

# 1 September 2015

# RC ASSAYS CONFIRM HIGHEST GRADES AT FRASER'S DEPOSIT

Hastings Rare Metals Limited ABN 43 122 911 399

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#### **Board and Management**

Charles Lew (Chairman)
Anthony Ho (Non Exec Director)
Malcolm Mason (Non Exec Director)

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# **HIGHLIGHTS**

- Final assays received from the major RC drilling programme at Fraser's Deposit, Yangibana Project
- Highest Nd<sub>2</sub>O<sub>3</sub>-Eq\* grades from Fraser's Deposit within the Project confirming the potential of this deposit
- Best intersections include:-
- 9m at 3.37%TREO\*\* including 1.80%Nd<sub>2</sub>O<sub>3</sub>-Eq
- 6m at 1.49%TREO including 0.89%Nd<sub>2</sub>O<sub>3</sub>-Eq
- 6m at 1.55%TREO including 0.88%Nd<sub>2</sub>O<sub>3</sub>-Eq
- 4m at 1.56%TREO including 0.83%Nd<sub>2</sub>O<sub>3</sub>-Eq
- 2m at 3.10%TREO including 1.73%Nd<sub>2</sub>O<sub>3</sub>-Eq
- Main Fraser's deposit now extends over 550m of strikelength to 100m depth
- Limited exploratory drilling on other targets to southwest and north indicate further potential

#### Introduction

The Board of Hastings Rare Metals Limited (ASX:HAS) is pleased to announce that reverse circulation (RC) drilling at the Fraser's Deposit within the Yangibana Project in the Gascoyne Region of Western Australia has returned high grade mineralisation over a strike length of 550m and up to 100m depth.

An extension to the northeast of the mineralisation tested in 2014 has returned highly encouraging results. New targets to the southwest and north of the main mineralisation have also returned some positive results and these will be followed up in the future. All results are now being fed into the interpretation leading to resource estimation as part of the Company's Pre-Feasibility Study (PFS).



Three diamond holes were drilled to replicate RC holes and to provide geotechnical data and samples for comminution test work.

### Fraser's Drilling Programme

Reverse circulation and diamond drilling has infilled and extended Hastings' 2014 drilling at the Fraser's Deposit. The deposit has a JORC Inferred Resources of 0.35 million tonnes at 1.31%TREO with 0.71% Nd<sub>2</sub>O<sub>3</sub>-Eq\* remained open along strike and at depth. Figure 1 shows holes drilled in 2015. This drilling extended the main mineralisation to the northeast where it becomes more shallow-dipping. RC drilling also tested new targets to the southeast and north (Figure 2) with some encouraging intersections achieved.

Table 1 provides details of the better intersections returned from this drilling. Collar details of the drillholes are provided in Appendix 1. Individual assays for the Company's target oxides (neodymium, praseodymium, dysprosium and europium) from the mineralised zone and surrounding samples are provided in Appendix 2.

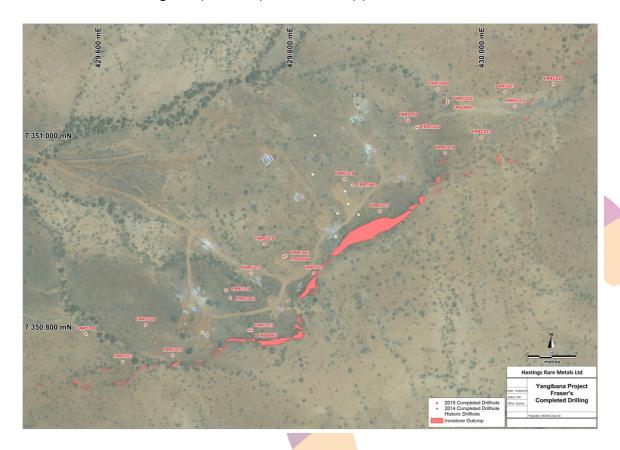


Figure 1 – Yangibana Project – Fraser's Deposit, Main Zone drill coverage



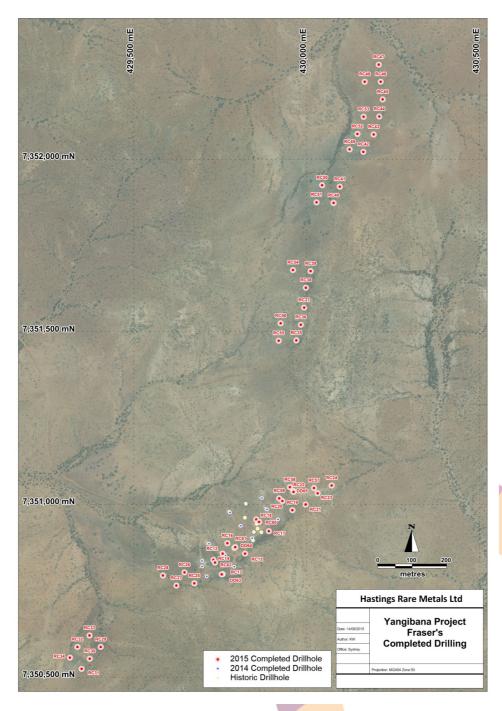


Figure 2 – Yangibana Project – Fraser's Deposit, New Targets drill coverage



Hole No (FRRC)	From (m)	To (m)	Interval (m)	% TREO**	% Nd <sub>2</sub> O <sub>3</sub> -Eq*
12	83	92	9	3.37	1.80
16	66	70	4	1.52	0.79
17	8	17	9	0.96	0.50
18	60	66	6	1.55	0.88
19	11	15	4	1.55	0.74
21	5	11	6	1.49	0.89
22	25	36	11	0.91	0.60
23	13	19	6	1.48	0.68
50	51	58	7	0.77	0.49
57	26	32	6	1.25	0.65
59	51	53	2	3.10	1.73
61	70	74	4	1.56	0.83

