Positive Phase 1 Test results from CSIRO Research Program

Highlights

- First phase of the CSIRO research project, focused on understanding the mineralogy of the non-magnetic iron tailings stream with a view to developing a secondary product recovery strategy, is now complete.
- The results from the test work demonstrated the following:
  - the major component in the tailings samples was dominated by hematite and quartz;
  - Low levels of magnetite (1% or less) were detected in the tailings samples confirming high recovery of magnetite in earlier stages of process separation; and
  - phosphorus exists predominantly as discrete phosphate minerals, potentially simplifying the removal of phosphorus as part of upgrading a hematite concentrate.
- These encouraging results provide the basis for further investigations into the potential economic recovery of hematite from the tailings stream.

Hawsons Iron Limited (**Hawsons**) is pleased to advise the completion of the first phase of the collaborative research project with CSIRO, Australia's national science agency, with financial assistance provided through its Kick-Start Program.

The focus on the first phase of works was to identify the chemical and mineralogical properties of the non-magnetic iron content contained within the tails fraction. The program was structured to assist Hawsons in determining the high-level technical feasibility of extracting hematite as a potential byproduct of the Hawsons Iron Project (**Project**). The key aims for this work were to determine:

a) The main Fe-bearing mineral contained within the tailings stream;

b) The degree of liberation of the non-magnetic iron-bearing minerals in the tails and the associated gangue minerals; and

c) To gain a better understanding of the presence of phosphorus (**P**) (and other impurity elements) in the tailings fraction.

Summary of Technical Results

Based on chemical characterisation work using X-ray Fluorescence (**XRF**) Spectroscopy, the major element chemistry in all four samples was dominated by Fe_2O_3 and SiO_2 **.**

Impurities present, in approximate order of abundance, included: $Al_2O_3 > MgO \sim CaO > K_2O > Na_2O > Mn_3O_4$. These results suggest the presence of aluminosilicate gangue minerals, most likely feldspars and/or micas.

Mineralogical characterisation by X-ray Diffraction (**XRD**) identified:

- Samples were dominated by hematite and quartz with minor muscovite, dolomite, albite (feldspar), chamosite (chlorite-group mineral). The ratios of hematite:quartz varied according to tabling conditions/parameters for the different concentrates.
- Additional Fe-oxide (magnetite) and Fe oxyhydroxide (goethite) phases were collectively <2% in abundance.
- There was no evidence for any phosphate containing phase(s).
- Gangue phases are primarily responsible for the elevated levels of Al_2O_3 (muscovite and feldspar), MgO (dolomite and muscovite), CaO (dolomite and tr. calcite), K_2O (muscovite).

Client ID	Magnetite	Hematite	Calcite	Quartz	Dolomite	Chamosite	Muscovite	Goethite	Albite	Microcline
Con1	1	46	<1	32	5	2	8	2	3	<1
Con2A	1	45	<1	34	6	2	7	1	3	<1
Con2B	1	29	<1	44	7	3	10	1	4	1
Con3	<1	25	<1	47	9	3	9	1	5	1

Table 1: QXRD (*relative* crystalline wt%). Note: QXRD has a detection limit of 1-2%

The final phase of the work focused on examining the distribution of phosphorus using Electron Probe Microanalysis (**EPMA**).

The key technical findings from the EPMA were as follows:

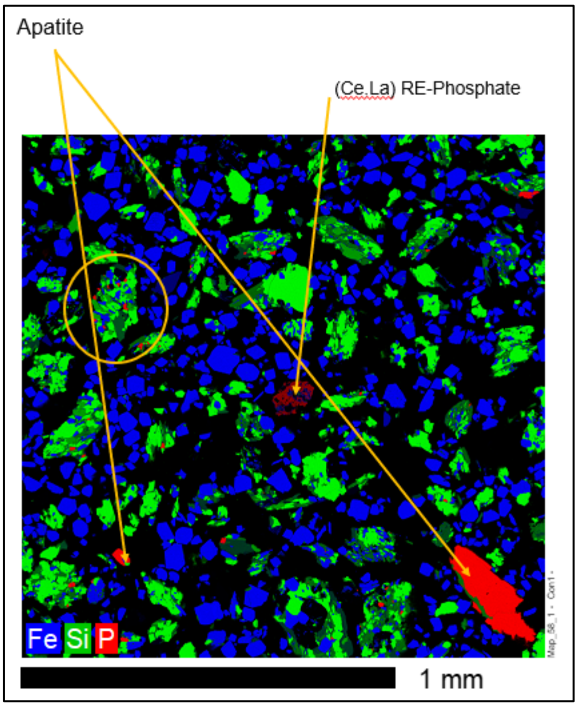

Figure 1: *EPMA element distributions*

The image (left) for Con1 shows that phosphorus occurs in two forms:

1. As discrete Ca-rich phosphate grains (the correlation between P and Ca suggests this phase is most likely apatite; and
2. as a (Ce,La) Rare Earth -phosphate phase.

