039	252019.6	7555099.1	469.7	0	-90	0	1	16.2	20.7	24.0	1	LATERITIC MN
AHRC040	252038.5	7555099.1	468.7	0	-90	0	2	24.9	18.7	17.1	2	LATERITIC MN
AHRC041	251988.9	7555098.4	470.4	0	-90	0	10	38.1	13.6	7.8	10	LATERITIC MN
AHRC041	251988.9	7555098.4	470.4	0	-90	15	20	23.2	22.9	16.5	5	PODIFORM MN
AHRC042	251973.1	7555098.2	470.7	0	-90	0	5	23.2	26.5	17.0	5	LATERITIC MN
AHRC042	251973.1	7555098.2	470.7	0	-90	12	18	20.5	27.7	13.5	6	PODIFORM MN
AHRC043	251993.7	7555080.4	469.6	0	-90	0	5	24.1	25.5	14.2	5	LATERITIC MN
AHRC043	251993.7	7555080.4	469.6	0	-90	18	21	24.0	22.4	14.8	3	PODIFORM MN
AHRC044	252008.1	7555079.9	469.3	0	-90	0	1	24.8	19.4	17.2	1	LATERITIC MN
AHRC045	252026.9	7555080.0	468.5	0	-90	0	1	21.0	17.7	21.4	1	LATERITIC MN
AHRC047	251978.4	7555080.8	470.0	0	-90	0	4	22.7	13.7	28.2	4	LATERITIC MN
AHRC047	251978.4	7555080.8	470.0	0	-90	13	15	18.6	17.9	33.1	2	PODIFORM MN
AHRC048	251978.1	7555119.1	471.6	0	-90	14	21	23.7	24.1	15.5	7	PODIFORM MN
AHRC049	252044.2	7555199.8	470.4	0	-90	0	2	30.2	15.7	16.3	2	LATERITIC MN
AHRC050	251998.9	7555198.4	474.1	0	-90	0	2	19.8	19.1	23.5	2	LATERITIC MN
AHRC051	251985.6	7555198.7	474.8	0	-90	0	1	21.6	14.6	24.4	1	LATERITIC MN
AHRC052	251971.0	7555199.5	475.7	0	-90	0	2	20.8	18.4	19.2	2	LATERITIC MN
AHRC052	251971.0	7555199.5	475.7	0	-90	8	12	20.5	33.5	13.2	4	PODIFORM MN
AHRC053	251993.6	7555214.4	473.6	0	-90	0	4	20.2	19.3	25.2	4	LATERITIC MN
AHRC053	251993.6	7555214.4	473.6	0	-90	13	22	26.3	23.9	13.6	9	PODIFORM MN
AHRC054	251979.3	7555218.7	475.4	0	-90	0	2	23.8	19.1	18.3	2	LATERITIC MN
AHRC055	252007.4	7555219.3	470.8	0	-90	9	14	20.4	19.2	25.2	5	PODIFORM MN
AHRC055	252007.4	7555219.3	470.8	0	-90	15	20	16.7	39.1	7.8	5	PODIFORM MN
AHRC056	251967.9	7555057.6	469.5	0	-90	0	2	17.3	14.3	36.1	2	LATERITIC MN
AHRC058	252003.9	7555238.1	469.0	0	-90	6	13	25.9	26.1	9.8	7	PODIFORM MN
AHRC059	251989.4	7555238.3	470.7	0	-90	17	26	22.2	22.5	13.6	9	PODIFORM MN
AHRC060	251996.9	7555260.0	466.7	0	-90	2	7	25.2	24.8	12.1	5	PODIFORM MN
AHRC060	251996.9	7555260.0	466.7	0	-90	14	25	24.2	30.7	6.2	11	PODIFORM MN
AHRC061	251994.1	7555277.3	471.3	90	-60	0	11	24.7	25.0	14.7	11	PODIFORM MN
AHRC061	251994.1	7555277.3	471.3	90	-60	30	31	15.3	36.8	10.5	1	PODIFORM MN
AHRC062	251987.3	7555279.1	469.3	0	-90	15	30	24.8	24.3	10.6	15	PODIFORM MN
AHRC063	251985.8	7555298.6	472.4	90	-60	4	12	30.5	21.8	11.6	8	PODIFORM MN
AHRC063	251985.8	7555298.6	472.4	90	-60	26	37	21.9	33.7	7.3	11	PODIFORM MN
AHRC064	251977.1	7555298.1	470.5	0	-90	7	9	22.3	18.8	26.9	2	PODIFORM MN
AHRC064	251977.1	7555298.1	470.5	0	-90	13	28	28.3	22.5	10.1	15	PODIFORM MN
AHRC065	251989.3	7555319.1	473.9	0	-90	0	26	26.2	26.0	11.1	26	PODIFORM MN
AHRC066	251994.7	7555340.1	478.4	0	-90	3	23	34.8	19.1	7.0	20	PODIFORM MN

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AHRC067	252008.7	7555338.8	479.3	0	-90	2	3	25.3	20.0	21.5	1	PODIFORM MN
AHRC067	252008.7	7555338.8	479.3	0	-90	16	31	21.1	26.8	18.6	15	PODIFORM MN
AHRC068	252023.0	7555338.8	480.3	0	-90	0	5	26.9	25.1	12.3	5	PODIFORM MN
AHRC068	252023.0	7555338.8	480.3	0	-90	9	23	26.0	25.7	13.5	14	PODIFORM MN
AHRC071	251879.6	7555168.7	483.4	180	-75	0	5	32.8	15.1	13.9	5	LATERITIC MN
AHRC071	251879.6	7555168.7	483.4	180	-75	17	24	17.5	29.4	17.8	7	PODIFORM MN
AHRC072	251880.6	7555119.9	477.8	0	-90	0	8	29.1	21.6	11.9	8	LATERITIC MN
AHRC072	251880.6	7555119.9	477.8	0	-90	10	14	22.1	24.5	14.3	4	PODIFORM MN
AHRC073	251890.8	7555138.3	474.9	0	-90	0	4	22.7	26.4	15.0	4	LATERITIC MN
AHRC073	251890.8	7555138.3	474.9	0	-90	9	14	21.3	25.8	12.8	5	PODIFORM MN
AHRC074	252048.8	7555319.5	475.8	0	-90	2	9	18.5	25.3	24.3	7	PODIFORM MN
AHRC075	252032.6	7555317.7	477.4	0	-90	5	8	22.9	24.7	16.6	3	PODIFORM MN
AHRC075	252032.6	7555317.7	477.4	0	-90	11	23	19.5	27.3	18.2	12	PODIFORM MN
AHRC076	252009.5	7555318.3	478.7	270	-60	4	10	17.5	16.6	34.7	6	PODIFORM MN
AHRC076	252009.5	7555318.3	478.7	270	-60	17	35	27.8	26.4	9.7	18	PODIFORM MN
AHRC077	252019.7	7555317.5	478.4	0	-90	5	12	20.3	36.9	8.3	7	PODIFORM MN
AHRC077	252019.7	7555317.5	478.4	0	-90	19	22	24.8	22.9	15.0	3	PODIFORM MN
AHRC078	252038.0	7555298.7	473.7	0	-90	7	19	20.5	28.3	14.5	12	PODIFORM MN
AHRC079	252026.6	7555357.5	480.8	0	-90	3	6	24.2	19.7	22.4	3	PODIFORM MN
AHRC080	252015.0	7555356.0	480.6	0	-90	6	27	28.1	21.8	13.7	21	PODIFORM MN
AHRC081	252009.4	7555300.5	477.9	0	-90	0	12	21.7	21.5	22.6	12	PODIFORM MN
AHRC081	252009.4	7555300.5	477.9	0	-90	23	37	19.3	37.5	6.5	14	PODIFORM MN
AHRC082	252013.0	7555285.3	476.0	270	-60	0	13	14.0	30.1	24.5	13	PODIFORM MN
AHRC082	252013.0	7555285.3	476.0	270	-60	26	42	20.5	31.6	11.2	16	PODIFORM MN
AHRC083	251999.5	7555377.9	482.6	0	-90	9	32	28.6	26.2	6.6	23	PODIFORM MN
AHRC084	251968.7	7555378.2	484.7	0	-90	28	31	25.4	26.5	10.0	3	PODIFORM MN
AHRC085	251959.5	7555397.9	485.5	0	-90	24	35	39.6	13.3	6.5	11	PODIFORM MN
AHRC086	251971.2	7555398.3	483.7	0	-90	2	34	34.3	21.1	6.8	32	PODIFORM MN
AHRC087	251952.7	7555420.2	485.5	0	-90	18	35	36.0	22.0	3.7	17	PODIFORM MN
AHRC088	251952.7	7555439.4	486.2	0	-90	26	35	32.6	21.4	10.7	9	PODIFORM MN
AHRC089	251969.1	7555437.9	484.6	0	-90	23	31	6.9	20.6	50.2	8	PODIFORM MN
AHRC090	251982.1	7555440.0	483.2	0	-90	22	30	26.6	27.3	7.5	8	PODIFORM MN
AHRC091	251983.2	7555376.9	483.2	0	-90	22	31	21.0	33.7	8.3	9	PODIFORM MN
AHRC092	251998.7	7555357.9	481.2	0	-90	8	32	24.7	23.0	15.9	24	PODIFORM MN
AHRC093	251944.8	7555479.8	488.0	0	-90	3	27	29.7	21.5	11.7	24	PODIFORM MN
AHRC094	251900.4	7555499.8	488.3	90	-60	29	42	35.4	18.9	9.5	13	PODIFORM MN
AHRC095	251918.8	7555500.1	487.0	0	-90	20	36	30.2	24.3	10.9	16	PODIFORM MN
AHRC096	251908.8	7555520.0	487.0	90	-60	26	36	32.1	17.3	12.1	10	PODIFORM MN
14AHRC_001	251806.0	7555418.0	489.3	360	-90	2	22	23.7	24.1	22.3	20	PODIFORM MN
14AHRC_002	251827.0	7555435.0	490.5	360	-90	12	30	14.4	19.2	44.0	18	PODIFORM MN
14AHRC_003	251850.0	7555449.0	491.4	360	-90	20	40	25.4	17.7	27.3	20	PODIFORM MN
14AHRC_004	251874.0	7555458.0	491.1	360	-90	16	36	18.6	19.3	35.1	20	PODIFORM MN
14AHRC_005	251898.0	7555468.0	490.0	360	-90	2	16	28.0	21.8	15.2	14	PODIFORM MN
14AHRC_005	251898.0	7555468.0	490.0	360	-90	20	40	18.3	21.0	34.9	20	PODIFORM MN
14AHRC_007	251852.0	7555525.0	489.1	360	-90	30	40	21.3	18.1	29.3	10	PODIFORM MN
14AHRC_008	251903.0	7555528.0	486.7	360	-90	26	36	22.0	14.2	35.2	10	PODIFORM MN
14AHRC_014	251767.0	7555800.0	488.8	360	-90	12	18	17.2	11.6	49.2	6	PODIFORM MN
14AHRC_016	251755.0	7555850.0	494.5	360	-90	16	22	24.7	12.3	33.4	6	PODIFORM MN
14AHRC_017	251743.0	7555901.0	499.5	360	-90	28	34	16.0	25.1	21.9	6	PODIFORM MN
14AHRC_018	251761.0	7555902.0	498.9	360	-90	24	30	20.9	20.1	23.0	6	PODIFORM MN
14AHRC_022	251759.0	7556051.0	496.5	360	-90	6	14	17.0	30.6	12.1	8	PODIFORM MN
14AHRC_023	251800.0	7556053.0	498.2	360	-90	0	8	26.8	26.8	9.9	8	PODIFORM MN
14AHRC_023	251800.0	7556053.0	498.2	360	-90	16	20	27.7	19.3	11.7	4	PODIFORM MN
14AHRC_024	251846.0	7556051.0	499.4	360	-90	0	2	24.5	31.5	7.3	2	PODIFORM MN

