Appendix 1

Parameters and methodology used for resource estimates

Mineralized material

The mineralized materials forming this resource include a combination of material from tailings, detritic deposits, saprolite deposits, and transition material, which are described below:

- Tailings:

The previous mining of manganese ore at Matthews Ridge produced a significant volume of washplant reject material (tailings), which did not meet commercial specifications at the time, but that was conveniently deposited next to the processing plant in a shallow valley. The Company drilled this material with 119 holes using a manual Banka and collected 208 samples.

- Detrital:

The detrital deposits are characterized by fairly loose manganese-rich nodules and fragments forming blankets covering hills with subjacent saprolitic mineralization and easily extractable by free digging. The Company sampled this material with 365 pits along the Matthews Ridge prospect (Hills 1 to 9) area, 182 pits at the Arakaka prospect and 351 pits at the Pipiani prospect.

- Saprolite:

The saprolite deposits are formed by manganese oxide and hydroxide minerals occurring in clastic sediments that were thoroughly weathered and occur along the crest of hills as the main components of the lateritic profile. This mineralized material was sampled in the Matthews Ridge prospect (Hills 1 to 9) area by 142 trenches, 47,570 meters of diamond drilling in 735 holes, and 17,361 meters of reverse circulation drilling in 283 holes. Trenches, drill holes and pit collars were surveyed by independent surveyors and diamond drill holes were down-hole surveyed, on average, every 30 meters using electronic survey equipment. The Matthews Ridge prospect (Hills 1 to 9) area has been drilled on a nominal 50 meter by 50 meter grid spacing.

- Transition:

The so-called transition material consists of mineralized saprolite at the transition to fresh rock, where the manganese-bearing sediments are incompletely weathered. This material was sampled by diamond and reverse circulation drilling only.

Sampling

Trench sampling was conducted as channels on the wall just above the trench floor on one meter intervals. Diamond drilling was done using HQ-diameter casing and triple-tube core barrel to maximize recovery. Half of the core was used for sampling at regular 1.5 m intervals. Reverse circulation drilling was done with four-inch casing, sampling at every meter and splitting the rock chips once in the field and processing an entire half sample. Banka drilling of tailings was done with six-inch casing and sampling at every meter. Detrital material was sampled from pits and trenches with 30 cm-wide vertical channels.

Assaying, Quality Assurance and Quality Control

Standard reference materials, internal standards, blanks and duplicate samples have been used to control laboratory accuracy and precision. Drill core sample preparation was done by Activation Laboratories Ltd. and ACME Laboratories at their facilities in Georgetown. It comprised of crushing to minus 2 mm and pulverization passing

200 mesh, followed by XRF assays for manganese and other relevant oxides at their laboratories in Canada. Sample preparation and XRF assay of reverse circulation drill and detrital samples were done by FILAB Guyana Laboratories on site using the same methodology described above.

Density Measurements

Density measurements were routinely taken from diamond drill core on samples spaced at approximately four meters down hole. The "wet" and "dry" densities of the drill core segments were measured using the industry-standard hydrostatic method, but only the dry density values (with measurement of water loss in oven) were used for the resource estimate. The densities of tailings and detritic materials were measured using a bulk technique by digging small pits on representative occurrences of these materials.

Resource and Grade Modeling

The geological units were interpreted on sections by Reunion Manganese personnel. GMining Services validated the interpretation and created 3D geological envelopes that were used to constrain the grade estimation during the interpolation process. Resource estimation was completed using the geostatistical estimation technique, called Ordinary Kriging ("OK"). Validation of the estimated manganese grades and other elements such as SiO_2, Al_2O_3, P and Fe were performed on cross-sections and plan views.

Variography and Grade Capping

The continuity in three dimensions of the various grade elements was studied using the Correlograms technique. Parameters were defined for each unit according to the material types and applied to each element during the estimation process. Hard boundary technique was used to avoid unnecessary grade smearing during interpolation. Statistical analysis was performed on all the elements. All the populations follow a log-normal distribution and a high grade limit of 30% Mn was used to avoid smearing of the high grade values.

