

## ASX Release

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**Issued Capital:**

341.8 million shares

**ASX Symbol:** HAR

## METALLURGICAL TEST RESULTS OF THE SELENGE IRON ORE PROJECT

Haranga Resources Limited ("the Company") is pleased to announce the completion of the metallurgical work on samples taken from the Company's Selenge iron ore project ("the Project")

### HIGHLIGHTS

- **Total of 400 kg of samples representing the iron ore of Bayantsogt clustered deposit were the subject of metallurgical test works.**
- **The metallurgical test results demonstrated a magnetite concentrate of marketable specification with high iron grade and low impurities suitable for Chinese steel producers.**

#### Summary Results of the Two-stage Grinding Wet Magnetic Separation Test (P80 250µm and P80 75 µm)

Deposit names	Final stage Mass Yield, %	Grade, Fe%	Final stage Recovery, %
Dund Bulag	67.4	<b>63.1</b>	93.9
Bayantsogt	67.6	<b>62.1</b>	88.6

#### Summary Results on the Quality and Impurities in the Product of Iron Concentrate

Deposit names / JORC Measured & Indicated Resource***	Fe, %	SiO <sub>2</sub> , %	S, %	Al <sub>2</sub> O <sub>3</sub> , %	P, %
Dund Bulag ( <b>199.9</b> Mln tons)	63.1	6.9	0.2	1.38	0.005
Bayantsogt ( <b>35.7</b> Mln tons)	62.1	6.4	2.8*	1.33	0.038

\* LIMS/Flotation test result

- **The Company is now in the final stages of developing and optimizing a small scale production scenario.**

## Summary on the Metallurgical test works and results

The metallurgical test was completed at the ALS Iron Ore Technical Centre \*\* in Wangara, Western Australia. The test works were carried out in two phases as described in detail in the attachments to this report.

A total of 400.1 kg of samples including 196.9 kg of samples representing Bayantsogt deposit and 203.2 kg of samples representing Dundbulag deposit were prepared and delivered to ALS for testing.

The following test works were successfully completed:

### I. Head Analysis

1. 24 Element XRF and Asbestos Analysis
2. XRD, Optical (Mineralogy)

### II. Physical Test

1. Unconfined Compressive Strength (UCS)
2. Bond Impact Crushing Work Index (CWi)
3. SAG Mill Comminution (SMC)
4. Bond Abrasion Index (Ai)
5. Bond Ball Mill Work Index (BWi)

### III. Magnetite Recovery Test

1. Davis Tube Recovery (DTR)
2. Davis Tube Wash (DTW)
3. Grind Establishment Test
4. Coarse Liberation Test (using ERIEZ L8 separator)
5. Grind Size Optimization Test (using ERIEZ L8 separator)
6. XRD and Optical Microscopy on the non-mags
7. LIMS/Flotation (using ERIEZ L8 separator)
8. Two - stage Grinding Test (using ERIEZ L8 separator)

## I. HEAD ANALYSIS

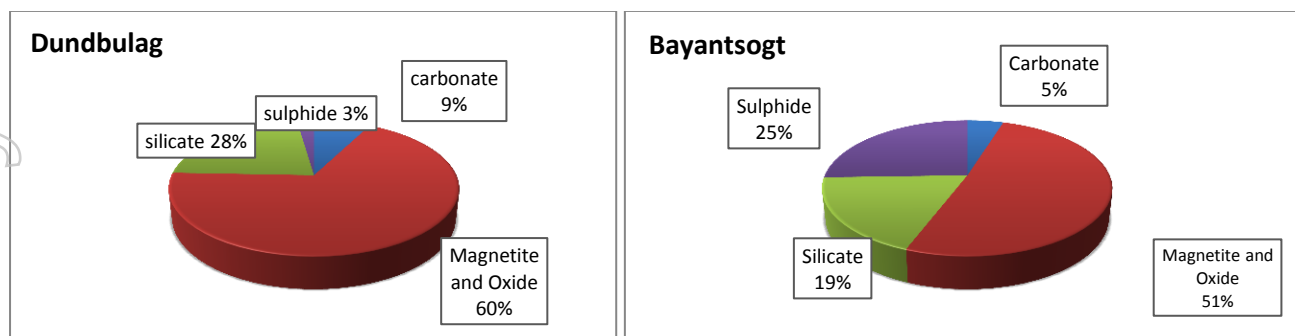
### I.1 Head Assay (24 Element XRF)

The test samples were representative of ore contents of both the Dundbulag and Bayantsogt deposits. Asbestiform analysis was conducted at SGS Environmental Laboratories in Newburn, Western Australia. The analysis was undertaken in accordance with SGS method AN602.