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14AHRC_025	251727.0	7556100.0	494.7	360	-90	22	38	22.5	19.6	24.4	16	PODIFORM MN
14AHRC_026	251774.0	7556100.0	495.5	360	-90	2	12	25.1	24.9	13.4	10	PODIFORM MN
14AHRC_026	251774.0	7556100.0	495.5	360	-90	16	24	30.0	27.3	7.0	8	PODIFORM MN
14AHRC_028	251725.0	7556150.0	493.3	360	-90	24	28	23.5	21.9	20.0	4	PODIFORM MN
14AHRC_029	251745.0	7556151.0	492.7	360	-90	4	32	27.2	25.1	11.7	28	PODIFORM MN
14AHRC_030	251697.0	7556204.0	490.8	360	-90	26	46	30.8	20.2	10.4	20	PODIFORM MN
14AHRC_031	251747.0	7556202.0	492.7	360	-90	20	28	36.6	20.9	5.0	8	PODIFORM MN
14AHRC_032	251655.0	7556248.0	487.5	360	-90	45	50	21.9	25.5	20.0	5	PODIFORM MN
14AHRC_033	251692.0	7556248.0	490.0	360	-90	20	40	18.8	34.8	11.0	20	PODIFORM MN
14AHRC_034	251801.0	7556000.0	500.2	360	-90	18	23	22.4	22.4	12.9	5	PODIFORM MN
14AHRC_073	251650.0	7556273.0	486.2	360	-90	42	52	20.9	33.7	9.7	10	PODIFORM MN
14AHRC_074	251675.0	7556269.0	487.0	360	-90	18	38	1.0	20.1	61.6	20	PODIFORM MN
14AHRC_075	251699.0	7556270.0	485.5	360	-90	0	20	27.4	25.5	8.5	20	PODIFORM MN
14AHRC_076	251701.0	7556270.0	485.3	91	-60	0	22	26.3	27.9	8.6	22	PODIFORM MN
14AHRC_078	251674.0	7556248.0	489.0	360	-90	30	48	11.3	29.9	23.7	18	PODIFORM MN
14AHRC_079	251716.0	7556249.0	488.2	360	-90	14	26	22.9	32.2	7.8	12	PODIFORM MN
14AHRC_080	251760.0	7556224.0	491.2	87	-60	12	20	23.8	33.6	5.0	8	PODIFORM MN
14AHRC_081	251758.0	7556224.0	491.3	360	-90	14	24	17.8	35.4	8.9	10	PODIFORM MN
14AHRC_082	251722.0	7556224.0	491.6	360	-90	8	32	25.5	22.6	11.0	24	PODIFORM MN
14AHRC_083	251700.0	7556223.0	491.3	360	-90	20	44	24.6	28.5	11.6	24	PODIFORM MN
14AHRC_084	251676.0	7556225.0	489.1	360	-90	28	44	3.4	47.2	23.2	16	PODIFORM MN
14AHRC_085	251765.0	7556201.0	492.4	87	-60	22	28	22.5	37.8	3.0	6	PODIFORM MN
14AHRC_086	251724.0	7556200.0	492.2	360	-90	24	36	1.4	39.7	33.8	12	PODIFORM MN
14AHRC_088	251649.0	7556219.0	485.1	360	-90	36	42	24.4	28.8	8.5	6	PODIFORM MN
14AHRC_099	251726.0	7556175.0	492.7	360	-90	20	24	24.2	24.0	13.0	4	PODIFORM MN
14AHRC_100	251751.0	7556175.0	492.1	88	-60	28	36	23.2	38.0	2.7	8	PODIFORM MN
14AHRC_101	251749.0	7556175.0	492.3	360	-90	18	32	26.1	30.9	6.6	14	PODIFORM MN
14AHRC_106	251725.0	7556125.0	494.1	360	-90	20	34	19.0	24.4	23.6	14	PODIFORM MN
14AHRC_107	251751.0	7556126.0	493.8	360	-90	6	32	25.7	29.9	6.4	26	PODIFORM MN
14AHRC_108	251778.0	7556126.0	493.7	88	-60	0	14	20.9	32.2	9.6	14	PODIFORM MN
14AHRC_108	251778.0	7556126.0	493.7	88	-60	18	22	31.7	28.2	3.2	4	PODIFORM MN
14AHRC_109	251776.0	7556126.0	493.7	360	-90	0	18	27.0	25.9	9.2	18	PODIFORM MN
14AHRC_109	251776.0	7556126.0	493.7	360	-90	24	28	21.6	20.3	18.2	4	PODIFORM MN
14AHRC_112	251748.0	7556101.0	495.3	360	-90	6	24	23.2	30.6	8.6	18	PODIFORM MN
14AHRC_113	251788.0	7556101.0	494.9	88	-60	0	8	24.3	29.5	10.3	8	PODIFORM MN
14AHRC_114	251786.0	7556101.0	495.0	360	-90	0	10	24.9	30.4	8.0	10	PODIFORM MN
14AHRC_114	251786.0	7556101.0	495.0	360	-90	18	22	20.2	37.9	7.0	4	PODIFORM MN
14AHRC_115	251845.0	7556071.0	498.4	88	-60	0	2	27.9	23.0	9.3	2	PODIFORM MN
14AHRC_116	251843.0	7556071.0	498.3	360	-90	0	4	18.4	29.0	17.1	4	PODIFORM MN
14AHRC_117	251824.0	7556071.0	497.9	360	-90	0	8	36.1	22.3	2.8	8	PODIFORM MN
14AHRC_118	251800.0	7556071.0	497.6	360	-90	4	10	8.2	43.3	18.0	6	PODIFORM MN
14AHRC_118	251800.0	7556071.0	497.6	360	-90	14	20	32.2	24.3	4.7	6	PODIFORM MN
14AHRC_119	251774.0	7556073.0	496.8	360	-90	6	10	33.7	19.5	7.7	4	PODIFORM MN
14AHRC_119	251774.0	7556073.0	496.8	360	-90	16	24	19.9	29.6	12.9	8	PODIFORM MN
14AHRC_124	251776.0	7556053.0	497.4	360	-90	6	16	18.9	29.0	15.0	10	PODIFORM MN
14AHRC_124	251776.0	7556053.0	497.4	360	-90	22	24	10.2	48.0	8.1	2	PODIFORM MN
14AHRC_125	251825.0	7556052.0	498.7	360	-90	2	6	27.4	25.1	9.6	4	PODIFORM MN
14AHRC_126	251849.0	7556051.0	499.5	88	-60	0	2	26.4	27.9	8.5	2	PODIFORM MN
14AHRC_127	251838.0	7556026.0	499.1	90	-60	12	15	24.0	35.4	4.8	3	PODIFORM MN
14AHRC_128	251836.0	7556026.0	499.3	360	-90	10	13	29.7	26.2	5.4	3	PODIFORM MN
14AHRC_129	251824.0	7556026.0	499.5	360	-90	11	14	20.3	35.5	7.2	3	PODIFORM MN
14AHRC_137	251822.0	7556001.0	500.8	360	-90	8	16	22.3	30.6	9.0	8	PODIFORM MN
14AHRC_138	251840.0	7556002.0	500.0	88	-60	10	13	14.7	29.9	15.4	3	PODIFORM MN