Apatite is the more common form of phosphate in the sample and occurs as either discrete, fully liberated particles (indicated by arrows) or as smaller, poorly liberated grains in composite particles (circled).

Most hematite grains are well-liberated. Composite particles are largely composed of various aluminosilicates (various shades of olive green) and quartz (bright green).

There was no evidence for phosphorus occurring as a substitutional contaminant within hematite grains.

Hawsons CEO, Tom Revy, commented: *"The results of this test work have not only confirmed the Company's earlier assessments on tailings mineralogy, but have provided Hawsons sufficient confidence to progress further investigations into the potential economic recovery of hematite as a byproduct from the tailings stream.*

These results will not be considered in the Company's current prefeasibility (PFS) activities which are focused on future magnetite production only. The Hawsons Iron Project PFS is still planned to be completed by year end."

Next Steps

As an outcome of these results, the Company plans to undertake further metallurgical testwork to determine the most appropriate method of rejecting the phosphorus and quartz minerals whilst retaining the hematite. This is likely to be by flotation or similar process methods using existing technologies.

Acknowledgment

This project was made possible by CSIRO Kick-Start, an initiative that provides funding and support for innovative Australian start-ups and SMEs to access CSIRO's research expertise and capabilities to help grow and develop their business.

Head Office

Level 3
410 Queen Street
Brisbane QLD 4000
Phone: +61 7 3554 1003
Website: www.hawsons.com.au

Share Registry

MUFG Corporate Markets
Level 12, 300 Queen Street
Brisbane QLD 4000
Phone: 1300 554 474

This announcement is authorised by the Board.

For further information contact:

Tom Revy
Chief Executive Officer
tom.revy@hawsons.com.au
+61 411 475 376

JORC Code, 2012 Edition – Tables 1 & 3 Hawsons Magnetite Project

CSIRO Samples

Location and Geology

Hawsons Iron Magnetite Ore Deposit is situated 65km south-west of Broken Hill about 10km on the NSW side of the NSW/SA border. It can be described as a Rapitan-style stratified turbidite sequence that dips approximately 45° down to the SW in the Core West and Core East areas and up to 70° down to the NW in the Fold Area. The sequence consists of magnetite rich siltstones, sandstones and diamictites. The DTR% grade of the magnetite product is up to 70% iron and the ore is comparatively soft where the crystalline magnetite liberates readily from the ore.

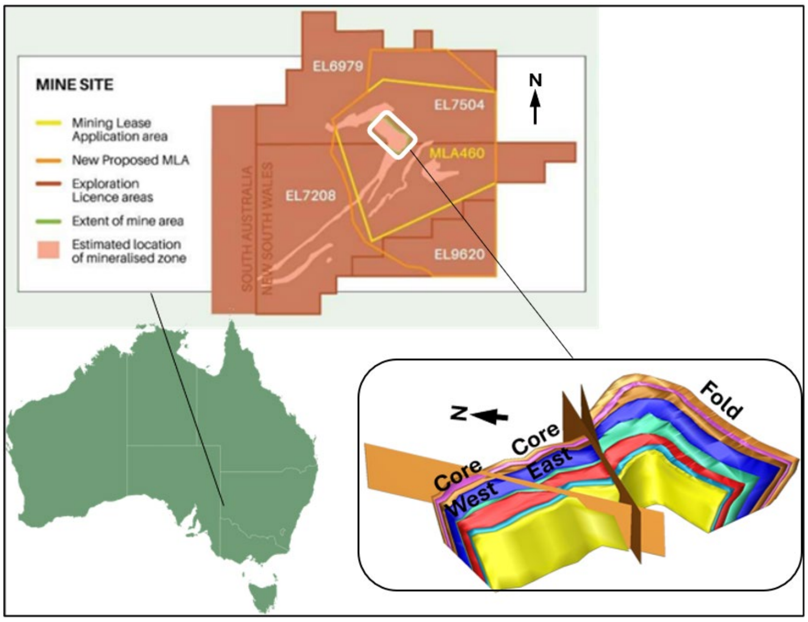

Figure 2: *Hawsons Iron location plan and schematic structural diagram (red band = Unit 3, blue band = Unit 2 and pink band = Unit 1)*