Head Assay					
Deposit name	Fe %	SiO <sub>2</sub> %	Al <sub>2</sub> O <sub>3</sub> %	S %	Asbestos %
Dundbulag	18.5	42.4	9.34	0.4	Nil
Bayantsogt	22.9	34.9	7.6	2.8	Nil

## I.2 XRD Mineralogy

The minerals identified in the ore of the Dundbulag and Bayantsogt deposits are summarized below:



## II. PHYSICAL TEST

Comminution testworks summary			Note
Material Property	Dundbulag	Bayantsogt	
UCS-Unconfined Compressive Strength (MPa)	163.12	203.8	1
CWi-Bond Impact Crushing Work Index (kWh/t)	9.09	11.4	2
SMC-SAG Mill Comminution (kWh/m <sup>3</sup> )	10.19	10.8	3
Ai-Bond Abrasion Index	0.32	0.17	4
BWi-Bond Ball Mill Work Index (kWh/t)	19.4	19.9	5

### Notes:

1. The UCS results indicated that the samples range from strong to very strong.
2. The Bond CWi results indicated the crushability of the samples is medium.
3. The SMC results indicated that grinding of the samples by SAG milling of the samples is hard.
4. The Bond Ai results indicated the classification of the samples range from moderately abrasive to abrasive.
5. The Bond BWi results indicated that grinding of the samples by ball milling is very hard.

### III. MAGNETITE RECOVERY TEST

#### III.1 Davis Tube Recovery (DTR)

The results of DTR test at different screen sizes of P100 were consistent with the results of previously conducted laboratory scale DTR tests in 2011 and 2012. The results showed that 65% Fe or higher iron grade concentrate as a final saleable product can be achieved at P100 150 micron or finer screen sizes.

Deposit name	Screen Size P100	Mass Yield %	Fe %		SiO <sub>2</sub> %	S %
			Grade	Recovery	Grade	Grade
Dundbulag	425	22.6	49.7	62.7	17.3	1.10
	300	21.6	53.4	61.2	15.0	0.23
	250	20.9	56.3	65.3	12.6	0.26
	212	20.0	55.3	63.7	13.2	0.48
	150	16.9	65.0	61.4	5.6	0.26
	125	17.4	66.8	62.9	4.9	0.23
	106	16.7	66.9	61.4	4.5	0.17
	75	15.3	69.6	61.3	2.1	0.13
	45	14.4	70.1	59.4	1.5	0.14
Bayantsogt	425	23.8	40.8	45.5	23.2	3.92
	300	19.1	49.1	43.1	16.7	4.53
	250	17.7	55.1	41.3	11.8	5.0
	212	17.2	56.8	43.6	10.4	5.0
	150	15.0	62.6	41.9	6.88	4.95
	125	14.9	63.1	42.0	5.74	5.0
	106	14.8	64.1	42.1	4.87	5.0
	75	14.8	66.6	42.9	2.34	5.0
	45	14.3	68.3	43.0	1.51	5.0

#### III.2 Davis Tube Wash (DTW)

This test work was conducted by using the rod mill that is commonly used in the industry. As seen from the below results, 61.9% Fe concentrate was achieved at P80 75µm for Dundbulag deposit.

Deposit name	Grind Size Size P80	Mass Yield %	Fe %		SiO <sub>2</sub> %	S %
			Grade	Recovery	Grade	Grade
Dundbulag	500	36.3	33.5	65.8	31.1	0.31
	250	28.1	43.0	65.3	22.9	0.30
	125	20.4	56.1	62.0	12.6	0.29
	75	18.4	61.9	61.5	7.66	0.24
	45	16.9	66.4	60.8	4.33	0.19
	38	16.7	66.5	60.0	3.52	0.17
	32	16.4	67.6	60.0	2.86	0.16
	25	16.1	67.7	58.8	2.61	0.14
Bayantsogt	500	35.3	38.3	59.0	24.6	3.52
	250	27.6	44.5	53.6	20.3	3.95
	125	20.4	51.8	46.0	14.1	4.71
	75	17.6	60.4	46.3	7.50	>5.0
	45	15.3	64.4	43.0	3.87	>5.0
	38	15.0	65.3	42.5	3.38	>5.0
	32	14.7	65.8	42.1	2.69	>5.0
	25	14.3	65.8	41.2	2.73	>5.0

### III.3 Grind Establishment Test

Grind establishment was carried out at various sizes on the samples from both deposits. Splits of the samples were milled for various selected times to determine the grind time versus grind size characteristics.

