Fremantle METALLURGY
IT'S ALL ABOUT THE PROCESS

12a Bowen Street
O'CONNOR 6163
Western Australia

Red Dingo

(Grade by Size, Gravity Concentration and Cyanide Leach)

August 2018

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1 Introduction

Established in 2012 by a small group of local investors, Red Dingo Corp is an Australian business based in Alice Springs.

Red Dingo Corp has recently purchased White Range gold mine, located 130 kilometres east of Alice Springs near Arltunga. Whilst gold production had ceased one year since the first gold pour in 1990, geological studies have shown that there are extensive gold reserves at the site.

Work is underway to recommence mining at the site, with new production equipment and accommodation facilities being established onsite. For this purpose, Red Dingo Corp has engaged Fremantle Metallurgy to undertake testwork on their White Range material. The material has been sampled from four separate locations on an existing waste rock stockpile of 210,000t.

The main focus of this investigation is to determine the gold grade across a range of particle size fractions in order to determine an optimum grind size that would allow for economic recovery of the gold. In addition, the viability of upgrading the material via gravity concentration has been investigated. The gravity tailings have also been leached with cyanide to determine the efficacy of cyanide in extracting any gold not recoverable through gravity concentration.

2 Executive Summary

The testwork results are summarised and presented in the tables below:

Table 1: Grade by Size

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Size (µm)	Mass (g)	%Mass Distribution	%Passing	Assay		
				Au (ppm)	Ag (ppm)	Cu (ppm)
1400	164.2	16.6	83.4	0.45	1.0	<10.00
600	231.0	23.3	60.1	0.90	2.0	<10.00
300	113.2	11.4	48.7	10.96	2.0	<10.00
150	78.6	7.9	40.8	6.74	<1.0	<10.00
106	53.0	5.3	35.4	3.34	<1.0	<10.00
-106	351.2	35.4	0.0	6.59	<1.0	20.00
Total	991.2	100.0				
Head Grade by Size				**4.59**	**<1.0**	**<6.46**

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Table 2: Gravity Concentration

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Stream	Mass (g)	Au (ppm)	Au % Distribution	Mass % Distribution
Falcon Feed*	4452.24	2.70	100	100
Falcon Concentrate	582.24	10.63	51	13
Falcon Tailings	3870.00	1.51	49	87

***Falcon feed Au grade has been calculated using concentrate and tailings assay data**

Table 3: Cyanide Leaching

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Parameter	Unit	
Au in Leach Solution	g/t	0.88
Au in Leach Residue	g/t	0.14
Au Recovery	**%**	90.90
Calculated Tailings Au Grade	g/t	1.51
NaCN Consumption	kg/t	0.10
Lime Consumption	kg/t	0.33

From the testwork data, we can see that the majority of gold is present in the -300µm fraction and 50.94% of the gold is distributed in -106 µm fraction, which constitutes 35.43% of the sample mass.

The material has been upgraded 3.94 times its initial grade from 2.7 g/t (calculated) to 10.63 g/t in the falcon concentrate. The tailings have also been shown to be readily leached, with a gold recovery of 90.9%.

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3 Testwork Program

The Red Dingo testwork program consisted of the following:

- Sample preparation (bulk crush, screen at 3.35mm and homogenisation);
- Grade by size (Au, Ag and Cu at 1.4mm, 600µm, 300µm, 150µm, 106µm, -106µm);
- Falcon concentration;
- Falcon tailings cyanide leach;
- Solution Assays for Au;
- Residue Assays for Au;

4 Sample Receipt and Preparation

Fremantle Metallurgy received four buckets of sample with a combined weight of 141.7kg for testwork purposes. All four samples were then crushed and screened to -3.35mm separately. A particle sizing was conducted on the four samples separately. The samples were then combined to form a bulk sample and homogenised via cone and quartering.