Sample Constituents

Samples that formed the basis of the CSIRO analysis consisted of material from Units 2 and 3:

- 15 drums of core samples from drillholes RDCW21005, RDCW21006 and GFCW22020 (**Figure 4**)
- 8C (8inch = 200mm diameter) core hole LDCW21004 cored from 59.00m – 92.70m (= 33.70m total core length). This core was packed into 12 x 200L drums (**Figure 3**)
- While digging the sump for drillhole RCFO23015 high grade material was intersected in the near surface. This material was sampled into 4 intermediate bulk containers (IBCs) (**Figure 5**)

Figure 3: *Drums 1-4 on pallet #1 (out of a total of 12 drums of 8C core from drillhole LDCW21004)*

Figure 4: *Pallets of trays of ¾ HQ3 diamond drill core to be used for testing at ALS Perth*

Figure 5: *RCFO23015 drillhole sump and an example of the sample recovered*

The following is a summary of the sample masses of feedstock for the ALS samples:

Sump sample IBCs:	5,306kg
HQ3 drill core:	8,214kg
8C core:	3,229kg

The sample feedstock (HQ3 core, 8C core, and the sump sample) was used in testwork programs at ALS, Perth. This testwork consisted of comminution (crushing and grinding) and magnetic separation to produce the non-mags sample sent for analysis to CSIRO.

The list of core and sump samples used is shown in Table 1.

Table 1: Record of samples used in the process of producing the CSIRO test sub-samples

ALS Project No.	Hole ID	East GDA2020	North GDA2020	RL (AHD)	Tot Depth (m)	Azi (°)	Dip (°)	Hole Purpose	Sample Type	Depth From (m)	Depth To (m)	Length (m)	Comments
A23297	RDCW21005	511965.48	6412719.73	187.25	590.43	040	-55	Resource Definition	1/2 Core in Drums	325.00	582.90	257.90	Entire core length provided (no missing intervals). 6 Drums of core.
	RDCW21006	511852.15	6412819.31	187.26	561.20	040	-55	Resource Definition	1/2 Core in Drums	165.50	560.20	394.70	Entire core length provided (no missing intervals). 4 Drums of core.
	GFCW22020	512291.28	6413434.15	195.66	475.03	040	-65	Geotechnical Assessment	Full Core in Drums	70.00	83.45	13.45	Missing intervals (ranging between 19-28cm) sampled for geotechnical testing.
									Full Core in Drums	83.73	151.21	67.48	
									Full Core in Drums	151.46	270.36	118.90	
									Full Core in Drums	270.57	330.32	59.75	
									Full Core in Drums	330.57	335.00	4.43	
A24666	RDCE22031	513068.21	6411981.25	195.18	400.00	040	-55	Resource Definition	3/4 Core in Trays	248.70	400.30	151.60	Entire core length provided (no missing intervals).
	GFCW22030	512485.90	6413170.68	193.30	450.81	040	-65	Geotechnical Assessment	3/4 Core in Trays	2.50	6.08	3.58	Missing intervals (ranging between 10-40cm) sampled for geotechnical testing.
									3/4 Core in Trays	6.28	13.16	6.88	
									3/4 Core in Trays	13.54	18.81	5.27	
									3/4 Core in Trays	19.10	22.70	3.60	
									3/4 Core in Trays	22.97	26.30	3.33	
									3/4 Core in Trays	26.50	31.93	5.43	
									3/4 Core in Trays	32.14	34.63	2.49	
									3/4 Core in Trays	34.89	57.90	23.01	
									3/4 Core in Trays	58.30	61.10	2.80	
									3/4 Core in Trays	61.35	82.17	20.82	
									3/4 Core in Trays	82.57	106.58	24.01	
									3/4 Core in Trays	106.86	139.60	32.74	
									3/4 Core in Trays	139.90	145.16	5.26	
									3/4 Core in Trays	145.40	188.34	42.94	
									3/4 Core in Trays	188.60	245.80	57.20	
									3/4 Core in Trays	245.99	333.22	87.23	
									3/4 Core in Trays	333.72	339.90	6.18	
									3/4 Core in Trays	340.17	438.70	98.53	
									3/4 Core in Trays	438.80	444.57	5.77	
									3/4 Core in Trays	444.85	450.81	5.96	
	GPCE22028	513180.20	6412114.17	195.48	250.80	220	-70	Geotechnical Assessment	3/4 Core in Trays	95.70	151.65	55.95	Missing intervals (ranging between 19-26cm) sampled for geotechnical testing.
									3/4 Core in Trays	151.91	219.91	68.00	
									3/4 Core in Trays	220.10	231.80	11.70	
									3/4 Core in Trays	232.05	241.70	9.65	
	GPCW22037	512402.87	6412748.89	188.71	400.00	220	-70	Geotechnical Assessment	3/4 Core in Trays	90.00	152.60	62.60	Missing intervals (ranging between 25-30cm) sampled for geotechnical testing.
									3/4 Core in Trays	152.86	273.70	120.84	
									3/4 Core in Trays	273.95	328.60	54.65	
									3/4 Core in Trays	328.90	399.84	70.94	
	RDCE22026	513298.48	6412255.92	196.49	450.40	040	-55	Resource Definition	3/4 Core in Trays	339.50	450.40	110.90	Entire core length provided (no missing intervals).
	RDCW21009	512091.43	6413091.81	192.63	540.40	040	-55	Resource Definition	3/4 Core in Trays	387.30	540.40	153.10	Entire core length provided (no missing intervals).
	RDCW22048	512294.53	6413222.39	194.06	402.20	040	-55	Resource Definition	3/4 Core in Trays	347.50	402.20	54.70	Entire core length provided (no missing intervals).
	LDCW21004	512671.51	6413384.05	194.07	92.70	000	-90	Metallurgical Testing	Full Core in Drums	59.00	92.70	33.70	Entire core length provided (no missing intervals).
	RCFO23015	514556.13	6412044.34	197.09	2.50	000	-90	Drillhole Sump Sample	Lump Sample in IBCs	0.70	2.50	1.80	Surficial ore recovered during excavation of a drillhole sump. Loaded into 4 x IBCs.