Grind Size P80 (um)	Requisite Grind Time (min' sec'')	
	Bayantsogt	Dundbulag
500	4' 26''	4' 40''
250	6' 22 ''	7' 03''
125	9' 49''	10' 44''
75	14' 49''	15' 22''
45	26' 13''	24 '55''
38	37' 21''	35 '50''
32	45' 40''	40 '54''
25	49' 12''	46 '07''

### III.4 Coarse Liberation Test

This test was carried out to ascertain the effect of crush size. The representative portions of the two deposits were tested at crushing sizes of -6.3mm, -3.35mm, -1.0mm. A Bayantsogt LIMS result indicates a mass rejection of 71.4%, with 50.9% Fe Recovery at 1.0mm. A Dundbulag LIMS result indicates a mass rejection of 69.4%, with 66.1% Fe Recovery at 1.0mm.

Deposit name	Crush Size (mm)	Feed Grade (%)	Products	Mass Yield (%)	Fe %	
					Grade	Metal Recovery
Bayantsogt	-6.3	22,4	Mags	63,7	26,4	75,1
			Non-Mags	36.3	15.3	24.9
	-3.35	22,8	Mags	51,3	29,8	67,1
			Non-Mags	48.7	15.4	32.9
	-1.00	22,7	Mags	28,6	40,5	50,9
			Non-Mags	71.4	15.6	49.1
Dundbulag	-6.3	17,6	Mags	64,2	23,1	84,0
			Non-Mags	35.8	7.87	16.0
	-3.35	17,1	Mags	62,9	22,7	83,2
			Non-Mags	37.1	7.75	16.8
	-1.00	17,2	Mags	30,6	37,0	66,1
			Non-Mags	69.4	8.37	33.9

### III.5 Grind Size Optimization Test

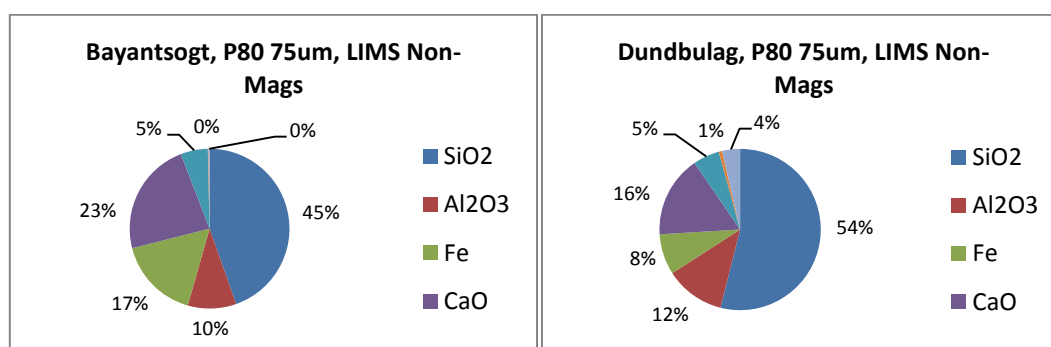
The test was conducted by using an ERIEZ L8 wet drum separator. The purpose of this test was to optimize the grinding size in correlation with increasing Fe grade in the concentrate (or Mags.)

The results are shown below:

Deposit name	Grind Size P80 (um)	Feed Grade (%)	Mass Yield (%)	Fe %	
				Grade	Metal Recovery
Bayantsogt	125	23,0	21,4	51,9	48,3
	75	23,2	18,2	60,3	47,1
	45	23,3	16,9	64,2	46,7
Dundbulag	125	18,4	21,3	57,5	66,8
	75	18,3	19,4	62,3	66,2
	45	18,4	18,4	66,2	65,9

### III.6 XRD and Optical Microscopy on the Non-Mags

An ERIEZ L8 magnetic separator was used in the scope of P80 75um and 125um in grinding size and mineralogy test work was conducted at non-magnetic fraction separated with the magnetic separator. Types of minerals detected with the tests categorized as follows. As seen from this result, iron content in the waste material was very small as for Dundbulag deposit.



### III.7 LIMS/Flotation Test

At the aim to eliminate sulphur grade in ore of Bayantsogt deposit, we executed flotation test. With the flotation test, sulphur content 5.92% in the ore was decreased till 2.86%.