Figure 1: Sample Buckets Received

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Figure 2: White Range Samples as Received

Table 1: White Range Initial Screening

RD1			
Fraction(µm)	**Mass(g)**	**%Retained**	**%Passing**
1.4 mm	91.2	18.5	81.5
600	74.8	15.2	66.3
300	42.0	8.5	57.8
150	35.8	7.3	50.5
106	34.6	7.0	43.5
-106	214.2	43.5	0.0
TOTAL	492.6	100.0	
RD2			
Fraction(µm)	**Mass(g)**	**%Retained**	**%Passing**
1.4 mm	74.8	15.1	84.9
600	132.8	26.7	58.2
300	64.2	12.9	45.3
150	42.8	8.6	36.7
106	26.8	5.4	31.3
-106	155.6	31.3	0.0
TOTAL	497.0	100.0	

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RD3			
Fraction(µm)	**Mass(g)**	**%Retained**	**%Passing**
1.4 mm	94.2	19.1	80.9
600	125.4	25.4	55.5
300	58.8	11.9	43.6
150	38.0	7.7	35.9
106	19.0	3.8	32.1
-106	158.4	32.1	0.0
TOTAL	493.8	100.0	
RD4			
Fraction(µm)	**Mass(g)**	**%Retained**	**%Passing**
1.4 mm	89.0	18.1	81.9
600	134.8	27.4	54.6
300	58.8	11.9	42.6
150	38.8	7.9	34.8
106	21.6	4.4	30.4
-106	149.6	30.4	0.0
TOTAL	492.6	100.0	

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5 Head Grade by Size Analysis

After preparing the bulk sample, a 1kg sub-sample was split and sized between 1.4mm to 106 µm. The fractions were submitted for gold, silver and copper analysis. Results are shown in Table 2 below:

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Table 2: Results of Head Grade by Size Analysis

Size (µm)	Mass (g)	%Mass Distribution	%Passing	Assay		
				Au (ppm)	Ag (ppm)	Cu (ppm)
1.4mm	164.2	16.6	83.4	0.45	1.0	10.00
600	231.0	23.3	60.1	0.90	2.0	10.00
300	113.2	11.4	48.7	10.96	2.0	10.00
150	78.6	7.9	40.8	6.74	1.0	10.00
106	53.0	5.3	35.4	3.34	1.0	10.00
-106	351.2	35.4	0.0	6.59	1.0	20.00
Total	991.2	100.0				
Head Grade by Size				**4.59**	**1.0**	**6.46**

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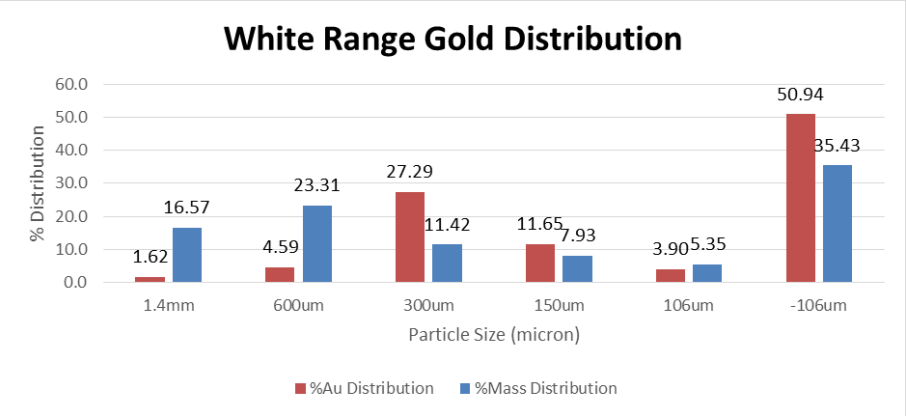
The gold distribution by size on the head sample has also been calculated as shown in Table 3:

Table 3: Calculated Gold Distribution by Size Analysis

Size (µm)	%Mass Distribution	% Au Distribution	Cum %Au Dist
1.4mm	16.6	1.6	100
600	23.3	4.6	98.4
300	11.4	27.3	93.8
150	7.9	11.7	66.5
106	5.3	3.9	54.8
-106	35.4	50.9	50.9
		100.0	0.0

Graph 1: Distribution by Size - Head Sample



Graph 1 shows that 50.94% of the gold is distributed in -106 µm fraction, which constitutes 35.43% of the sample mass.