Table 1 – Yangibana Project, Fraser's Deposit 2015 drilling results

\*\* TREO is the sum of the oxides of the heavy rare earth elements (HREO) and the light rare earth elements (LREO).

**HREO** is the sum of the oxides of the heavy rare earth elements europium (Eu), gadolinium (Gd), terbium (Tb), dysprosium (Dy), holmium (Ho), erbium (Er), thulium (Tm), ytterbium (Yb), lutetium (Lu), and yttrium (Y).

**CREO** is the sum of the oxides of neodymium (Nd), europium (Eu), terbium (Tb), dysprosium (Dy), and yttrium (Y) that were classified by the US Department of Energy in 2011 to be in critical short supply in the foreseeable future.

**LREO** is the sum of the oxides of the light rare earth elements lanthanum (La), cerium (Ce), praseodymium (Pr), neodymium (Nd), and samarium (Sm).



# **Neodymium Equivalence**

Hastings is concentrating its efforts on the recovery of four important rare earths – neodymium, praseodymium, dysprosium and europium. To portray the grade of the mineralisation Hastings has established neodymium-equivalent figures where:-

\*The  $Nd_2O_3$  equivalent ( $Nd_2O_3$ -Eq) values have been calculated based on the following rare earths prices. These prices have been established by independent consultants Adamas Intelligence and are being used by Hastings in the evaluation of the project.

- Nd<sub>2</sub>O<sub>3</sub> US\$85/kg
- $Pr_2O_3 US\$95/kg$
- $Dy_2O_3$  US\$550/kg and
- Eu<sub>2</sub>O<sub>3</sub> US\$635/kg

Where  $Nd_2O3$ -Eq =

 $((Nd_2O_3grade + ((Pr_2O_3grade * (Pr_2O_3price + Nd_2O_3price)) + (Dy_2O_3grade * (Dy_2O_3price + Nd_2O_3price)) + (Eu_2O_3grade * (Eu_2O_3price + Nd_2O_3price)))$ 

Such that  $Nd_2O_3$  Eq =  $Nd_2O_3$  + (1.1176 x  $Pr_2O_3$ ) + (6.4706 xDy<sub>2</sub>O<sub>3</sub>) + (7.4706 xEu<sub>2</sub>O<sub>3</sub>)

These commodity prices were updated from those used previously (up to 20/5/15) (Nd<sub>2</sub>O<sub>3</sub> at US\$59.5/kg; Pr<sub>2</sub>O<sub>3</sub> at US\$119.5/kg; Dy<sub>2</sub>O<sub>3</sub> at US\$340/kg; and Eu<sub>2</sub>O<sub>3</sub> at US\$725/kg). Positive changes are for neodymium (+43%) and dysprosium (+62%), with a decrease in praseodymium (-21%) and europium (-12%).

These changes affect the calculation of  $Nd_2O_3$ -Eq figures and the in-ground value of the mineralisation. Based on the updated prices, the JORC resources at Bald Hill South of 1.23 million tonnes at 1.22% TREO now contain 0.65%  $Nd_2O_3$ -Eq as compared to 0.77% $Nd_2O_3$ -Eq as previously calculated. Because of the higher  $Nd_2O_3$  price, the value of the in-ground mineralisation has increased significantly from US\$456/tonne to US\$646/tonne (+42%).

#### For further information please contact:

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# **About Hastings Rare Metals**

- Hastings Rare Metals is a leading Australian rare earths company, with two JORC compliant rare earths projects in Western Australia.
- The Yangibana Project hosts JORC Indicated and Inferred Resources totalling 6.79 million tonnes at 1.52% TREO, including 0.35% Nd<sub>2</sub>O<sub>3</sub> (comprising 3.96 million tonnes at 1.59% TREO Indicated Resources and 2.83 million tonnes at 1.43% TREO in Inferred Resources).
- The Brockman deposit contains JORC Indicated and Inferred Resources totalling 36.2 million tonnes (comprising 27.1mt Indicated Resources and 9.1mt Inferred Resources) at 0.21% TREO, including 0.18% HREO, plus 0.89%  $\rm ZrO_2$  and 0.35%  $\rm Nb_2O_5$ .
- Rare earths are critical to a wide variety of current and new technologies, including smart phones, hybrid cars, wind turbines and energy efficient light bulbs.
- The Company aims to capitalise on the strong demand for critical rare earths created by expanding new technologies. In late 2014 Hastings completed a Scoping Study of the Yangibana Project that confirmed the economic viability of the Project and in early 2015 commenced work on a Pre-Feasibility Study.