Parameters Utilized to Estimate Constrained Resources

A number of industry standard and benchmark values were utilized in order to constrain the Matthew's Ridge prospect (Hills 1 to 9) resources to a Whittle shell. Resources from Arakaka and Pipiani prospects have not been evaluated. The main input parameters for operating costs and concentrate pricing include:

Costs		
Mining	2.00	$/t mined
Processing and Power	3.00	$/t milled
G&A	5.00	$/t milled
Concentrate Transportation	30.00	$/t moved
Concentrate Pricing (FOB Guyana)		
Lump 40%	4.38	$/dmtu
Lump 38%	4.18	$/dmtu
Fine 40%	3.32	$/dmtu
Fine 38%	3.12	$/dmtu
Fine 36%	2.92	$/dmtu

Other inputs include the metallurgical equations by material type as generated by the metallurgical testwork. The cut- off grades utilized vary by hill and material type and are generally between 6% and 8%. The cut off grades are generally defined by the upgradability of the material, meaning that below 6 to 8%, it was impossible to upgrade the material to a marketable concentrate grade.

Table 10: Detailed Constrained Measured, Indicated and Inferred by material type
Matthew's Ridge (Hills 1 to 9)

Material Type	Resource Classification	Tonnage	Grade	Lump Concentrate (-25mm + 6mm)		Fine Concentrate (-6mm + 1mm)		Total Concentrate
		'000 t	(%) Mn	('000t)	(%) Mn	('000t)	(%) Mn	('000t)
Detrital	Measured	-	-	-	-	-	-	-
	Indicated	2,447	15	464	38	175	35	639
	Inferred	169	15	32	38	12	36	45
Saprolite	Measured	12,320	15	2,574	38	1,354	36	3,928
	Indicated	8,497	12	1,213	38	851	36	2,064
	Inferred	1,426	16	311	39	173	36	484
Transition	Measured	3,336	14	695	38	351	36	1,046
	Indicated	1,566	14	269	39	182	36	450
	Inferred	1,191	16	265	40	168	37	433
Tailings	Indicated	998	18	-	-	257	37	257
Grand Total	**Measured & Indicated**	**29,163**	**14**	**5,214**	**38**	**3,170**	**36**	**8,384**
	Inferred	**2,786**	**16**	**608**	**39**	**353**	**37**	**961**

Table 11: Detailed Unconstrained Measured Resources by material type
Matthew's Ridge (Hills 1 to 9)

Material Type	Cutoff Grade	Tonnage	Grade	Lump Concentrate (-25mm + 6mm)		Fine Concentrate (-6mm + 1mm)		Total Concentrate
	% Mn	('000 t)	% Mn	('000 t)	%Mn	('000 t)	%Mn	('000 t)
Detrital	**15%**	-	-	-	-	-	-	-
	10%	-	-	-	-	-	-	-
	8%	-	-	-	-	-	-	-
	6%	-	-	-	-	-	-	-
Saprolite	**15%**	5,597	19	1,657	41	904	39	2,560
	10%	10,612	18	2,564	40	1,348	37	3, 912
	8%	13,208	15	2,779	39	1,468	36	4,247
	6%	17,926	13	2,788	29	1,468	27	4,256
Transition	**15%**	1,371	19	414	41	215	39	629
	10%	2,814	15	677	40	348	37	1,025
	8%	3,778	14	756	39	393	37	1,149
	6%	5,835	11	757	25	393	24	1,151
Tailings	**15%**	-	-	-	-	-	-	-
	10%	-	-	-	-	-	-	-
	8%	-	-	-	-	-	-	-
	6%	-	-	-	-	-	-	-
All Material Types Hills 1 to 9	**15%**	6,968	19	2,071	41	1,119	39	3,189
	10%	13,426	18	3,241	40	1,696	37	4,936
	8%	16,987	14	3,535	39	1,861	37	5,396
	6%	23,760	12	3,546	28	1,861	26	5,407

Table 12: Detailed Unconstrained Indicated Resources by material type
Matthew's Ridge (Hills 1 to 9)

Material Type	Cutoff Grade	Tonnage	Grade	Lump Concentrate (-25mm + 6mm)		Fine Concentrate (-6mm + 1mm)		Total Concentrate
	% Mn	('000 t)	% Mn	('000 t)	%Mn	('000 t)	%Mn	('000 t)
Detrital	**15%**	1,102	19	265	40	113	37	378
	10%	2,800	15	515	38	190	35	705
	8%	3,509	14	579	37	194	35	772
	6%	3,921	13	599	37	194	31	792
Saprolite	**15%**	1,463	17	333	41	228	38	561
	10%	5,950	13	1,006	39	706	36	1,711
	8%	8,502	12	1,245	38	876	36	1,121
	6%	11,441	11	1,413	37	987	34	2,400
Transition	**15%**	640	18	153	41	102	38	254
	10%	1,495	15	279	40	187	37	466
	8%	2,322	13	351	39	237	36	587
	6%	3,694	10	410	34	276	31	686
Tailings	**15%**	627	22	-	-	163	38	163
	10%	977	19	-	-	254	37	254
	8%	1,055	18	-	-	264	37	264
	6%	1,119	17	-	-	264	35	264
All Material Types Hills 1 to 9	**15%**	3,832	18	751	40	605	38	1,356
	10%	11,221	14	1,799	39	1,337	36	3,136
	8%	15,388	13	2,174	38	1,570	36	3,744
	6%	20,175	11	2,422	37	1,721	34	4,143