Deposit name	Grind Size P80	Test Work	Mass Yield %	Fe %		S %	
				Grade	Recovery	Grade	Recovery
Bayantsogt	75um	LIMS	19.7	60.5	49.8	5.92	41.95
		Flotation	85.9	59.2	85.6	2.86	48.0

### III.8 Two Stage Grinding Test

Two sets of two-stage grinding LIMS tests were conducted. The first set was conducted at P80 400um and P80 75, with the second set conducted at P80 250um and P80 75um. This was to determine the effect of the initial grind size on the grade of the final concentrate.

Grinding to P80 250um at the primary grind produced a higher Fe grade concentrate as compared to the primary grind at P80 400um.

LIMS results showed better Fe recoveries, 64% of overall feed, at a primary grind of P80 250um compared to 59% at primary grind of P80 400um.

The results are provided in below table:

Deposit Name	Grind Size P80 (um)	Feed Grade (%)	Mass Yield %	Fe %		SiO <sub>2</sub> %	S %
				Grade	Recovery	Grade	Grade
Dundbulag	400	17.0	26.6	41.3	64.8	24.1	0.43
	75	39.8	60.5	60.2	91.6	8.77	0.37
	250	18.0	26.6	45.9	67.8	20.3	0.32
	75	45.3	67.4	63.1	93.9	6.9	0.24
Bayantsogt	400	23.9	28.2	45.4	53.5	19.1	4.29
	75	45.0	67.2	59.3	88.5	8.12	4.96
	250	23.7	27.4	45.9	53.0	18.65	3.95
	75	47.7	67.6	62.1	88.6	6.45	4.08

As a result of the tests, it was demonstrated that an iron concentrate containing >62% Fe can be produced from both Dundbulag and Bayantsogt deposits. This meets the marketable specification suitable for Chinese steel producers. Overall, the magnetite range metallurgical test works showed an excellent processing attributes of iron ore from Dundbulag deposit.

Erdene Tsengelbayar

**Managing Director**

**Haranga Resources Limited**

*\*\* Mr. Aden Tan, who represents the ALS Iron Ore Technical Centre in Wangara in Western Australia, consents to the inclusion in this report of the matters based on his information, and information presented to him, in the form and context in which it appears.*

*\*\*\* The technical information contained in this announcement in relation to the JORC Code (2012) Compliant Resource for the Selenge Project Deposits has been reviewed by Mr Peter Ball of DataGeo Ltd, who is a member of the Australasian Institute of Mining and Metallurgy. Mr Ball has sufficient experience relevant to the style of mineralization and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Mineral Resources and Ore Reserves'. Mr Ball consents to the inclusion in this report of the matters based on his information, and information presented to him, in the form and context in which it appears. Refer to the HAR ASX announcement dated 7 May 2013 for further details.*