#### **Competent Person's Statement**

The information in this announcement that relates to Resources is based on information compiled by Simon Coxhell. Simon Coxhell is a consultant to the Company and a member of the Australasian Institute of Mining and Metallurgy. The information in this announcement that relates to Exploration Results is based on information compiled by Andy Border, an employee of the Company and a member of the Australasian Institute of Mining and Metallurgy.

Each has sufficient experience relevant to the styles of mineralisation and types of deposits which are covered in this announcement and to the activity which they are undertaking to qualify as a Competent Person as defined in the 2012 edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves' ("JORC Code"). Each consents to the inclusion in this announcement of the matters based on his information in the form and context in which it appears.



# Appendix 1 – Drill hole data

Hole_ID	EMGA94	N MGA94	RL	Decln	Azi	EOH
FRRC012	429757	7350857	354	-90	0	94
FRRC015	429822	7350860	361	-60	135	16
FRRC016	429777	7350867	364	-60	120	76
FRRC017	429890	7350923	365	-60	135	21
FRRC018	429855	7350959	362	-60	135	70
FRRC020	429930	7351011	361	-65	135	58
FRRC019	429959	7350983	366	-60	135	22
FRRC022	429962	7351039	358	-60	135	52
FRRC013	429756	7350798	359	-60	135	22
FRRC014	429734	7350841	360	-60	135	70
FRRC021	429997	7350999	362	-60	135	22
FRRC023	430031	7351034	361	-60	135	28
FRRC024	430072	7351056	362	-60	135	28
FRRC025	429674	7350774	356	-60	135	22
FRRC026	429646	7350803	357	-60	135	76
FRRC027	429624	7350767	357	-60	135	28
FRRC028	429585	7350788	349	-60	135	70
FRRC029	429404	7350592	351	-60	135	22
FRRC030	429374	7350557	357	-60	135	16
FRRC031	429349	7350527	353	-60	135	16
FRRC033	429382	7350614	328	-60	135	40
FRRC032	429337	7350589	351	-60	135	46
FRRC034	429315	7350557	353	-60	135	46
FRRC035	429970	7351475	370	-60	90	16
FRRC044	430210	7352124	361	-60	90	28
FRRC045	430219	7352175	361	-60	90	22
FRRC046	430216	7352224	364	-60	90	16
FRRC047	430209	7352276	359	-60	90	22
FRRC036	429982	7351522	371	-60	90	21
FRRC037	429990	7351572	371	-60	90	22
FRRC038	429997	7351640	371	-60	90	22
FRRC039	430010	7351675	369	-60	90	22
FRRC040	430076	7351871	360	-60	90	28
FRRC041	430095	7351920	360	-60	90	16
FRRC042	430164	7352022	362	-60	90	28



Hole_ID	E MGA94	N MGA94	RL	Decln	Azi	EOH
FRRC043	430193	7352074	361	-60	90	34
FRRC055	429921	7351479	369	-60	90	46
FRRC056	429921	7351525	372	-60	90	46
FRRC054	429964	7351681	374	-60	90	58
FRRC051	430026	7351873	372	-60	90	52
FRRC050	430047	7351925	368	-60	90	70
FRRC049	430123	7352028	362	-70	90	64
FRRC052	430146	7352076	357	-60	90	58
FRRC053	430167	7352122	358	-60	90	58
FRRC048	430166	7352224	357	-60	90	58
FRRC008	429770	7350855	364	-60	130	52

Appendix 2 – Assays within and adjacent to mineralised intersections

Hole_ID	From	То	Dy2O3ppm	Eu2O3ppm	Nd2O3ppm	Pr2O3ppm
FRRC008	43	44	9.526	5.905	220.450	62.260
FRRC008	44	45	45.334	80.590	5569.443	1290.958
FRRC008	45	46	20.544	27.558	1536.032	370.634
FRRC012	76	77	4.591	5.558	381.646	107.551
FRRC012	77	78	9.067	24.663	1994.427	563.148
FRRC012	78	79	10.903	13.779	916.324	253.370
FRRC012	82	83	4.935	13.200	1292.371	363.027
FRRC012	83	84	38.448	52.569	3071.015	778.835
FRRC012	84	85	162.170	266.317	17722.165	4398.807
FRRC012	85	86	113.048	173.222	11324.928	2815.274
FRRC012	86	87	201.880	346.907	26149.172	6191.121
FRRC012	87	88	238.263	416.381	30012.055	6995.117
FRRC012	88	89	135.543	193.717	13545.520	3445.831
FRRC012	89	90	122.115	130.148	6183.786	1599.917
FRRC012	90	91	16.871	20.842	1222.387	305.682
FRRC012	91	92	27.315	36.12 <mark>6</mark>	2924.165	778.015
FRRC013	0	1	13.887	20.147	1460.916	378.358
FRRC013	6	7	15.838	19.221	1143.772	295.033
FRRC013	7	8	11.247	8.337	330.324	78.410
FRRC013	8	9	37.759	39.253	2106.518	549.456
FRRC013	9	10	68.977	81.169	4126.023	1045.429
FRRC013	10	11	85.61 <mark>8</mark>	104.674	4414.707	1077.378
FRRC013	11	12	161.59 <mark>6</mark>	151.453	6170.256	1454.917
FRRC013	12	13	39.022	33.695	1302.169	307.204
FRRC015	2	3	3.787	2.200	91.096	21.885