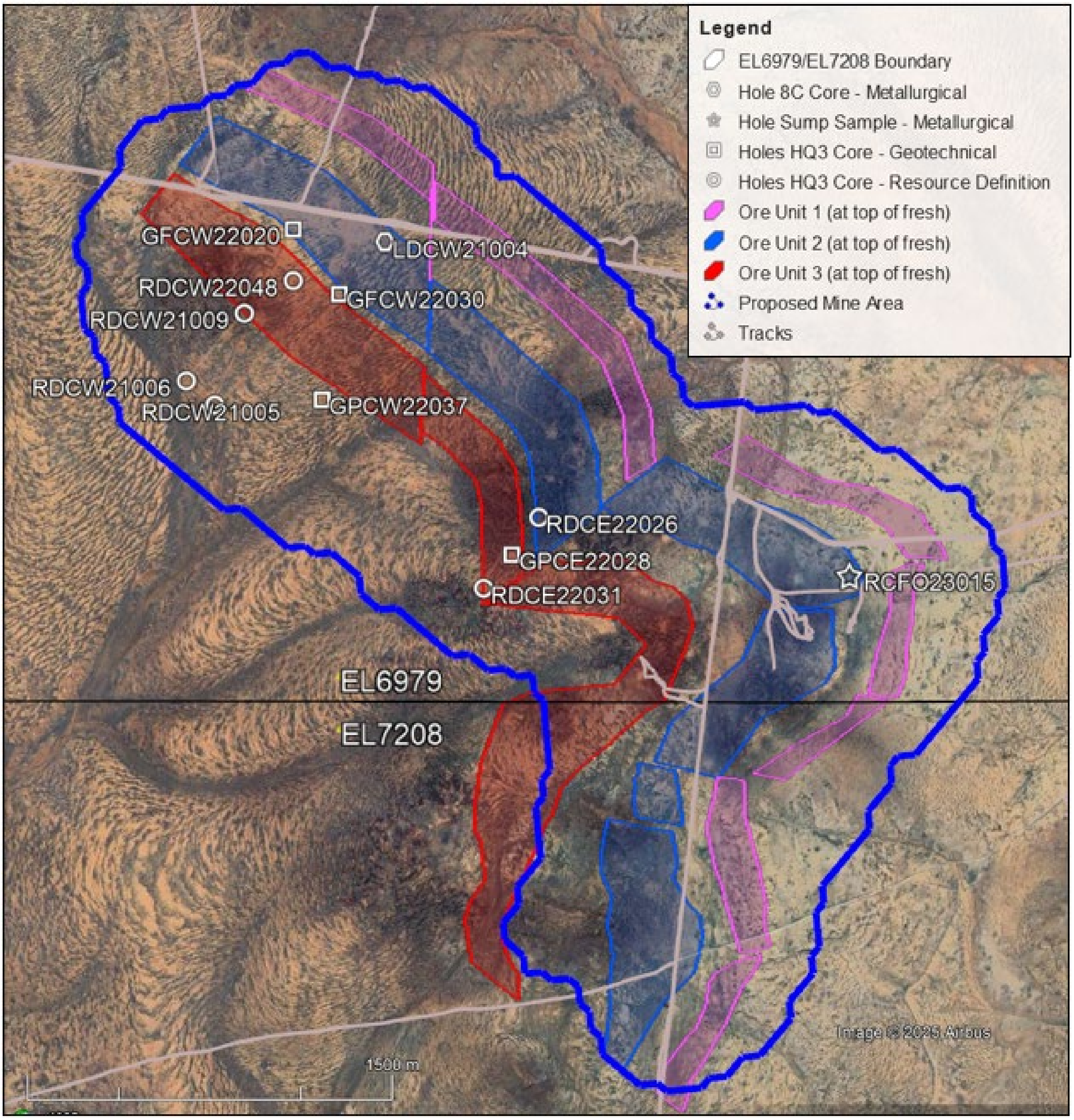

Figure 6: *Locations of source sample sites used for CSIRO samples.*

Table 3: Compliance statement for Hawsons samples and data

Criteria	Commentary
Sampling techniques	The feedstock samples tested at ALS Metallurgy & Mineral Processing were derived from selected intervals of HQ3 (61.1mm) diamond core from 10 drillholes and 1 large diameter 8C (200mm diameter) and 1 cored hole drilled within the overall pit shell of the Hawsons project area. An additional 4 x IBC grab sample from the mineralised subcrop in the RCFO23015 drill sump was included. The selection criteria was completed to ensure representative lateral cover existed across the project area and representative vertical cover existed across the prospective mineralised units. All crushing, sampling and assay for individual samples used in the comminution testing was performed to industry standards at ALS Perth.
Drilling techniques	No new drill results are reported in this announcement. The drilling results for this exercise have previously been reported.
Drill sample recovery	No new drill results are reported in this announcement.
Logging	All core sample was logged geologically to a level of detail appropriate to support metallurgical sampling.
Sub-sampling techniques and sample preparation	Subsampling techniques and sample preparation were conducted to industry standards at ALS Metallurgy & Mineral Processing, Perth.
Quality of assay data and laboratory tests	All analysis was completed at a third-party laboratory (ALS Perth). The magnetic mineral (magnetite) content (%) was determined by Davis Tube Recovery (DTR). Assay was conducted by XRF to produce a 14-element suite (oxides) and LOI was determined by gravimetric method both on the head samples and the DTR samples. Laboratory procedures are in line with industry standards and are appropriate for magnetite iron ore. The third-party laboratory inserts their own standards at set frequencies and monitors the precision of the XRF analysis.