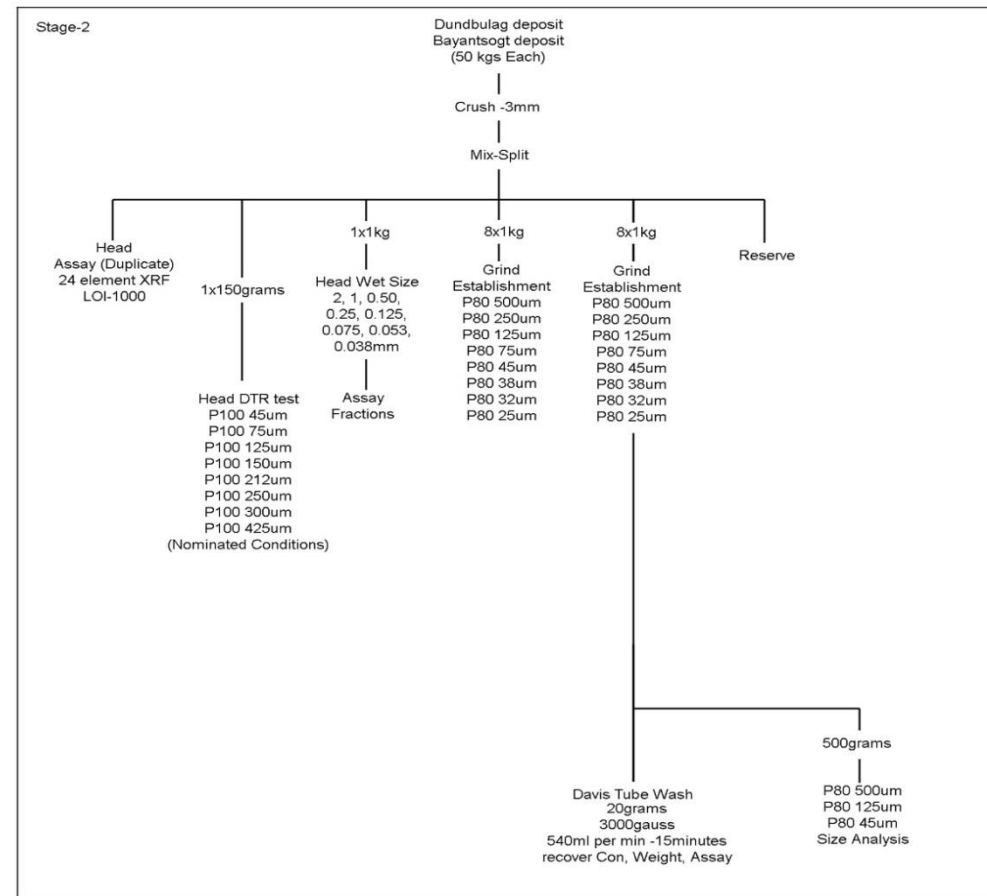
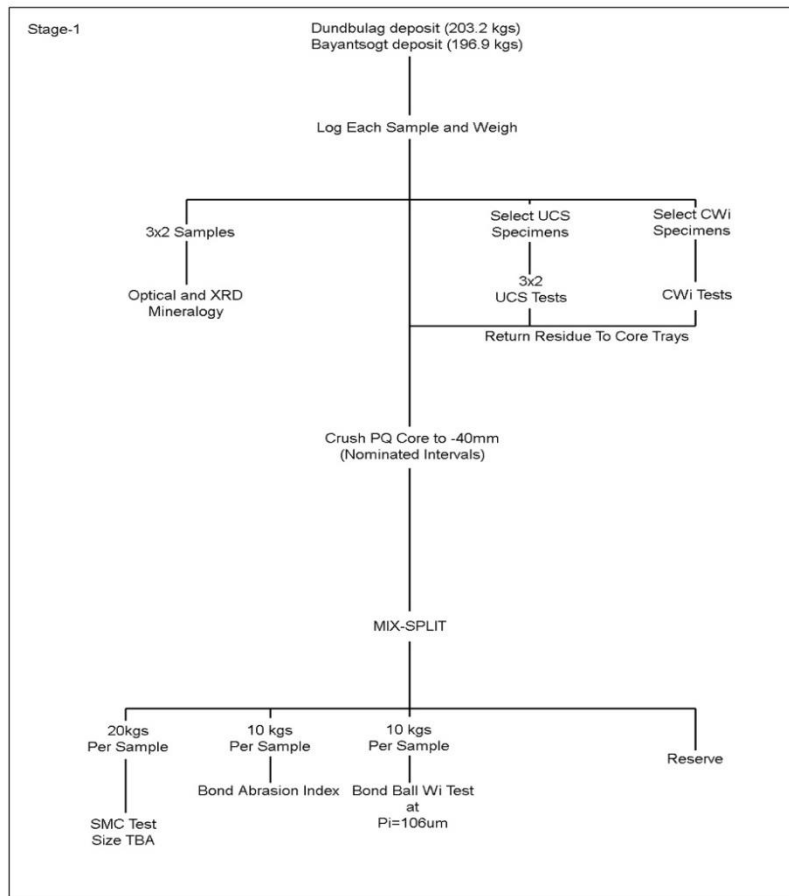
**JORC Resource Estimates Split by Deposit (Cutoff = 12.5% Fe)**

Deposit	Measured		Indicated		Inferred		TOTAL	
	Mt	Fe Grade	Mt	Fe Grade	Mt	Fe Grade	Mt	Fe Grade
Dund Bulag	96.4	16.6	103.5	16.1			199.9	16.4
Bayantsogt	20.7	23.0	15.0	22.8	0.55	16.6	36.3	22.8
Undur Ukhaa	9.3	15.8	8.9	15.1			18.2	15.4
TOTAL	126.4	17.6	127.4	16.8	0.55	16.7	254.4	17.2



**PHASE ONE:**

**Sample Preparation, Comminution Test, Magnetite Recovery Scoping Study  
Magnetic Recovery Test by Davis Tube**



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**PHASE TWO:**

Grind Size Optimisation Test-Using ERIEZ L8, Coarse Liberation Assessment, LIMS/Flotation, Two-Stage Grinding Test