HOLE_ID	EASTING MGA94Z51	NORTHING MGA94Z51	RL AHD	AZI	DIP	FROM M	TO M	Mn %	Fe %	SiO2 %	INTERVAL M	MINZONE
14AHRC_139	251842.0	7556002.0	499.1	360	-90	9	12	7.4	42.9	15.2	3	PODIFORM MN
14AHRC_140	251832.0	7555975.0	501.5	88	-60	6	11	24.7	28.9	9.9	5	PODIFORM MN
14AHRC_141	251824.0	7555975.0	501.6	360	-90	9	11	17.5	27.8	19.8	2	PODIFORM MN
14AHRC_151	251716.0	7555904.0	498.1	269	-60	38	43	27.4	18.5	15.6	5	PODIFORM MN
14AHRC_152	251718.0	7555904.0	498.4	360	-90	26	36	25.6	18.3	19.0	10	PODIFORM MN
14AHRC_153	251729.0	7555874.0	497.0	360	-90	23	27	24.9	16.5	24.7	4	PODIFORM MN
14AHRC_154	251767.0	7555834.0	492.3	90	-60	15	19	19.5	23.1	18.8	4	PODIFORM MN
14AHRC_155	251765.0	7555834.0	492.5	360	-90	14	17	29.6	13.1	21.0	3	PODIFORM MN
14AHRC_164	251874.0	7555578.0	485.2	88	-60	0	2	26.6	15.8	19.7	2	PODIFORM MN
14AHRC_164	251874.0	7555578.0	485.2	88	-60	3	4	25.0	17.7	18.8	1	PODIFORM MN
14AHRC_165	251872.0	7555578.0	485.5	360	-90	1	23	20.4	15.9	30.3	22	PODIFORM MN
14AHRC_166	251875.0	7555563.0	486.2	360	-90	0	18	19.3	20.4	24.1	18	PODIFORM MN
14AHRC_166	251875.0	7555563.0	486.2	360	-90	22	30	28.9	15.9	20.4	8	PODIFORM MN
14AHRC_167	251849.0	7555564.0	487.8	360	-90	32	35	22.7	14.3	30.8	3	PODIFORM MN
14AHRC_175	251860.0	7555541.0	488.1	360	-90	24	30	22.4	19.5	27.3	6	PODIFORM MN
14AHRC_176	251877.0	7555541.0	487.3	360	-90	2	14	14.4	13.8	48.5	12	PODIFORM MN
14AHRC_176	251877.0	7555541.0	487.3	360	-90	17	21	20.5	13.2	43.7	4	PODIFORM MN
14AHRC_176	251877.0	7555541.0	487.3	360	-90	39	40	24.0	28.0	14.0	1	PODIFORM MN
14AHRC_177	251882.0	7555517.0	487.9	360	-90	28	36	21.2	16.0	35.5	8	PODIFORM MN
14AHRC_178	251860.0	7555521.0	488.8	360	-90	28	36	17.8	20.2	34.2	8	PODIFORM MN
14AHRC_181	251870.0	7555519.0	488.3	360	-90	22	34	22.2	16.2	33.8	12	PODIFORM MN
14AHRC_182	251897.0	7555501.0	488.3	360	-90	30	38	21.4	17.3	31.7	8	PODIFORM MN
14AHRC_183	251882.0	7555500.0	488.7	360	-90	22	34	20.4	14.9	35.2	12	PODIFORM MN
14AHRC_184	251861.0	7555501.0	489.3	360	-90	32	36	17.0	17.0	41.6	4	PODIFORM MN
14AHRC_185	251840.0	7555501.0	490.0	360	-90	30	37	21.3	15.2	36.9	7	PODIFORM MN
14AHRC_192	251907.0	7555521.0	487.0	360	-90	24	36	29.2	14.7	24.5	12	PODIFORM MN
14AHRC_193	251901.0	7555521.0	487.2	360	-90	24	38	28.8	15.0	24.2	14	PODIFORM MN
14AHRC_194	251895.0	7555542.0	486.1	360	-90	1	6	23.7	26.8	15.4	5	PODIFORM MN
14AHRC_194	251895.0	7555542.0	486.1	360	-90	30	36	30.4	17.5	15.3	6	PODIFORM MN
14AHRC_195	251897.0	7555542.0	486.0	87	-60	1	5	28.1	17.4	22.3	4	PODIFORM MN
14AHRC_195	251897.0	7555542.0	486.0	87	-60	32	34	17.3	18.8	28.6	2	PODIFORM MN
14AHRC_196	251877.0	7555563.0	486.1	90	-60	0	6	17.4	19.4	31.2	6	PODIFORM MN
14AHRC_196	251877.0	7555563.0	486.1	90	-60	14	26	18.1	20.2	19.8	12	PODIFORM MN
14AHRC_200	251850.0	7555482.0	490.2	360	-90	28	37	18.9	15.4	40.4	9	PODIFORM MN
14AHRC_201	251860.0	7555482.0	490.2	360	-90	28	36	22.8	26.6	20.9	8	PODIFORM MN
14AHRC_202	251871.0	7555482.0	490.0	360	-90	26	36	22.3	21.9	24.2	10	PODIFORM MN
14AHRC_203	251835.0	7555464.0	489.6	269	-60	12	24	24.6	31.7	12.3	12	PODIFORM MN
14AHRC_204	251837.0	7555464.0	489.8	360	-90	19	34	16.5	14.7	46.1	15	PODIFORM MN
14AHRC_205	251847.0	7555464.0	490.6	360	-90	24	39	19.4	16.9	39.8	15	PODIFORM MN
14AHRC_206	251859.0	7555466.0	491.0	360	-90	24	39	23.4	16.7	31.8	15	PODIFORM MN
14AHRC_207	251867.0	7555465.0	491.0	360	-90	22	37	20.4	17.9	33.5	15	PODIFORM MN
14AHRC_208	251878.0	7555463.0	490.8	360	-90	12	36	19.8	14.1	41.9	24	PODIFORM MN
14AHRC_209	251890.0	7555464.0	490.5	360	-90	8	9	24.8	11.6	33.2	1	PODIFORM MN
14AHRC_209	251890.0	7555464.0	490.5	360	-90	20	39	22.0	25.5	24.0	19	PODIFORM MN
14AHRC_210	251898.0	7555463.0	490.4	360	-90	1	16	27.9	19.4	20.3	15	PODIFORM MN
14AHRC_210	251898.0	7555463.0	490.4	360	-90	18	39	12.0	22.6	42.6	21	PODIFORM MN
14AHRC_211	251909.0	7555461.0	491.0	360	-90	2	6	20.5	16.8	36.0	4	PODIFORM MN
14AHRC_211	251909.0	7555461.0	491.0	360	-90	19	40	20.3	26.9	20.8	21	PODIFORM MN
14AHRC_212	251879.0	7555482.0	489.9	360	-90	21	36	21.6	17.1	34.2	15	PODIFORM MN
14AHRC_213	251889.0	7555482.0	489.8	360	-90	24	39	22.3	20.5	27.0	15	PODIFORM MN
14AHRC_214	251899.0	7555481.0	489.4	360	-90	22	40	19.9	28.9	21.7	18	PODIFORM MN
14AHRC_215	251908.0	7555482.0	489.6	360	-90	0	24	28.5	22.4	15.4	24	PODIFORM MN
14AHRC_215	251908.0	7555482.0	489.6	360	-90	27	39	29.6	16.2	21.7	12	PODIFORM MN

