ASX Announcement
5 May 2014

COARSER GRIND SIZE TESTING DELIVERS VERY HIGH GOLD RECOVERIES FOR GRUYERE PROJECT

Highlights

- **Coarser grind size testing delivers very high gold recoveries**
- **Oxygen Sparging increases leaching rate; potentially reducing overall leach residence times**
- **Simulated Heap Leach Test produce rapid and high recoveries**

Gold Road Resources Limited (**Gold Road** or the **Company**) (ASX: GOR) received the results of additional metallurgical test work carried out by ALS between February and April 2014, which were recommended in the metallurgical report released on 3 February 2014.

Further metallurgical testing on a composite sample (COMP 6), taken from the fresh (COMP 1 & 2), transition (COMP 3 & 4) and oxide samples (COMP5), referred to in the metallurgical report dated 29 April 2014 (Appendix 2), has produced the following results:

- Recoveries in excess of 95% at P80s of 106 micron and 125 micron with air sparging;
- Oxygen sparging[1] increases leach kinetics during first few hours and improves recovery by an additional 1% to 2%; and
- Intermittent bottle roll tests simulating heap leach recovery produce rapid gold extraction of 70.3% in 24 hours, levelling out at 81.2% after 96 hours.

The coarser grind size could result in lower capital and operating costs for the grinding circuit in any potential future processing plant due to reduced power consumption and increased throughput potential. Oxygen sparging could also allow for reduced leach residence times and therefore reduced tank capacity requirements, while increasing gold recoveries.

Gold Road Chairman Ian Murray said, "The latest metallurgical results support the likelihood of achieving high recoveries with the potential use of standard CIL processing commonly used in the Western Australian gold industry, and also support the use of the lower capital cost option of Heap Leach, both of which will be studied further. These results, combined with the current resource drilling programme, should allow us to continue to rapidly add value to the Gruyere Project for shareholders."

[1] Sparging refers to the introduction of air or oxygen into each leach vessel to maintain dissolved oxygen levels.

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Further recommended testwork includes:

- Grind tests at 150 micron to investigate recovery behaviour at even coarser grind than tested to date;
- Column tests for heap leach testing to confirm initial intermittent bottle roll test results; and
- Comminution testing to enable grinding mill calculations as previously identified in ASX announcement dated 3 February 2014.