Hole_ID	From	То	Dy2O3ppm	Eu2O3ppm	Nd2O3ppm	Pr2O3ppm
FRRC015	3	4	83.093	77.811	3494.301	720.437
FRRC015	4	5	80.454	93.906	5212.525	1278.202
FRRC015	5	6	36.956	59.053	4897.830	1367.847
FRRC015	6	7	13.658	16.558	990.274	260.275
FRRC016	64	65	14.002	13.316	600.696	161.267
FRRC016	65	66	16.183	22.926	1523.902	418.850
FRRC016	66	67	53.942	57.432	3115.338	800.485
FRRC016	67	68	81.142	100.622	6552.719	1747.375
FRRC016	68	69	83.782	98.190	5916.797	1542.806
FRRC016	69	70	80.109	95.295	5325.432	1353.569
FRRC016	70	71	7.804	7.758	404.974	98.890
FRRC017	7	8	16.297	14.474	647.235	151.320
FRRC017	8	9	24.561	29.990	1832.998	494.920
FRRC017	9	10	30.873	32.653	1606.016	403.636
FRRC017	10	11	85.848	86.495	3454.877	810.550
FRRC017	11	12	28.119	36.358	2878.092	787.027
FRRC017	12	13	41.317	70.400	9023.270	2653.889
FRRC017	13	14	18.708	24.779	2195.515	604.460
FRRC017	14	15	75.863	76.190	3085.944	723.011
FRRC017	15	16	57.500	62.874	2360.560	520.784
FRRC017	16	17	75.174	85.685	3170.858	688.370
FRRC017	17	18	20.659	20.611	752.678	168.640
FRRC018	59	60	16.297	2.316	73.483	21.299
FRRC018	60	61	24.790	27.442	1741.902	459.811
FRRC018	61	62	106.507	115.790	4396.512	998.032
FRRC018	62	63	226.212	243.622	10648.066	2586.831
FRRC018	63	64	182.025	209.001	10446.278	2626.153
FRRC018	64	65	85.389	91.590	4257.710	1050.227
FRRC018	65	66	41.891	45.505	2057.413	503.112
FRRC018	66	67	12.280	11.232	576.202	146.053
FRRC020	26	27	13.658	15.863	856.254	222.942
FRRC020	27	28	30.873	41.569	2565.847	667.188
FRRC020	28	29	18.822	37.748	2373.274	560.457
FRRC020	29	30	13.658	18.642	819.513	197.430
FRRC021	4	5	22.151	17.716	663.565	157.873
FRRC021	5	6	21.347	38.326	4411.325	1213.016
FRRC021	6	7	48.777	77.000	7648.435	2118.126
FRRC021	7	8	38.792	47.011	2861.296	724.884
FRRC021	8	9	331.341	321.201	7601.312	1300.203
FRRC021	9	10	283.482	283.338	7095.328	1238.294



Hole_ID	From	То	Dy2O3ppm	Eu2O3ppm	Nd2O3ppm	Pr2O3ppm
FRRC021	10	11	103.063	102.822	3506.315	701.127
FRRC021	11	12	18.363	19.221	785.804	168.523
FRRC022	24	25	5.394	2.316	96.111	25.278
FRRC022	25	26	50.269	57.084	4397.795	1068.016
FRRC022	26	27	53.942	56.621	2569.463	541.147
FRRC022	27	28	82.061	72.021	3127.585	611.482
FRRC022	28	29	124.296	102.590	5553.114	1130.861
FRRC022	29	30	56.926	44.811	2386.921	508.144
FRRC022	30	31	64.156	64.032	3713.118	887.790
FRRC022	31	32	55.090	48.979	2367.442	532.604
FRRC022	32	33	103.523	93.443	2927.197	559.872
FRRC022	33	34	156.202	139.874	4284.537	761.865
FRRC022	34	35	209.800	221.390	7521.647	1463.694
FRRC022	35	36	77.585	80.937	3572.100	775.441
FRRC022	36	37	16.183	12.390	405.091	76.538
FRRC023	8	9	27.660	28.832	812.981	164.661
FRRC023	9	10	30.414	35.200	2067.561	504.399
FRRC023	10	11	35.005	45.505	2650.177	659.230
FRRC023	11	12	17.904	15.284	496.187	116.562
FRRC023	12	13	17.560	16.095	725.268	174.726
FRRC023	13	13	25.594	31.148	2168.804	577.777
FRRC023	13	15	42.580	68.663	6401.203	1781.548
FRRC023	15	16	76.666	95.295	5290.557	1356.612
FRRC023	16	17	79.650	130.032	8825.566	2447.917
FRRC023	17	17	63.812	63.569	2125.414	472.450
FRRC023	17	19	88.602	81.053	2333.966	472.430 497.026
FRRC023	19	20	10.559	8.684	316.794	79.931
FRRC025	17	12	21.347	22.463	1209.324	326.982
FRRC025	12	13	113.508	129.222	6706.333	1643.920
	13	13				
FRRC025 FRRC026	56		22.495	22.116 16.790	1286.772 719.669	311.066 192.280
		57 59	21.921	16.790		
FRRC026	57 50	58 50	93.193		5478.814	1424.255
FRRC026	58	59 1	13.887	10.190	423.753	100.529
FRRC029	0	1	26.053	30.453	1932.608	614.408
FRRC029	1	2	46.023	72.716	5849.846	1890.152
FRRC029	2	3	24.331	33.695	2031.402	631.962
FRRC029	3	4	6.312	6.716	481.956	162.906
FRRC030	4	5	11.592	19.916	1629.811	456.885
FRRC030	5	6	17.330	22.463	1435.488	441.086
FRRC030	6	7	17.675	21.769	1778.410	586.905