HOLE_ID	EASTING MGA94Z51	NORTHING MGA94Z51	RL AHD	AZI	DIP	FROM M	TO M	Mn %	Fe %	SiO2 %	INTERVAL M	MINZONE
14AHRC_216	251791.0	7555431.0	487.3	360	-90	8	12	19.1	31.1	21.6	4	PODIFORM MN
14AHRC_217	251789.0	7555431.0	486.9	269	-60	6	9	24.9	29.5	14.0	3	PODIFORM MN
14AHRC_219	251796.0	7555412.0	488.9	360	-90	14	18	26.9	16.7	28.0	4	PODIFORM MN
14AHRC_220	251798.0	7555431.0	487.8	360	-90	2	18	19.5	30.9	21.9	16	PODIFORM MN
14AHRC_221	251818.0	7555433.0	489.3	360	-90	6	24	19.0	15.6	40.1	18	PODIFORM MN
14AHRC_222	251828.0	7555443.0	490.0	360	-90	11	28	12.5	12.8	55.4	17	PODIFORM MN
14AHRC_223	251839.0	7555443.0	490.8	360	-90	18	33	23.7	17.2	29.0	15	PODIFORM MN
14AHRC_224	251850.0	7555443.0	491.7	360	-90	19	39	24.4	20.9	24.2	20	PODIFORM MN
14AHRC_225	251859.0	7555443.0	491.9	360	-90	20	38	24.5	18.0	28.4	18	PODIFORM MN
14AHRC_226	251870.0	7555443.0	492.1	360	-90	14	36	24.5	27.2	15.8	22	PODIFORM MN
14AHRC_227	251880.0	7555443.0	491.7	360	-90	14	38	18.2	25.1	29.2	24	PODIFORM MN
14AHRC_228	251888.0	7555443.0	491.5	360	-90	0	16	25.2	14.4	32.6	16	PODIFORM MN
14AHRC_228	251888.0	7555443.0	491.5	360	-90	32	36	21.5	28.4	13.4	4	PODIFORM MN
14AHRC_229	251900.0	7555443.0	490.9	360	-90	11	14	24.1	18.4	29.9	3	PODIFORM MN
14AHRC_229	251900.0	7555443.0	490.9	360	-90	36	37	20.6	25.8	13.2	1	PODIFORM MN
14AHRC_230	251908.0	7555443.0	490.7	360	-90	37	39	22.4	26.0	15.1	2	PODIFORM MN
14AHRC_231	251904.0	7555424.0	491.5	360	-90	26	32	34.6	23.4	4.8	6	PODIFORM MN
14AHRC_232	251918.0	7555422.0	489.9	360	-90	24	36	35.7	19.3	7.2	12	PODIFORM MN
14AHRC_233	251837.0	7555400.0	493.6	360	-90	10	34	32.7	13.3	22.2	24	PODIFORM MN
14AHRC_234	251858.0	7555401.0	494.1	360	-90	16	36	23.0	16.7	31.7	20	PODIFORM MN
14AHRC_235	251882.0	7555423.0	493.6	360	-90	3	14	21.7	18.6	33.4	11	PODIFORM MN
14AHRC_235	251882.0	7555423.0	493.6	360	-90	26	34	24.2	18.8	25.4	8	PODIFORM MN
14AHRC_236	251858.0	7555422.0	493.5	360	-90	16	34	30.8	17.6	19.1	18	PODIFORM MN

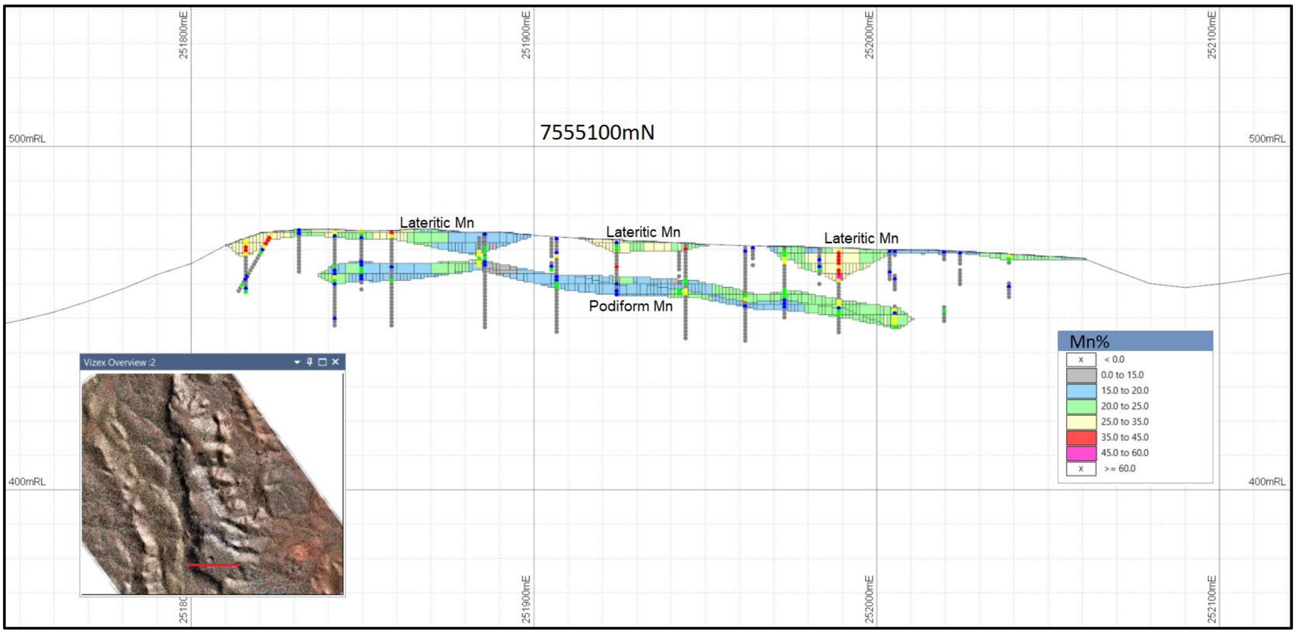

Figure 3 Ant Hill Cross Section 7,555,100N Showing Block Model and Supporting Drill Results