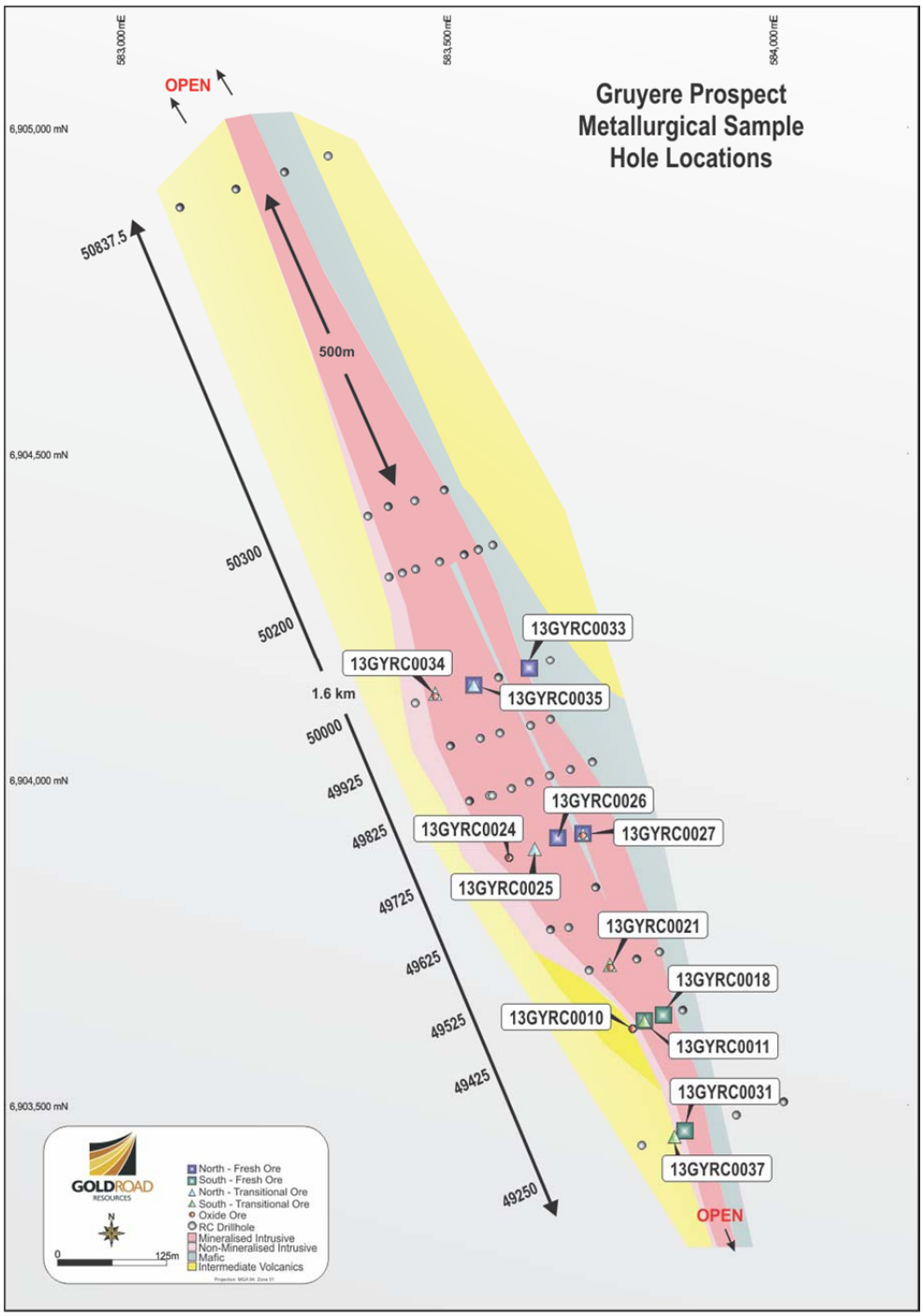

Figure 1: *Gruyere plan projection illustrating location of RC holes sampled for Metallurgical testing composites (Appendix 1).*

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About Gold Road Resources

Gold Road Resources Limited (ASX: GOR) is exploring and developing its wholly-owned **Yamarna Belt**, a newly discovered gold region covering ~4,200 square kilometres on the Yilgarn Craton, 150 kilometres east of Laverton in Western Australia.

Gold Road announced in May 2013 an exploration joint venture with Sumitomo Metal Mining Oceania Pty Ltd (a subsidiary of Sumitomo Metal Mining Co. Limited) for Sumitomo Metal Mining to earn up to 50% interest in Gold Road's South Yamarna tenements, an area covering ~2,120 square kilometres.

The Yamarna Belt, adjacent to the 500 kilometre long Yamarna shear zone, is historically underexplored and highly prospective for gold mineralisation. Geologically similar to the prolific Kalgoorlie Gold Belt, the Yamarna Belt has a resource of 1.3 million ounces of gold, hosts a number of significant new discoveries and lies north of the 7.9 million ounce Tropicana deposit.

Gold Road is prioritising exploration on six of its ten **Gold Camp Targets** on the Yamarna Belt. Identified in 2012 through interpretation of various geological and geophysical data sets, each target has a 15-25 kilometre strike length and contains numerous prospects. Initial exploration of these targets has been very encouraging.

The first Gold Camp Target was the South Dorothy Hills Trend which yielded the recent Gruyere and YAM14 gold discoveries. The discoveries, approximately 9 kilometres apart and on the same structural trend, approximately 25 kilometres north-east of its more advanced project Central Bore, exhibit two different mineralisation styles not seen before in the Yamarna Belt, and confirm the potential for the Dorothy Hills Trend to host further significant gold deposits.