Verification of sampling and assaying	Apart from data and samples resubmitted to the third party for review / re-analysis following Lab-In QAQC error-trapping, no adjustments were made to the assay data.
Location of data points	All geolocation x, y, z data is referenced to GDA2020 datum with a Differential GPS. Height datum is AHD. Downhole geolocation survey is conducted using both industry standard logging tools along the drill string and by gyroscopic downhole geophysical logging tools.
Data spacing and distribution	Based on the geological understanding of the deposit the composite sample locations are considered adequate to establish the degree of geological and grade continuity appropriate for the samples.
Orientation of data in relation to geological structure	The orientation of the mineralisation and the deposit structure is well understood and sample locations were selected to sample the mineralisation appropriately.
Sample security	All samples are placed in containers appropriate for the nominated analyses and then a chain of custody process is followed to track sample security.
Audits or reviews	No external audit or reviews have been undertaken specifically in relation to these exploration results.

Competent Persons Statement

The data in this report that relates to Exploration Results for the Hawsons Magnetite Project is based on information evaluated by Mr. Wes Nichols who is a Member of the Australian Institute of Mining and Metallurgy and who has sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (the "JORC Code"). Mr. Nichols is a full-time employee of Hawsons Iron Limited and he consents to the inclusion in the report of the Exploration Results in the form and context in which they appear.