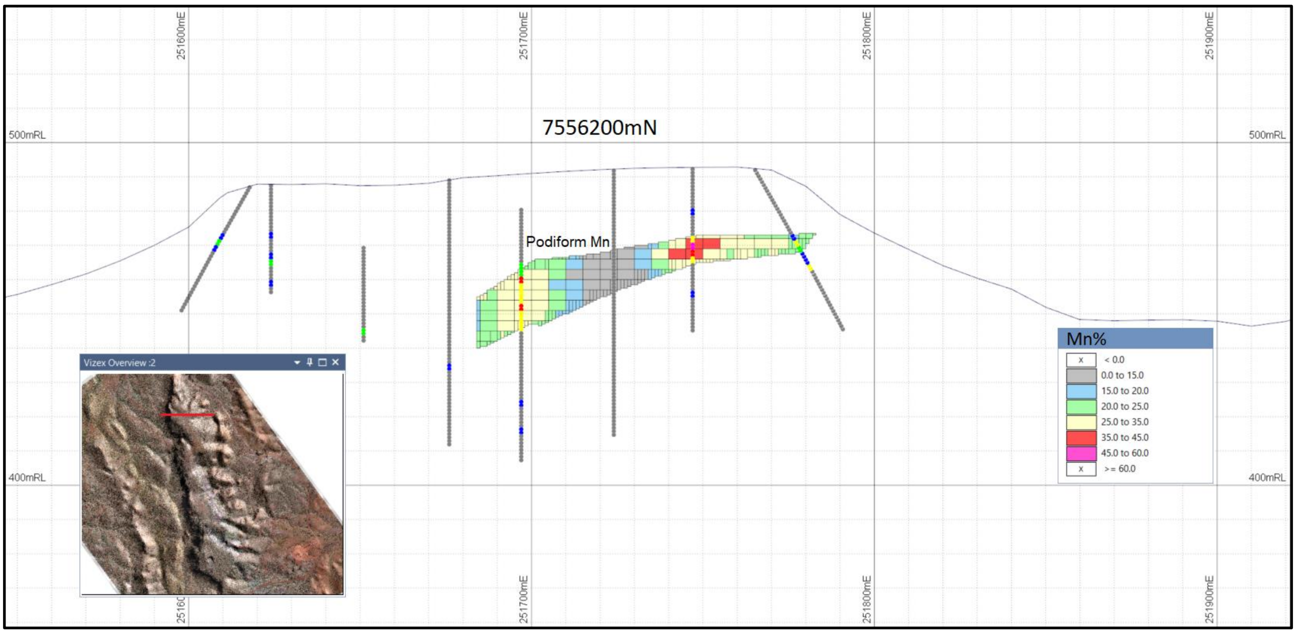

Figure 4 Ant Hill Cross Section 7,556,200N Showing Block Model and Supporting Drill Results

Resource Classification

The Resource has been classified as Indicated and Inferred within pit constraints, satisfying the requirements of 'reasonable prospects for eventual economic extraction' in accordance with the 2012 JORC Code. Remaining mineralisation has been left as unclassified.

A range of criteria has been considered in determining the classification including:

- Geological continuity
- Data quality
- Drillhole spacing
- Modelling technique
- Estimation quality measures, including search strategy, the number of informing data, the average distance of data from blocks, the block kriging variance and the slope of regression.

Where the Resource is supported by a drillhole spacing of 25 m by 25 m it has been classified as Indicated. In areas where drillhole support is limited but surface mapping and cross section structures suggest the mineralisation is continuous, the Resource has been classified as Inferred.

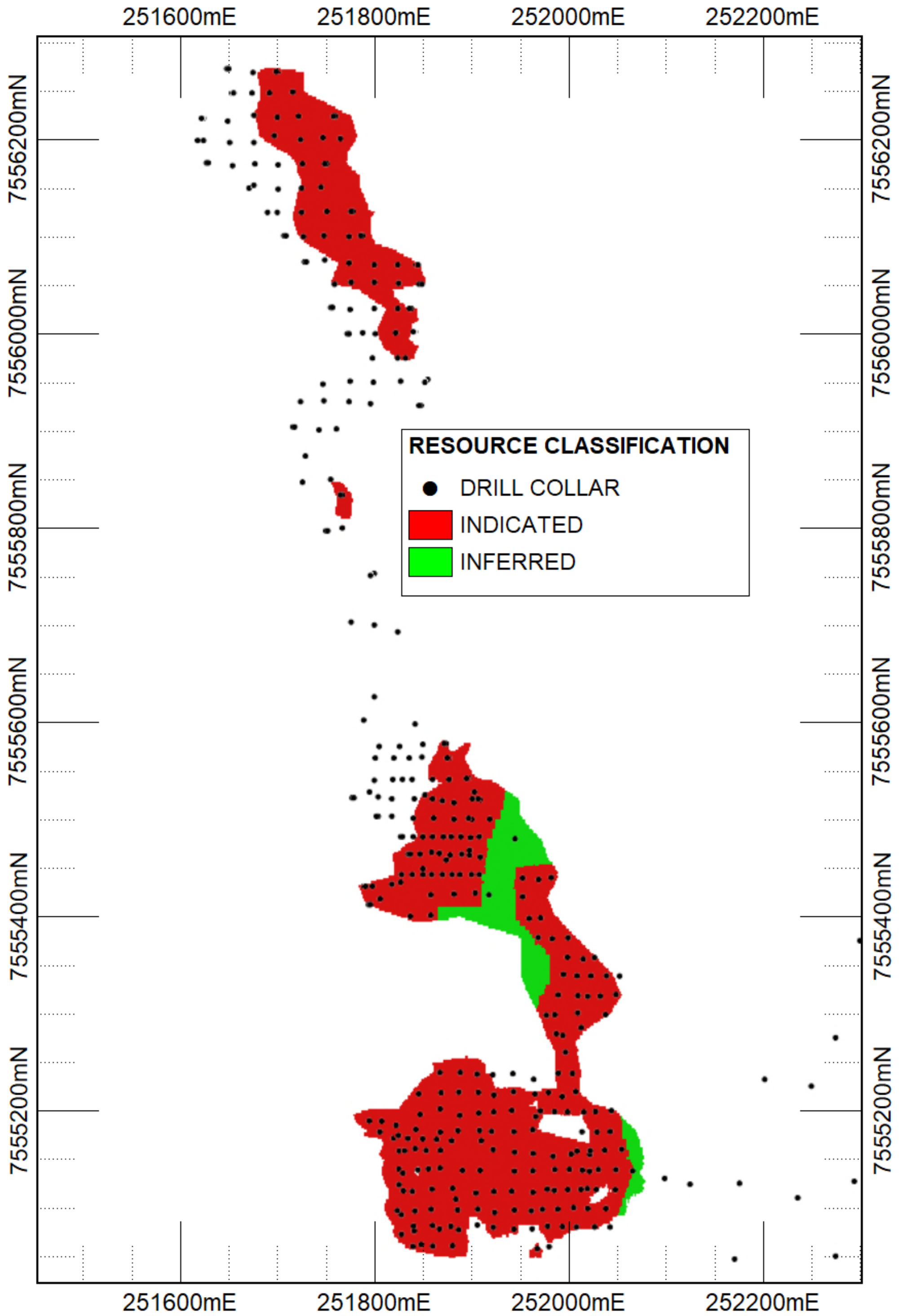

Figure 5 Ant Hill Resource Classification

Cut-off Grade

A cut-off grade of 10% Mn was used for reporting the Mineral Resource estimate, the reporting cut-off is in line with the parameters used to build the geological model.

Table 2 Ant Hill Global Manganese Mineral Resource (as at 31 December 2019)

Commodity: Manganese (Mn)							
Deposit	**Type**	**Cut-off (Mn %)**	**Tonnes (Mt)**	**Mn (%)**	**Fe (%)**	**SiO_2 (%)**	**Resource Category**
Ant Hill	Sediment-Hosted	10	2.8	24.4	23.9	16.7	Indicated
		10	0.3	28.7	21.6	14.2	Inferred
Total			**3.1**	**24.7**	**23.7**	**16.5**	**All**

Competent Person's Statement

The information in this report that relates to the Mineral Resources listed in the previous table is based upon work compiled by Mr Matthew Watson. Mr Matthew Watson is a full-time employee of Mineral Resources Limited and a Member of The Australian Institute of Mining and Metallurgy. Mr Watson has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity he has undertaken to qualify as a Competent Person as defined in the JORC Code, 2012. Mr Watson consents to the inclusion in this report of the matters based on his information in the form and context in which it appears.

Forward Looking Statement

This ASX announcement may contain forward looking statements that are subject to risk factors associated with manganese exploration, mining and production businesses. It is believed that the expectations reflected in these statements are reasonable but they may be affected by a variety of variables and changes in underlying assumptions which could cause actual results or trends to differ materially, including but not limited to price fluctuations, actual demand, currency fluctuations, drilling and production results, metallurgy, Reserve estimations, loss of market, industry competition, environmental risks, physical risks, legislative, fiscal and regulatory changes, economic and financial market conditions in various countries and regions, political risks, project delay or advancement, approvals and cost estimates.

APPENDIX 1: JORC COMPLIANT MANGANESE RESOURCES

The following information has been provided in accordance with Table 1 of Appendix 5A of the JORC Code 2012 – Section 1 (Sampling Techniques and Data), Section 2 (Reporting of Exploration Results) and Section 3 (Estimation and Reporting).

Section 4 (Estimation and Reporting of Ore Reserves) is not being reported in this document.