NOTES:
The information in this report which relates to Exploration Results or Mineral Resources is based on information compiled by Mr Justin Osborne, Exploration Manager for Gold Road Resources Limited. Mr Osborne is an employee of Gold Road Resources Limited, as well as a shareholder and share option holder, and is a Fellow of the Australasian Institute of Mining and Metallurgy. Mr Osborne has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken 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". Mr Osborne consents to the inclusion in the report of the matters based on this information in the form and context in which it appears

Appendix 1 – Gruyere Metallurgical Samples – Drill hole details

Table 1: *Summary of RC hole collars for holes from which Metallurgical samples were derived*

Hole_ID	Depth (m)	MGA_E	MGA_N	m RL	MGAn Azimuth	Dip
13GYRC0010	60	583,786	6,903,617	413.6	250	-60
13GYRC0011	102	583,804	6,903,629	413.9	250	-60
13GYRC0018	120	583,832	6,903,638	415	250	-60
13GYRC0021	84	583,750	6,903,713	414	250	-60
13GYRC0024	84	583,596	6,903,878	411	250	-60
13GYRC0025	84	583,635	6,903,891	411	250	-60
13GYRC0026	84	583,671	6,903,903	412	250	-60
13GYRC0027	120	583,709	6,903,916	412	250	-60
13GYRC0031	120	583,865	6,903,460	414	250	-60
13GYRC0033	126	583,627	6,904,169	411	250	-60
13GYRC0034	120	583,483	6,904,129	410	250	-60
13GYRC0035	120	583,542	6,904,143	410	250	-60
13GYRC0037	66	583,849	6,903,450	414	250	-60

Appendix 2 – Metallurgical Testwork Report

1. Executive Summary

A successful metallurgical test program carried out in January 2014, indicated all five RC samples from five Gruyere locations were readily treatable by a simple process of gravity separation and cyanide leaching.

For this maiden testwork, favourable test conditions of grind size P80 at 75 micron and sparging with oxygen were employed. Results were reported in **Report GOR-04 January 2014**, which reported all achieved very good to excellent gravity gold recoveries and total gold recoveries. Total gold recoveries ranged from a low of 96.04% to a high of 98.02%, while gravity gold recoveries ranged from a low of 52.24% to a high of 69.24%.

To further define the optimum grind and leach parameters, it was decided to carry out further gravity and leach testwork at less favourable test conditions, namely coarser grind P80s of 106 micron and 125 micron and evaluation of sparging with air compared to oxygen.

Potential for heap leaching was also to be investigated.

The original five RC samples, COMP1 to COMP5, represented one oxide, two transitional and two fresh or primary ores. For this extra testwork a single composite, COMP6, prepared from equal parts from COMP1 to COMP5 would be tested.

The conclusions from this second test program on gravity and leach testwork are very promising. The main conclusions are:-

- Successful treatment does not require a fine grind P80 of 75 micron. The tests indicate high total gold recoveries in excess of 95% are possible at P80s of 106 micron and 125 micron with air sparging. (P80 of 150 micron cannot be ruled out at this stage and should be investigated.)
- Oxygen sparging increases the total gold recovery by an additional 1% to 2%.
- Oxygen sparging significantly increases the leaching kinetics during the first few hours and has the potential to reduce overall leach residence time.

The ramifications are:-

- Treatment at coarser P80s has two major benefits:-
  - Reduced capital cost associated with the grinding section.
  - Reduced operating cost due to lower power consumed in grinding section.
- If sparging with oxygen can reduce leach residence time this has the potential to reduce the required leach tank capacity and the associated capital cost of the leaching section.

Results of gravity and leach testwork were very encouraging and are summarized below:-

- All tests recorded very high gravity gold recoveries, ranging between 49.7% and 52.5%. [*Previously COMP1 to COMP5 at P80 of 75 micron reported gravity gold recoveries between 52.2% and 69.2%.*]
- All tests recorded high total gold recoveries, ranging between 95.4% and 97.4%. [*Previously COMP1 to COMP5 at P80 of 75 micron with oxygen sparging reported total gold recoveries between 96.0% and 98.0%.*]
- Both tests with oxygen sparging recorded higher total gold recoveries than those with air sparging.
- When considered against the average results for P80 of 75 micron with oxygen sparging, the coarser grinds are very promising.