Hole_ID	From	То	Dy2O3ppm	Eu2O3ppm	Nd2O3ppm	Pr2O3ppm
FRRC030	7	8	7.231	7.758	622.974	183.269
FRRC031	3	4	9.296	13.084	922.506	258.636
FRRC031	4	5	35.005	51.758	3249.007	1049.174
FRRC031	5	6	4.361	3.589	224.065	71.271
FRRC032	36	37	4.935	3.126	203.770	67.292
FRRC032	37	38	16.297	33.232	2441.742	802.709
FRRC032	38	39	6.657	15.168	1315.116	409.137
FRRC033	26	27	3.787	4.168	308.863	94.092
FRRC033	27	28	22.839	34.042	1787.858	536.583
FRRC033	28	29	30.873	62.527	5096.585	1398.743
FRRC033	29	30	47.285	45.042	3404.605	905.461
FRRC033	30	31	11.018	13.779	1249.681	346.994
FRRC033	31	32	13.772	26.979	2658.459	719.032
FRRC033	32	33	13.772	14.011	923.089	235.698
FRRC034	37	38	3.673	1.389	73.833	29.258
FRRC034	38	39	25.938	29.874	2042.016	621.663
FRRC034	39	40	24.790	32.653	2252.668	672.923
FRRC034	40	41	5.968	4.284	261.973	75.835
FRRC035	3	4	26.282	20.147	634.405	117.732
FRRC035	4	5	53.598	50.137	2089.489	473.386
FRRC035	5	6	22.610	31.611	2768.684	749.226
FRRC035	6	7	27.200	30.453	1842.329	417.797
FRRC035	7	8	7.804	2.779	157.231	39.790
FRRC036	9	10	12.166	12.158	596.030	124.052
FRRC036	10	11	84.930	83.832	5575.159	1307.225
FRRC036	11	12	8.608	4.400	211.818	53.015
FRRC039	1	2	17.330	16.326	556.256	109.891
FRRC039	2	3	54.171	56.274	1945.322	376.017
FRRC039	3	4	21.921	17.137	533.278	98.773
FRRC039	7	8	8.034	11.579	730.166	182.099
FRRC039	8	9	9.985	20.84 <mark>2</mark>	1977.864	512.591
FRRC039	9	10	15.379	1 <mark>3.43</mark> 2	487.905	91.283
FRRC039	10	11	8.608	6.484	205.870	38.971
FRRC039	11	12	112.934	79.200	1486.110	223.995
FRRC039	12	13	19.396	10.653	205.170	37.099
FRRC041	1	2	8.149	4.863	213.101	43.769
FRRC041	2	3	33.628	36.937	2212.311	505.570
FRRC041	3	4	13.65 <mark>8</mark>	21.769	1594.236	401.647
FRRC042	11	12	6.083	3.705	115.007	24.108
FRRC042	12	13	50.843	65.306	2862.229	573.330



Hole_ID	From	То	Dy2O3ppm	Eu2O3ppm	Nd2O3ppm	Pr2O3ppm
FRRC042	13	14	72.764	102.127	5724.924	1240.401
FRRC042	14	15	19.396	23.621	975.810	192.631
FRRC044	2	3	5.279	10.768	655.983	155.767
FRRC044	3	4	27.889	35.548	1702.244	376.837
FRRC044	4	5	2.984	3.705	169.011	36.630
FRRC046	0	1	6.083	7.642	561.622	134.585
FRRC046	1	2	9.985	31.842	3050.019	747.237
FRRC046	2	3	10.215	34.621	3428.516	841.563
FRRC046	3	4	11.592	21.653	1377.168	316.800
FRRC047	0	1	4.017	2.316	89.113	22.236
FRRC047	1	2	18.822	32.769	1934.241	409.371
FRRC047	2	3	15.609	57.895	5075.240	1186.801
FRRC047	3	4	14.805	11.926	342.572	66.824
FRRC049	46	47	7.345	10.768	595.447	132.712
FRRC049	40 47	48	21.347	42.148	4054.523	975.679
FRRC049	48	49	5.624	8.684	467.610	103.337
FRRC050	46	47	6.542	3.474	106.259	25.044
FRRC050	47	48	69.436	55.116	1480.978	227.155
FRRC050	48	49	21.577	34.158	2031.636	454.310
FRRC050	49	50	17.445	21.537	925.538	197.781
FRRC050	50	51	29.955	35.200	1314.883	260.392
FRRC050	51	52	48.433	59.284	2485.598	511.421
FRRC050	52	53	53.368	86.495	5453.503	1337.419
FRRC050	53	54	66.911	102.358	6066.213	1532.040
FRRC050	54	55	111.556	56.042	1931.792	405.977
FRRC050	55	56	97.899	42.611	1242.449	244.710
FRRC050	56	57	122.230	90.200	2195.515	372.038
FRRC050	57	58	121.656	92.285	1930.742	302.991
FRRC050	58	59	17.330	11.811	374.648	74.197
FRRC052	50	51	16.642	22.695	1091.517	229.262
FRRC052	51	52	24.905	32.537	1847.578	407.733
FRRC052	52	53	6.083	9.726	790.119	179.290
FRRC055	28	29	20.314	18.411	905.126	199.536
FRRC055	29	30	36.612	38.095	1792.174	398.136
FRRC055	30	31	15.379	22.116	1611.615	390.412
FRRC055	31	32	22.724	39.716	4150.634	1059.239
FRRC055	32	33	8.034	7.411	399.025	90.230
FRRC057	25	26	13.084	11.232	902.677	250.912
FRRC057	26	27	22.151	39.021	4631.424	1325.482
FRRC057	27	28	116.836	177.274	14610.443	3793.059