ANT HILL DEPOSIT

JORC Code 2012 Edition – Table 1

Section 1 - Sampling Techniques and Data

Criteria	JORC Code explanation	Commentary
Sampling techniques	*Nature and quality of sampling (eg cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.*	Valiant Consolidated Ltd completed 78 open-hole percussion drillholes in 1992 for 1,435m. Drillhole IDs were designated AHP. Sovereign Resources NL, in association with BHPE, completed 74 RC drillholes using face sampling hammers in 1998 for 2,018m. Drillhole IDs were designated BAH. HiTec Energy Ltd, through its Mesa Mining Joint Venture with Auvex Resources Ltd, completed 96 RC drillholes using face sampling hammers in 2008 for 2,966m. Drillhole IDs were designated AHRC. 2 Diamond holes using HQ triple tube were completed in 2008 for 14.1m. Drillhole IDs were designated AHD. Mineral Resources Ltd, through its subsidiary Process Minerals International (PMI), completed 236 RC drillholes using face sampling hammers in 2014 for 11,489. Drillhole IDs were designated 2014AHRC.
	Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.	No measurement tools were used by the geology team at the drill rig.

Criteria	JORC Code explanation	Commentary
	Aspects of the determination of mineralisation that are Material to the Public Report. *In cases where 'industry standard' work has been done this would be relatively simple (eg 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay'). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (eg submarine nodules) may warrant disclosure of detailed information.*	Open-hole percussion and RC drilling was used to obtain 1 m and 2 m sample intervals. All drill samples were collected from a fixed cyclone. Pre-2004 RC samples were obtained via a 3 tier Jones riffle splitter. Post-2004 RC samples were obtained via a cone splitter. Two sets of samples were collected into calico bags for each interval. A single set of calicos was dispatched to the laboratory for analysis. All samples were sent to Intertek Genalysis in Perth for preparation for XRF and TGA analysis. Sample weights were not recorded in the field or at the laboratory for any of the drillhole samples.
Drilling techniques	*Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (eg core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc).*	Open-hole percussion was used to collect AHP drill samples. RC with face sampling hammers was used to collect BAH, AHRC and 2014 AHRC drill samples. Drill bit sizes were standard 5.25 inch. HQ triple tube diamond drilling was used to collect AHD core samples.
Drill sample recovery	*Method of recording and assessing core and chip sample recoveries and results assessed.*	Diamond core recovery was measured for all drillholes by comparing tape measured core runs against drill run lengths as recorded by the driller. Recovery was >90%. No qualitative visual measurements were recorded for RC recovery by the attending rig geologists.
	Measures taken to maximise sample recovery and ensure representative nature of the samples.	Beyond the standard drilling procedures, it is not known what additional measures were taken to maximise sample recovery and ensure sample representivity at the drill rig.

Criteria	JORC Code explanation	Commentary
	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.	No direct observations are available to determine whether there is bias related to sample recovery. The lack of commentary in the comments section of the drill logs regarding sample loss suggests that low recovery was not an issue.
Logging	*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.*	AHP and BAH drill samples were re-logged in 2011 by Rudy Vooys using RAVEX Pty Ltd codes. Re-logging was carried out using chip tray samples. The RAVEX logging recorded lithology, colour and rock type. All chip samples have been geologically logged to a level of detail that allows the generation of a geological interpretation that supports the Mineral Resource estimation method.
	Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.	All logging is qualitative. Core and drill chip tray photography was carried out as part of the logging procedure.
	The total length and percentage of the relevant intersections logged.	All sample intervals are logged in full.
Sub-sampling techniques and sample preparation	*If core, whether cut or sawn and whether quarter, half or all core taken.*	Core was collected for petrographic studies.
	If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.	AHP and BAH samples were riffle split. AHRC and 2014AHRC samples were cone split. All drill samples are from above the water table.
	For all sample types, the nature, quality and appropriateness of the sample preparation technique.	All RC samples were collected in labelled bags which were stored onsite or sent for analysis. RC cuttings were taken at regular intervals. Samples were generated by sending dry drill cuttings through a riffle or cone splitter.

Criteria	JORC Code explanation	Commentary
	Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.	The rig sampling system was cleaned out during rod changes and again at the end of the drillhole to minimise cross-contamination between drill intervals.
	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.	Field duplicate results show reasonable reproduction of sample grades across the major analytes, with no obvious grade bias between the primary and duplicate sample grades.
	Whether sample sizes are appropriate to the grain size of the material being sampled.	The sample weights generated using 5.25 inch (RC) face sampling hammers per 1 m sample interval are considered appropriate in size to accurately represent the mineralisation style (sediment-hosted massive manganese).
Quality of assay data and laboratory tests	*The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.*	Assaying was carried out in line with the procedures set down by Intertek Genalysis in Perth. The technique is considered to be a total analysis, with measured analyte oxides summing to approximately 100%.
	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.	Samples were analyzed using X-Ray Spectrometers and Thermogravimetric (TGA) analysers. AHP, BAH AHRC & 2014AHRC drill hole samples were analyzed for Al_2O_3, CaO, Fe, K_2O, LOI, MgO, Mn, Na_2O and SiO_2. AHRC and 2014AHRC drill hole samples were additionally analyzed for As, Ba, Cl, Co, Cr, Cu, Fe_2O_3, Ni, P, S, Sn, TiO_2, Total, V and Zn. XRF and TGA analysis is industry standard for iron and manganese mineralisation. As such, the Competent Person considers XRF and TGA analysis to be suitable for resource estimation studies.
	Nature of quality control procedures adopted (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.	BAH and AHRC drillhole assays were submitted to Genalysis. Standards, coarse repeats, blanks and pulp repeats were all inserted by the laboratory at regular intervals. The raw QAQC data is not available; however, the BHPE resource report concluded that for the BAH holes the assays were within expected tolerance limits, and the 2009 Geologica resource report concluded that the

Criteria	JORC Code explanation	Commentary
		variability of the AHRC standard assays is very low, while most of the repeat standards were within 5% of the original value. 2014AHRC drillhole assays were submitted to Genalysis. Coarse duplicates were collected at the drill rig, whereas standards and pulp repeats were inserted by the laboratory. Lab standards, field duplicates and pulp repeats were taken at regular intervals. The reproducibility of the coarse duplicates were good with no obvious grade bias, pulp repeats were within 5% of the original value and the standards reported within acceptable tolerances.
Verification of sampling and assaying	*The verification of significant intersections by either independent or alternative company personnel.*	Significant intersections have been verified by The Competent Person. Comparisons were made between logged lithology and geochemistry versus photographed RC chip trays. No major issues were identified.
	The use of twinned holes.	There are no twinned holes for comparison.
	Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.	Logging was completed on paper at the drill rig and later entered into Excel. Drillhole detail, along with sampling information, was entered into and validated with Micromine 2018 software prior to interpretation.
	Discuss any adjustment to assay data.	Any samples not assayed (i.e. destroyed in processing, listed not received) have had the assay value left blank. Any samples assayed below detection limit, i.e. 0.01% SiO_2, have been converted to 0.005% (half detection limit) in the database.
Location of data points	*Accuracy and quality of surveys used to locate drillholes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.*	AHP drillholes were set out on a local grid. No survey reference control files are available and only 4 drillholes had their locational data verified. BAH and AHRC drillhole collars were picked up using a Leica System Real Time Kinematics system.

Criteria	JORC Code explanation	Commentary
		2014AHRC drillhole collars were picked up with a GPS. RL values were generated by dropping these locations onto the topographic surface. No downhole surveys were carried out on the drillholes. 437 drill holes were vertical and 96 were angled. The maximum hole depth was 102m, with a mean depth of 37m and a median depth of 30m. Given that the majority of drilling is vertical and that the average drill depth is short, the risk of using unsurveyed drillholes for estimation is considered low.
	Specification of the grid system used.	The grid system used is MGA Zone 51 (GDA 94) for surveying pickups, as well as for all modelling work.
	Quality and adequacy of topographic control.	The topographic surface has been derived from a ground-based survey carried out in E-W traverses by a registered surveyor.
Data spacing and distribution	*Data spacing for reporting of Exploration Results.*	Drillhole spacing over the deposit is nominally 20m along strike by 20m across strike.
	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.	The data spacing and distribution is sufficient to demonstrate spatial and grade continuity of the mineralised domains to support the definition of Inferred and Indicated Mineral Resources under the 2012 JORC Code.
	Whether sample compositing has been applied.	No sample compositing has been applied at the raw data stage.
Orientation of data in relation to geological structure	*Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.*	The dominant drilling direction is vertical (-90°) with a minor component of angled drillholes designed to test the edge of the mesa, where drill rig access is not possible. Overall, the drilling is roughly perpendicular to the strike and dip of the mineralisation, ensuring intercepts are close to true width.
	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.	It is not believed that the drilling orientation has introduced a sampling bias.

Criteria	JORC Code explanation	Commentary
Sample security	*The measures taken to ensure sample security.*	Samples are securely sealed in string drawn calico bags and stored on site until delivery to a Perth-based laboratory via contract freight transport. Sample submission forms are sent with the samples as well as being emailed to the laboratory, and are used to keep track of the sample batches.
Audits or reviews	*The results of any audits or reviews of sampling techniques and data.*	No audits on sampling techniques and data have been completed.