- From these limited results, both P80s of 106 micron and 125 micron have the potential to achieve total gold recoveries in excess of 95% with air sparging. Replacing air with oxygen sparging has the potential to increase the total gold recovery by approximately 2% to 97%. However four tests are insufficient to determine the optimum P80 grind size, further testwork is necessary. This additional testwork should also test P80 of 150 micron, as this coarser grind size has not been ruled out.
- The use of oxygen instead of air, increased the gold extraction rate to such an extent, it may be possible to reduce the overall leach residence time to less than 24 hours if oxygen is used. Eighteen hours leach residence time could be acceptable with oxygen sparging.
- Based upon the limited testwork undertaken to date, sparging with oxygen is the preferred oxygenation method. The very fast leach kinetics during the initial two hours sets up the leaching process to achieve an acceptable final gold extraction value within or less than 24 hours of leach residence time.

The conclusions from the simulated heap leach test are also promising. The main conclusion is:-

- The results are promising to such an extent that heap leaching cannot be ruled out. Additional heap leach testwork is warranted.

The simulated heap leach test by intermittent cyanide bottle roll on a sample of -3.35mm material recorded very promising initial results with regard to the potential for successfully treating Gruyere ore by heap leach treatment. Results are summarized below:-

- Initial gold extraction was rapid, with 70.3% of the gold extracted after 24 hours.
- Gold extraction continued, at a reducing rate, until reaching a plateau at 96 hours, when 81.2% of the gold had been extracted.
- No further gold was extracted after an additional 48 hours leaching.
- Results from this one test indicate heap leach could be a treatment option and should achieve at least 70% gold extraction. Further heap leach testwork is warranted.
- Further tests should be carried out with coarser feed. The initial top size to test should include both -10mm and -15mm feed sizes. However at this early stage, there is no reason not to test an ever coarser feed size of -25mm.
- Initially simulated heap leach test by intermittent cyanide bottle roll should be adequate for sighter tests but ultimately heap leach tests by column tests will be required to confirm results of sighter tests.

2. Introduction

During January 2014, five RC chip samples representative of Gold Road Resources' Gruyere Deposit were tested at ALS Metallurgy's Laboratory in Balcatta to determine both gravity gold and total gold recoveries. For this maiden testwork, favourable test conditions of grind size P80 at 75 micron and sparging with oxygen were employed. Results were reported in **Report GOR-04 January 2014**, which reported all achieved very good to excellent gravity gold recoveries and total gold recoveries.

Total gold recoveries ranged from a low of 96.04% to a high of 98.02%, while gravity gold recoveries ranged from a low of 52.24% to a high of 69.24%.

Following a review of these exceptional results, it was decided to carry out further gravity and leach testwork at less favourable test conditions, namely coarser grind P80s of 106 micron and 125 micron and evaluation of sparging with air compared to oxygen. If successful either one or both of these revised test conditions would have a positive impact upon plant capital costs and operating costs.

- Operating at a coarser grind of either P80 of 106 micron or 125 micron would reduce the capital cost of the grinding section. A corresponding reduction in required grinding power would also reduce operating costs.
- Provided operating with air sparging, maintained satisfactory leaching rates similar to those achieved by sparging with oxygen, this should result in reduced reagent costs.

The original samples were representative of:-

- GRUYERE Fresh Composite North – (COMP1).
- GRUYERE Fresh Composite South – (COMP2).
- GRUYERE Transitional Composite North – (COMP3).
- GRUYERE Transitional Composite South – (COMP4).
- GRUYERE Oxide Composite - (COMP5).

A new composite, COMP6, was prepared which consisted of equal parts of each of COMP1 to COMP5.