Hole_ID	From	То	Dy2O3ppm	Eu2O3ppm	Nd2O3ppm	Pr2O3ppm
FRRC057	28	29	25.249	27.558	1451.818	350.973
FRRC057	29	30	47.400	52.684	2147.576	455.949
FRRC057	30	31	56.123	58.821	1786.808	341.259
FRRC057	31	32	56.811	56.969	1826.232	342.664
FRRC057	32	33	11.707	8.453	266.522	57.579
FRRC058	43	44	20.200	18.411	1061.891	266.945
FRRC058	44	45	22.265	25.705	2147.109	576.490
FRRC058	45	46	66.911	68.779	4121.824	1018.746
FRRC058	46	47	34.316	37.169	1996.410	470.695
FRRC058	47	48	59.795	55.695	2895.705	683.455
FRRC058	48	49	21.347	24.316	2202.863	592.406
FRRC058	49	50	14.576	13.084	662.049	160.916
FRRC059	50	51	7.690	7.642	536.661	135.755
FRRC059	51	52	274.874	398.086	21144.966	5035.801
FRRC059	52	53	31.217	40.642	2009.124	466.599
FRRC059	53	54	8.723	9.842	504.235	117.030
FRRC060	69	70	15.035	18.063	1121.494	288.830
FRRC060	70	71	69.780	64.148	3001.614	681.232
FRRC060	71	72	65.763	67.158	4397.561	1172.875
FRRC060	72	73	15.723	13.316	524.997	125.222
FRRC061	69	70	13.084	11.579	615.159	161.501
FRRC061	70	71	63.927	75.148	4673.998	1229.751
FRRC061	71	72	28.807	26.284	856.021	177.652
FRRC061	72	73	100.309	146.590	12854.894	3105.508
FRRC061	73	74	75.404	81.053	4421.356	1050.812
FRRC061	74	75	8.378	8.568	501.435	118.551



#### **JORC Code, 2012 Edition - Table 1**

# **Section 1 Sampling Techniques and Data** (Criteria in this section apply to all succeeding sections.) Criteria **JORC Code explanation** Sampling Nature and quality of sampling (eg cut channels, techniques 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 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.

#### Commentary

- Reverse circulation drilling was carried out at the Fraser's prospect to obtain drill chip samples from one-metre intervals from which a 2-4kg sample was collected for submission to the laboratory for analysis for rare earths, rare metals, U, Th and a range of rock-forming elements. Mineralised zones were identified visually during geological logging in the field.
- Samples from each metre were collected in a cyclone and split using a 3 level riffle splitter. Field duplicates, blanks and Reference Standards were inserted at a rate of approximately 1 in 20.
- Hurlston Pty Limited drilled RC holes at eleven ironstone targets within tenements in which Hastings has an interest, in the 1980s. The Fraser's prospect was tested to a limited extent during that phase of exploration. Hurlston reported the results of most drill holes and a non-JORC resource estimation in its Annual Report for the period 1/1/87 to 31/12/88 (A25937). This report provides little data regarding processes used during the exploration, but Hastings has undertaken sufficient work on the project to indicate that Hurlston's work was carried out professionally and that certain assumptions can reasonably be based on the results reported in that report.

#### 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, facesampling bit or other type, whether core is oriented and if so, by what method, etc).
- Reverse Circulation drilling at Bald Hill South utilised a nominal 5 1/4 inch diameter facesampling hammer.
- No details are known regarding the RC drilling carried out by Hurlston.