Section 2 Reporting of Exploration Results

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	*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 Ant Hill Deposit is located on M46/238, approximately 120km southeast of Marble Bar. The current registered holder of the tenements is Auvex Resources Pty Ltd, a wholly owned subsidiary of Mineral Resources Limited. M46/238 was invalidly granted to the extent that it affects native title as it was granted during a period in which the State Government was not enforcing compliance with procedural requirements under the *Native Title Act 1993* (Cth) as a result of the decision in *Western Australia v Ward* (2000) 170 ALR 159 and prior to the High Court overturning that decision in *Western Australia v Ward* (2002) 213 CLR 1. Normal Western Australian State royalties apply.
	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.	M46/238 is the subject of forfeiture proceedings initiated by Black Range Mining Pty Ltd on 10 May 2017, pursuant to Section 98 of the *Mining Act 1978* (WA). The forfeiture proceedings are being vigorously defended.

Criteria	JORC Code explanation	Commentary
Exploration done by other parties	*Acknowledgment and appraisal of exploration by other parties.*	Exploration drilling was carried out BHPE for Valiant Consolidated in 1992. Exploration was carried out by Sovereign Resources in 1998. Exploration was carried out by HiTec Energy Ltd, through its Mesa Mining Joint Venture with Auvex Resources in 2008.
Geology	*Deposit type, geological setting and style of mineralisation.*	Ant Hill is a remnant basinal outlier of mid-Proterozoic sediments comprised of the Manganese Group, the Pinjian Chert Breccia, and the Hamersley Group. The sediments form a broad NW plunging syncline and unconformably overlie the Fortescue Group which is locally dominated by the volcanics of the Nymerina Basalt. The manganese deposit occurs as a number of discrete podiform bodies of various sizes on the Ant Hill mesa. The mesa is a fault bounded elongate feature approximately 1.4km long and 400m wide, with a maximum topographic relief of 50m. There is a prominent cap of lateritic manganese and iron at surface on the southern portion of the mesa. Underlying the lateritic cap and running the length of the mesa is a package of iron and silica rich chemical sediments which host several discrete sub-horizontal manganese rich bodies. Petrographic studies suggest that the manganese and iron oxides post-date the silicified host rock. The silicified host rock and the sub-horizontal manganese rich bodies have been cross-cut by a series of vertical faults, resulting in zones of mineralised fault breccia throughout the deposit.
Drillhole Information	*A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drillholes:* ○ *easting and northing of the drillhole collar* ○ *elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar*	Refer to Table 1 in the release.

Criteria	JORC Code explanation	Commentary
	○ *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.	Drillhole information not used to inform the estimation has been excluded from the data included in the release.
Data aggregation methods	*In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated.*	Data was aggregated based on mineralisation domain. Grades for Mn, Fe and SiO_2 were weight averaged based on sample interval length. No grade cutting has been applied.
	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.	Grades in each respective mineralisation domain were weight averaged based on sample interval length.
	The assumptions used for any reporting of metal equivalent values should be clearly stated.	No metal equivalent values are being reported.
Relationship between mineralisation widths and intercept lengths	*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 (eg 'down hole length, true width not known').*	The dominant drilling direction is vertical (-90°) with a minor component of angled drill holes designed to test the edge of the mesa where drill rig access is not possible. Overall the drilling is roughly perpendicular to the strike and dip of the mineralisation, ensuring intercepts are close to true-width.

Criteria	JORC Code explanation	Commentary
Diagrams	*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 drillhole collar locations and appropriate sectional views.*	Refer to Figures 2, 3 and 4 in the release.
Balanced reporting	*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.*	Reporting of exploration results are interval weight averaged across each mineralisation domain.
Other substantive exploration data	*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.*	No other material exploration data to report.
Further work	*The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).*	An infill drill program is planned to extend mineralisation across the deposit, and upgrade areas of inferred material.
	Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.	The geological interpretation is detailed further up in the report.

Section 3 Estimation and Reporting of Mineral Resources

Criteria	JORC Code explanation	Commentary
Database integrity	*Measures taken to ensure that data has not been corrupted by, for example, transcription or keying errors, between its initial collection and its use for Mineral Resource estimation purposes.*	Data was acquired by Mineral Resources Limited (MRL) from Rudy Vooys of RAVEX Pty Ltd and Rob Money a consultant for WestDrill. Data was provided in Excel format, including raw assay files from the lab.

Criteria	JORC Code explanation	Commentary
	Data validation procedures used.	The database has been reviewed and validated using Micromine 2018software.
Site visits	*Comment on any site visits undertaken by the Competent Person and the outcome of those visits.*	Multiple site visits were undertaken by the Competent Person in 2010 and 2011. During these visits, time was spent with Rudy Vooys from RAVEX Pty Ltd, who was responsible for mapping and interpreting the geology of the deposit.
	If no site visits have been undertaken indicate why this is the case.	Not applicable.
Geological interpretation	*Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit.*	Confidence in the geological interpretation is high. Continuity and mineralisation boundaries are informed by geological-structural interpretations identified through field mapping, drillhole assays and a manganese grade cut-off of 10%. Near-surface mining to date correlates well with the interpreted mineralisation envelope.
	Nature of the data used and of any assumptions made.	The geological data used to construct the geological model includes regional and detailed surface mapping, logging of RC drilling and associated geochemical assays.
	The effect, if any, of alternative interpretations on Mineral Resource estimation.	Mineralisation is not complex, and as such alternative interpretations of mineralisation structures are unlikely.
	The use of geology in guiding and controlling Mineral Resource estimation.	The Mineral Resource estimate has been constructed using a combination of sectional interpretations provided by Rudy Vooys of RAVEX Pty Ltd, geology logging, and a Mn grade envelope of 10%.
	The factors affecting continuity both of grade and geology.	The existence of vertical cross-cutting faults occurring at 050° have an effect on the grade continuity of the manganese mineralisation. This has been reflected in the variography.

Criteria	JORC Code explanation	Commentary
Dimensions	*The extent and variability of the Mineral Resource expressed as length (along strike or otherwise), plan width, and depth below surface to the upper and lower limits of the Mineral Resource.*	The manganese mineralisation trends roughly north-south. The mineralisation is divided into surficial lateritic mineralisation and multiple buried sub-horizontal pods, which daylight on the eastern wall of the mesa. The lateritic mineralisation has a strike length of 200m, an across strike width of 250m and a thickness ranging between 5m – 15m. The buried pods have strike lengths ranging from 200m – 400m, across strike width of 80m – 200m and thicknesses ranging between 10m – 25m.
Estimation and modelling techniques	*The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters and maximum distance of extrapolation from data points. If a computer assisted estimation method was chosen include a description of computer software and parameters used.*	Ordinary Kriging (OK) Interpolation was selected as the estimation method. Two geological/mineralisation domains were used to control the estimation. No top cuts were applied to the data. Analysis of sample lengths indicated that sample compositing to 1m was appropriate. AHP drillholes were excluded from the estimation. Variography was carried out on the Mn grades within each mineralisation domain to determine kriging parameters. The Mn variography ranges were used to estimate Mn, Fe and SiO_2. Variography was carried out in GeoAccess Pro and Micromine 2018. The estimation was carried out in Micromine 2018. Search ellipse (SE) sizes for the estimation were based on a combination of drill spacing and variogram ranges for the mineralisation domains, known as MIN_LAT and MIN_HORZ. The MIN_HORZ domain was flattened in the z-axis to improve the semi-variogram model. The MIN_HORZ domain was estimated in flattened space.

Criteria	JORC Code explanation	Commentary
		The estimation was carried out in 4 sequential search passes with the criteria for each successive pass being relaxed. The first pass utilised search ranges equivalent to 85% of the total sill, a maximum of 25 samples, a minimum of 10 samples, a minimum of 2 drillholes and a maximum of 5 samples per drillhole. The second pass utilised search ranges equivalent to 95% of the total sill, a maximum of 25 samples, a minimum of 5 samples, a minimum of 1 drillhole and a maximum of 5 samples per drillhole. The third pass utilised search ranges equivalent to 100% of the total sill, a maximum of 25 samples, a minimum of 5 samples, a minimum of 1 drillhole and a maximum of 5 samples per drillhole. The fourth and final pass utilised search ranges equivalent to 150% of the total sill, a maximum of 25 samples, a minimum of 5 samples, a minimum of 1 drillhole and a maximum of 5 samples per drillhole. For the Lateritic Manganese domain (MIN_LAT) 0.5% of the domain was estimated in the first pass, 87.5% of the domain was estimated after the second pass, 98.5% of the domain was estimated after the third pass, and 100% of the domain was populated after the forth pass. For the Manganese Pod domain (MIN_HORZ) 98% of the domain was estimated in the first pass, and 100% of the domain was populated after the second pass. The relevant search ranges are detailed below.