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6 Gravity Concentration Test work

A single Falcon concentrator pass was carried out on a model SB40. An initial sample mass of roughly 4kg at a P80 of 1.4mm was split from the bulk sample. This sample was prepared as a slurry and fed to the Falcon concentrator at roughly 30% solids whilst being agitated.

The Falcon test parameters were:

- Bowl Rotation = 60 Hz (3600 RPM)
- Fluidisation Rate = 7 L/min
- Water Pressure: 4 PSI

Figure 3: Falcon Concentrator

Table 4: White Range Gravity Concentration Results

Stream	Mass (g)	Au (ppm)	Au % Distribution	Mass % Distribution
Falcon Feed	4452.24	2.700	100	100
Falcon Concentrate	582.24	10.631	51	13
Falcon Tailings	3870	1.51	49	87

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7 Gold Leaching Testwork

A gold cyanide bottle roll leaching test were performed on the Falcon tailings. 1kg of the sample was combined with 1.5kg of water, to compose 2.5kg (40% W/W) of slurry for testing. Tests were conducted over 48 hours with pH and NaCN content maintained over 10 and 500 ppm respectively.

Slurry characteristics including pH and free cyanide concentrations were monitored at 2, 4, 8, 24 and 48 hours from commencing the leach to ensure specified targets were met and maintained. Leach solution samples were also taken at these sample points where surplus liquor samples were submitted for gold assay as well as the final leach residue. The tables below summarise the results as well as test conditions used.

Table 5: White Range Falcon Tailings Leach Conditions

Falcon Tailings Leach Parameters		
pH	**Initial**	10.0-10.5
	Maintained	10.0
NaCN (ppm)	**Initial**	650
	Maintained	500
Pulp Density (%solids)		40%
Oxygen or Air		nil
Dissolved Oxygen (ppm)		monitor

Table 6: White Range 48 Hr Leach Results Summary

Parameter	**Unit**	**Value**
Leach Solution	Au (g/t)	0.88
Leach Residue	Au (g/t)	0.14
Au Recovery	**%**	90.9
Calculated Tailings Au Grade	g/t	1.51
NaCN Consumption	kg/t	0.10
Lime Consumption	kg/t	0.33

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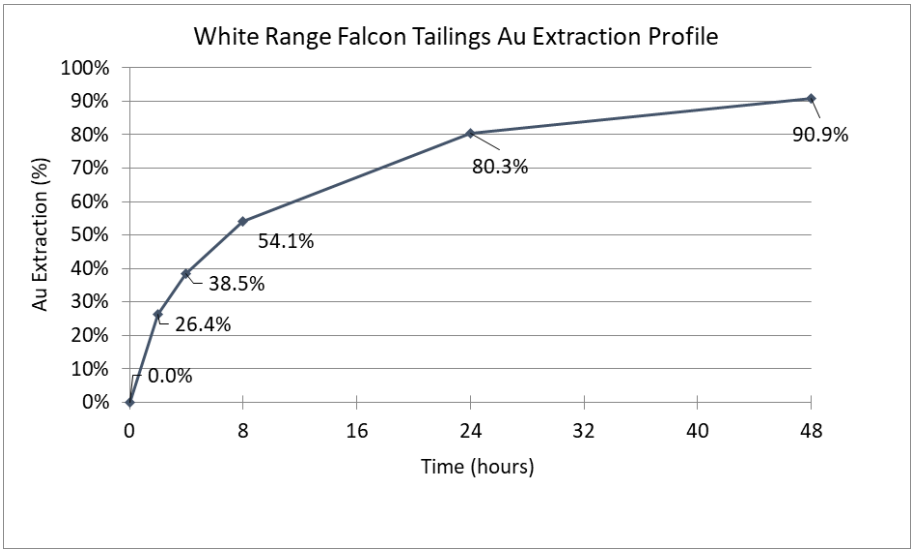
Graph 2: White Range Gold Extraction Profile



The leach results suggest that the tailings material is quite amenable to cyanidation, with 90.9% of the gold being recovered in solution.