#### Drill sample recovery

- 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.
- Recoveries are recorded by the geologist in the field at the time of drilling/logging.
- If poor sample recovery is encountered during drilling, the geologist and driller have endeavoured to rectify the problem to ensure maximum sample recovery. Visual assessment is made for moisture and contamination. A cyclone and splitter were used to ensure representative samples and were routinely cleaned.
- Sample recoveries to date have generally been high, and moisture in samples minimal. Insufficient



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Criteria	JORC Code explanation	Commentary
		data is available at present to determine if a relationship exists between recovery and grade. This will be assessed once a statistically valid amount of data is available to make a determination.  No details are known regarding the RC drilling carried out by Hurlston.
Logging	<ul> <li>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.</li> <li>Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.</li> <li>The total length and percentage of the relevant intersections logged.</li> </ul>	<ul> <li>All drill chip samples are geologically logged at 1m intervals from surface to the bottom of each individual hole to a level that will support appropriate future Mineral Resource studies.</li> <li>Logging is considered to be semi-quantitative given the nature of reverse circulation drill chips and the inability to obtain detailed geological information.</li> <li>All RC drill holes in the current programme are logged in full.</li> <li>No details are known regarding the RC drilling carried out by Hurlston.</li> </ul>
Sub- sampling techniques and sample preparation	<ul> <li>If core, whether cut or sawn and whether quarter, half or all core taken.</li> <li>If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.</li> <li>For all sample types, the nature, quality and appropriateness of the sample preparation technique.</li> <li>Quality control procedures adopted for all subsampling stages to maximise representivity of samples.</li> <li>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.</li> <li>Whether sample sizes are appropriate to the grain size of the material being sampled.</li> </ul>	<ul> <li>The RC drilling rig was equipped with an in-built cyclone and triple tier riffle splitting system, which provided one bulk sample of approximately 20kg, and a sub-sample of 2-4kg per metre drilled.</li> <li>All samples were split using the system described above to maximise and maintain consistent representivity. The majority of samples were dry. For wet samples the cleanliness of the cyclone and splitter was constantly monitored by the geologist and maintained to avoid contamination.</li> <li>Bulk samples were placed in green plastic bags, with the sub-samples collected placed in calico sample bags.</li> <li>Field duplicates were collected directly from the splitter as drilling proceeded through a secondary sample chute. These duplicates were designed for lab checks as well as lab umpire analysis.</li> <li>A sample size of 2-4kg was collected and considered appropriate and representative for the grain size and style of mineralisation.</li> <li>No details are known regarding the RC drilling carried out by Hurlston.</li> </ul>
Quality of assay data and laboratory tests	<ul> <li>The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.</li> <li>For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading to instrument constitutions.</li> </ul>	Genalysis (Perth) was used for all analysis work carried out on the 1m drill chip samples and the rock chip samples. The laboratory techniques below are for all samples submitted to Genalysis and are considered appropriate for the style of mineralisation defined at the Yangibana REE Project:      FP6/MS      Blind field duplicates were collected at a rate of

factors applied and their derivation, etc.

Blind field duplicates were collected at a rate of



Criteria	JORC Code explanation	Commentary
Verification	<ul> <li>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.</li> <li>The verification of significant intersections by</li> </ul>	<ul> <li>approximately 1 duplicate for every 20 samples that are to be submitted to Genalysis for laboratory analysis. Field duplicates were split directly from the splitter as drilling proceeded at the request of the supervising geologist.</li> <li>No details are known regarding the RC drilling carried out by Hurlston.</li> <li>At least two company personnel verify all</li> </ul>
of sampling and assaying	<ul> <li>either independent or alternative company personnel.</li> <li>The use of twinned holes.</li> <li>Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.</li> <li>Discuss any adjustment to assay data.</li> </ul>	<ul> <li>significant intersections.</li> <li>All geological logging and sampling information completed firstly on to paper logs before being transferred to Microsoft Excel spreadsheets. Physical logs and sampling data are returned to the Hastings head office for scanning and storage Electronic copies of all information are backed undaily.</li> <li>No adjustments of assay data are considered necessary.</li> <li>No details are known regarding the RC drilling carried out by Hurlston.</li> </ul>
Location of data points	<ul> <li>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.</li> <li>Specification of the grid system used.</li> <li>Quality and adequacy of topographic control.</li> </ul>	<ul> <li>A Garmin GPSMap62 hand-held GPS is used to define the location of the drill hole collars. Standard practice is for the GPS to be left at the site of the collar for a period of 5 minutes to obta a steady reading. Collar locations are considerer to be accurate to within 5m. Collars will be picke up by DGPS in the future. Down hole surveys ar conducted by the drill contractors using a Reflex electronic single-shot camera with readings for and magnetic azimuth nominally taken every 30 down hole, except in holes of less than 30m. The instrument is positioned within a stainless steel drill rod so as not to affect the magnetic azimuth</li> <li>Grid system used is MGA 94 (Zone 50)</li> <li>Topographic control is based on the detailed 1n topographic survey undertaken by Hyvista Corporation in 2014</li> <li>Most of Hurlston's RC hole collars are preserved in the field. Many have been surveyed using a Garmin GPSMap62 hand-held GPS and results indicate that the Hurlston data can be regarded a professional and certainly indicative of the potential of the mineralisation.</li> </ul>
Data spacing and distribution	<ul> <li>Data spacing for reporting of Exploration Results.</li> <li>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.</li> </ul>	<ul> <li>Drill hole spacing is nominally 50m along drill-lines, with a line spacing of 50m. Collar locations were varied slightly dependent on access at a given site.</li> <li>Further details are provided in the collar coordinate table contained elsewhere in this report.</li> <li>No sample compositing is used in this report, all</li> </ul>