Domain: MIN_LAT PASS #	D1 Range (m) 270°Azi 0°Plunge	D2 Range (m) 360°Azi 0°Plunge	D3 Range (m) 0°Azi 90°Plunge
1	8.1	7.1	4.9
2	19.7	14.7	11.8
3	33	25	20

Criteria	JORC Code explanation	Commentary
		4 | 49.5 | 37.5 | 30
		Domain: MIN_HORZ PASS # | D1 Range (m) 0°Azi 0°Plunge | D2 Range (m) 90°Azi 0°Plunge | D3 Range (m) 0°Azi 90°Plunge 1 | 50 | 20 | 10 2 | 100 | 25 | 15
	The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.	An ID2 model has been run as a check estimate. Check estimates produced confirmation of primary OK results.
	The assumptions made regarding recovery of by-products.	No by-products are present or modelled.
	Estimation of deleterious elements or other non-grade variables of economic significance (eg sulphur for acid mine drainage characterisation).	Other than Mn, Fe and SiO2 analytes were estimated.
	In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.	Block dimensions are 5m (E-W) by 10m (N-S) by 3m (Vertical) with sub-cells to 1 mE x 2mN x 0.5mRL. Block sizes are nominally one quarter of the lateral sample spacing in the E-W direction, one half of the lateral sample spacing in the N-S direction and three metres in the vertical.
	Any assumptions behind modelling of selective mining units.	The vertical block size was selected to align with mine bench heights.
	Any assumptions about correlation between variables.	For the Horizontal mineralisation pods, the Mn analyte is weakly and negatively correlated with Fe, and strongly and negatively correlated with SiO_2. For the Lateritic mineralisation, the Mn analyte is moderately and negatively associated with Fe, and strongly and negatively correlated with SiO_2.

Criteria	JORC Code explanation	Commentary
	Description of how the geological interpretation was used to control the resource estimates.	The geological interpretation in conjunction with geochemistry was used to define the mineralisation domain. The mineralisation domain was used to constrain composite data and model blocks during the resource estimation process.
	Discussion of basis for using or not using grade cutting or capping.	Top-cuts were not applied. This decision was informed through examination of histograms and probability plots of the composite data, and by considering the spatial location of the outliers within the mineralisation domains.
	The process of validation, the checking process used, the comparison of model data to drillhole data, and use of reconciliation data if available.	Validation of the final resource has been carried out in a number of ways, including: Drillhole section comparison, swath plot validation, and comparison of model mean grades versus composite mean grades by domain. All modes of validation have produced acceptable results. Reconciliation data has not been used to validate or inform the estimation process.
Moisture	*Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.*	Tonnages have been estimated on a dry basis.
Cut-off parameters	*The basis of the adopted cut-off grade(s) or quality parameters applied.*	A cut-off grade of 10% Mn has been used for reporting purposes. This cut-off grade was chosen based on analysis of the grade distribution, and provided best fit with the interpreted geology.
Mining factors or assumptions	*Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential mining methods, but the assumptions made regarding mining methods and parameters when estimating Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the mining assumptions made.*	Mining method is expected to be by open pit. Dilution from blast movement and during digging is expected. External mining dilution has not been factored into the Resource Model as a hard boundary was applied to the mineralisation envelope used for the estimation.

Criteria	JORC Code explanation	Commentary
Metallurgical factors or assumptions	*The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made.*	Based on initial metallurgical test work mineralised material (+10% Mn) from the Ant Hill deposit is expected to undergo crushing, screening and heavy media separation. The initial metallurgical test work has shown that Ant Hill has the ability to produce a manganese product head grade of +37% Mn.
Environmen-tal factors or assumptions	*Assumptions made regarding possible waste and process residue disposal options. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider the potential environmental impacts of the mining and processing operation. While at this stage the determination of potential environmental impacts, particularly for a greenfields project, may not always be well advanced, the status of early consideration of these potential environmental impacts should be reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made.*	Waste storage is expected to occur on flat stable ground in the form of waste dumps to the east of the pit. Any potential acid forming (PAF) material is expected to be correctly stored within the waste dump landform. PAF forming material within the waste rock is not expected to be an issue for mining or waste storage. >95% of all waste material in the project area has a sulphur value below 0.3%.
Bulk density	*Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method used, whether wet or dry, the frequency of the measurements, the nature, size and representativeness of the samples.*	BHPE carried out density measurements on 50 rock samples of approximately 0.5kg each (for in situ density of outcrops and quarry faces) using the weight in air/weight in water method. Additional measurements were carried out on 84 chip/pulp samples from 3 RC holes in the form of pycnometer tests. HiTec Energy Ltd, through its Mesa Mining Joint Venture with Auvex Resources Ltd, carried out density test work on 26 rock samples, 12 bulk samples from metallurgical test work and other assayed samples left over from metallurgical sizing tests. The density measurement method has not been recorded.
	The bulk density for bulk material must have been measured by methods that adequately account for void spaces (vugs, porosity, etc), moisture and differences between rock and alteration zones within the deposit.	The result of the density test work is a table of average densities related to Mn% content within the mineralisation.

<table>
<tr><th>Criteria</th><th>JORC Code explanation</th><th>Commentary</th></tr>
<tr><td></td><td></td><td><table>
<tr><td>Mn%</td><td>Density (insitu)</td></tr>
<tr><td>0-10</td><td>2.6</td></tr>
<tr><td>10-15</td><td>2.8</td></tr>
<tr><td>15-20</td><td>3.0</td></tr>
<tr><td>20-25</td><td>3.2</td></tr>
<tr><td>25-30</td><td>3.4</td></tr>
<tr><td>30-35</td><td>3.6</td></tr>
<tr><td>35-40</td><td>3.8</td></tr>
<tr><td>40-45</td><td>4.0</td></tr>
<tr><td>45-50</td><td>4.1</td></tr>
</table></td></tr>
<tr><td></td><td>Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.</td><td>The following density values have been assigned to the deposit mineralisation according to the above table by relating an equivalent density to the average manganese grade of the domain. Waste domain densities are assumed values:
<table>
<tr><td><u>Rock Type</u></td><td><u>Dry Bulk Density (t/m^3)</u></td></tr>
<tr><td>BIF</td><td>2.5</td></tr>
<tr><td>MST</td><td>2.3</td></tr>
<tr><td>MIN_LAT</td><td>3.2</td></tr>
<tr><td>MIN_HOR</td><td>3.2</td></tr>
</table></td></tr>
<tr><td>Classification</td><td>The basis for the classification of the Mineral Resources into varying confidence categories.</td><td>A range of criteria has been considered in determining this classification including:</td></tr>
</table>

Criteria	JORC Code explanation	Commentary
		- Geological continuity - Data quality - Drillhole spacing - Modelling technique - Estimation properties including search strategy, number of informing data and average distance of data from blocks - Block kriging variance and slope of regression
	Whether appropriate account has been taken of all relevant factors (ie relative confidence in tonnage/grade estimations, reliability of input data, confidence in continuity of geology and metal values, quality, quantity and distribution of the data).	The data spacing and distribution is sufficient to demonstrate spatial and grade continuity of the mineralised envelopes and to support the definition of an Indicated and Inferred Mineral Resource under the 2012 JORC Code once all other modifying factors have been addressed.
	Whether the result appropriately reflects the Competent Person's view of the deposit.	The Competent Person endorses the reported Mineral Resource classification.
Audits or reviews	*The results of any audits or reviews of Mineral Resource estimates.*	No audits or reviews of the Mineral Resource estimate have carried out.
Discussion of relative accuracy/ confidence	*Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors that could affect the relative accuracy and confidence of the estimate.*	Resource Estimation is qualitative in nature and based on the general approach used by resource estimation practitioners to indicate in relative terms the level of risk or uncertainty that may exist with respect to resource estimation which have cumulative effects on projected outcomes. Confidence in the estimate is based on the quality and distribution of the underlying data, continuity of the mineralisation and efficiency of the kriging algorithm.
	The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical	The Ant Hill Resource is a global estimate.

Criteria	JORC Code explanation	Commentary
	and economic evaluation. Documentation should include assumptions made and the procedures used.	
	These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.	Production data is currently limited, there is insufficient data for model comparisons.