Table 13: Detailed Unconstrained Measured and Indicated Resources by material type
Matthew's Ridge (Hills 1 to 9)

Material Type	Cutoff Grade	Tonnage	Grade	Lump Concentrate (-25mm + 6mm)		Fine Concentrate (-6mm + 1mm)		Total Concentrate
	% Mn	('000 t)	% Mn	('000 t)	%Mn	('000 t)	%Mn	('000 t)
Detrital	**15%**	1,102	19	265	40	113	37	378
	10%	2,800	15	515	38	190	35	705
	8%	3,509	14	579	37	194	35	772
	6%	3,921	13	599	37	194	31	792
Saprolite	**15%**	7,061	19	1,990	41	1,131	39	3,121
	10%	16,562	16	3,570	39	2,053	37	5623
	8%	21,711	14	4,024	39	2,344	36	6,368
	6%	29,367	12	4,202	32	2,455	30	6,657
Transition	**15%**	2,011	18	567	41	317	39	884
	10%	4,309	15	956	40	535	37	1,491
	8%	6,100	13	1,106	39	630	36	1,736
	6%	9,529	11	1,168	29	669	27	1,837
Tailings	**15%**	627	22	-	-	163	38	163
	10%	977	19	-	-	254	37	254
	8%	1,055	18	-	-	264	37	264
	6%	1,119	17	-	-	264	35	264
All Material Types Hills 1 to 9	**15%**	10,800	19	2,822	41	1,724	39	4,546
	10%	24,647	16	5,040	39	3,032	37	8,072
	8%	32,375	14	5,709	39	3,431	36	9,140
	6%	43,935	12	5,968	32	3,582	30	9,550

Table 14: Detailed Unconstrained Inferred Resources by material type
Matthew's Ridge (Hills 1 to 9)

Material Type	Cutoff Grade	Tonnage	Grade	Lump Concentrate (-25mm + 6mm)		Fine Concentrate (-6mm + 1mm)		Total Concentrate
	% Mn	('000 t)	% Mn	('000 t)	%Mn	('000 t)	%Mn	('000 t)
Detrital	**15%**	63	20	16	40	7	37	23
	10%	177	15	33	38	13	36	46
	8%	311	13	47	37	14	35	61
	6%	344	12	48	37	14	32	62
Saprolite	**15%**	735	20	214	42	119	40	334
	10%	1,330	16	313	40	175	38	488
	8%	1,428	16	322	40	180	38	502
	6%	1,986	13	332	32	187	30	519
Transition	**15%**	790	18	202	41	125	39	327
	10%	1,339	16	286	40	177	37	463
	8%	1,617	15	307	40	191	37	497
	6%	2,076	13	318	34	199	32	516
Tailings	**15%**	3	26	-	-	1	39	1
	10%	6	20	-	-	1	38	1
	8%	10	15	-	-	2	36	2
	6%	39	9	-	-	2	10	2
All Material Types Hills 1 to 9	**15%**	1,591	19	432	42	252	39	684
	10%	2,851	16	632	40	366	38	998
	8%	3,368	15	675	40	388	37	1,062
	6%	4,445	13	698	33	402	31	1,100

Table 15: Detailed Unconstrained Inferred Resources –Arakaka and Pipiani Prospects

Total Inferred	Cutoff Grade	Tonnage	Grade	Lump Concentrate (-25mm + 6mm)		Fine Concentrate (-6mm + 1mm)		Total Concentrate
	% Mn	('000 t)	% Mn	('000 t)	%Mn	('000 t)	%Mn	('000 t)
Detrital Arakaka prospect	**15%**	52	19	13	40	5	37	18
	10%	124	15	24	38	9	35	33
	8%	168	13	28	37	10	35	37
	6%	213	12	30	36	9	35	39
Detrital Pipiani prospect	**15%**	712	19	180	40	78	37	257
	10%	1,525	16	310	38	123	36	433
	8%	1,756	15	334	38	127	35	461
	6%	1,914	14	344	37	127	35	471