Criteria	JORC Code explanation	Commentary
	Whether sample compositing has been applied.	<ul> <li>results detailed are the product of 1m down hole sample intervals.</li> <li>Hurlston's RC drilling was not systematic other than holes were drilled to test obvious outcropping mineralised zones at each of the eleven targets tested by them.</li> </ul>
Orientation of data in relation to geological structure	<ul> <li>Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.</li> <li>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.</li> </ul>	<ul> <li>Most drill holes in the current programme are vertical (subject to access to the preferred collar position) and as such intersected widths do not represent true thickness.</li> <li>Hurlston's drilling was generally planned to intersect mineralisation as near to perpendicular as possible. A few holes tested specific conceptual targets away from the obvious lenses.</li> </ul>
Sample security	The measures taken to ensure sample security.	<ul> <li>The chain of custody is managed by the project geologist who places calico sample bags in polyweave sacks. Up to 10 calico sample bags are placed in each sack. Each sack is clearly labelled with:         <ul> <li>Hastings Rare Metals Ltd</li> <li>Address of laboratory</li> <li>Sample range</li> </ul> </li> <li>Samples were delivered by Hastings personnel to the Nexus Logistics base in order to be loaded on the next available truck for delivery to Genalysis. The freight provider delivers the samples directly to the laboratory. Detailed records are kept of all samples that are dispatched, including details of chain of custody.</li> <li>No details are known regarding the RC drilling carried out by Hurlston</li> </ul>
Audits or reviews	The results of any audits or reviews of sampling techniques and data.	<ul> <li>No audit of sampling data has been completed to date but a review will be conducted once all data from Genalysis (Perth) has been received. Data is validated when loading into the database and will be validated again prior to any Resource estimation studies.</li> <li>No details are known regarding the RC drilling carried out by Hurlston</li> </ul>



# **Section 2 Reporting of Exploration Results**

Criteria	e preceding section also apply to this section.)  JORC Code explanation	Commentary
Mineral tenement and land tenure status	<ul> <li>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.</li> <li>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.</li> </ul>	<ul> <li>The RC drilling at Fraser's was carried out within E09/2018.</li> <li>All Yangibana tenements are in good standing and no known impediments exist.</li> </ul>
Exploration done by other parties	<ul> <li>Acknowledgment and appraisal of exploration by other parties.</li> </ul>	<ul> <li>Limited RC drilling was completed at Fraser's the 1980s by Hurlston Pty Limited. Rock chip sampling programmes have been carried out more recently but add little to the project.</li> </ul>
Geology	Deposit type, geological setting and style of mineralisation.	<ul> <li>The Yangibana ironstones within the Yangiban Project are part of an extensive REE-mineralised system associated with the Gifford Creek Carbonatite Complex. The lenses have total strike length of at least 12km.</li> <li>These ironstone lenses have been explored previously to limited degree for base metals, manganese, uranium, diamonds and rare earths.</li> <li>The ironstones are considered by GSWA to be coeval with the numerous carbonatite sills that occur within Hastings tenements, or at least part of the same magmatic/hydrothermal system.</li> </ul>
Drill hole Information	<ul> <li>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> <li>easting and northing of the drill hole collar</li> <li>elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar</li> <li>dip and azimuth of the hole</li> <li>down hole length and interception depth</li> <li>hole length.</li> </ul> </li> <li>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.</li> </ul>	Refer to details of drilling in table in the body of this report and the appendices.
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	All intervals reported are composed of 1m dov hole intervals and as such are length weighted A lower cut-off grade of 5000ppm TREO has been used for assessing significant intercepts.



Criteria	JORC Code explanation	Commentary
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	<ul> <li>and should be stated.</li> <li>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.</li> <li>The assumptions used for any reporting of metal equivalent values should be clearly stated.</li> </ul>	<ul> <li>and no upper cut-off grade was applied.</li> <li>Maximum internal dilution of 1m was incorporated in reported significant intercepts.</li> <li>The basis for the metal equivalents used for reporting are provided in the body of the ASX announcement.</li> </ul>
Relationship between mineralisation widths and intercept lengths	<ul> <li>These relationships are particularly important in the reporting of Exploration Results.</li> <li>If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.</li> <li>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').</li> </ul>	<ul> <li>True widths for mineralisation have not been calculated and as such only down hole lengths have been reported.</li> <li>While interpretation of the results is still in the early stages, a better understanding of the geometry of the deposit will be achieved, and true widths reported, later in the programme. It is expected that true widths will be less than down hole widths, due to the apparent dip of the mineralisation.</li> </ul>
Diagrams	<ul> <li>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.</li> </ul>	<ul> <li>Appropriate maps and sections are available in the body of this ASX announcement.</li> </ul>
Balanced reporting	<ul> <li>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.</li> </ul>	Reporting of results in this report is considered balanced.
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.	Geological mapping has continued in the vicinity of the drilling as the programme proceeds.
Further work	<ul> <li>The nature and scale of planned further work (eg tests for lateral extensions, depth extensions or large-scale step-out drilling).</li> <li>Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.</li> </ul>	The Company is currently undertaking a major drilling programme within the Yangibana Project area as part of its ongoing Pre-Feasibility Study programme. Work is also progressing in the areas of metallurgical test work, plant design and costing: geotechnical studies, pit optimisation, mine design, scheduling and costing; environmental studies including baseline environmental studies; test work for



Criteria	JORC Code explanation	Commentary
		waste dump and tailings disposal sites; water sourcing and costing; and overall project costing and financial evaluation.