For the new composite sample the metallurgical testwork program included the following:-

- The five previous composites, COMP1 to COMP5, had been prepared and bagged as 1kg lots at a crushed size of -3.35mm.
- Sample preparation. For each test, retrieve 1kg from each of COMP1 to COMP5 and grind to required P80 grind sizes of 106 micron and 125 micron.
- 5 x 1kg samples would undergo Gravity (Knelson) Separation and intensive cyanidation leaching of gravity concentrates at two separate grind size P80s of 106 micron and 125 micron.
- Tailings from each of the intensive cyanide leach were combined with the respective Knelson gravity tailings prior to being split 50:50.
- Using water from the site borefield, one split was subjected to a 24 hour direct cyanidation leach with oxygen sparging, while the other split was subjected to a 24 hour direct cyanidation leach with air sparging.
- A 4kg sample of COMP6 at P100 of -3.35mm underwent a simulated heap leach test by undergoing an intermittent cyanide leach bottle roll for 144 hour (six days). In this test, the bottle roll is not continuous. Agitation is restricted to 1 minute of rotation every hour. Solution sub-samples for gold assay and monitoring of pH and cyanide concentration were taken at 2, 4, 6, 24, 48, 72, 96, 120 and 144 hours.
- The final bottle roll leached residue was sized to determine the distribution of the gold remaining in the leach residue.

3. Samples

A new composite, COMP6 was prepared.

COMP6 consists of equal parts of the five reserve samples previously prepared to P100 of -3.35mm.

The original samples included the following:-

- GRUYERE Fresh Composite North – (COMP1).
- GRUYERE Fresh Composite South – (COMP2).
- GRUYERE Transitional Composite North – (COMP3).
- GRUYERE Transitional Composite South – (COMP4).
- GRUYERE Oxide Composite - (COMP5).

For complete details of the five original samples refer to section 3 in **Report GOR-04** produced in January 2014.

4. Results – Head Assays

The original five composites (COMP1 to COMP5) were previously assayed twice in duplicate by fire assay (FA) and separately by screen fire assay (SFA).

Head grade values for COMP6 were determined as the average value of the five COMP1 to COMP5 for both Fire Assay and Screen Fire Assay.

Head assays are reported in Table 4.1

Table 4.1 – Head Assays by Fire Assay and Screen Fire Assay

Sample ID	Head Assay by FA g/t Au	Head Assay by SFA g/t Au
COMP1 – Fresh Composite North	1.43	1.79
COMP2 – Fresh Composite South	1.51	1.44
COMP3 – Transitional Composite North	1.49	1.52
COMP4 – Transitional Composite South	1.57	1.42
COMP5 – Oxide Composite	1.78	1.78
COMP6 – by Average	**1.56**	**1.59**

5. Grind Establishment Results

Grind establishment times were taken from results reported previously in **Report GOR-04** produced in January 2014.

6. Gravity Separation and Leach Extraction Testwork

6.1 Gravity Separation

Two 5kg samples of COMP6 were prepared by laboratory rod mill grinding to P80 of 106 micron and 125 micron. Each sample was subjected to gravity separation by laboratory Knelson Concentrator.

The grind P80s of 106 micron and 125 micron were chosen to investigate the effect on gravity gold recovery at coarser P80s than the 75 micron used in **Report GOR-04** produced in January 2014.

Results of the Gravity Separation testwork are presented in Table 6.1.

Table 6.1 – Results for Gravity Separation & Intensive Cyanide Leach of Concentrates

Sample ID	Grind Size P80	Gravity Conc (gm)	*Calc Solids Grade g/t Au	Int Cyanide Leach Soln (ml)	Assay Soln ppm Au	Total Au in Soln µg
COMP6	125 um	306.8	=/>12.5	1,227.2	3.13	3,841
COMP6	106 um	297.6	=/>13.9	1,190.3	3.48	4,142

*Calc Solid Grade represents the actual gold recovered by ICL of the gravity Concs. This value does not include any gold remaining in the ICL solid residue. Therefore the values are reported as equal to/greater than (=/>).

Comments on the gravity separation testwork include the following:-

- The mass of gravity concentrates recovered were very similar. Only 3% more mass was recovered at the coarser grind P80 of 125 micron, (306.8 gm compared to 297.6 gm).
- 9% less gold (3,841 µg compared to 4,142 µg) was recovered from the Intensive Cyanide Leach (ICL) of the gravity concentrates at the coarser grind P80 of 125 micron.
- At the finer grind P80 of 106 micron there should be more liberated gold particles recovered into the gravity concentrate. These would be more readily leached by ICL, thus explaining the slightly high quantity of gold recovered into the ICL solution at the finer grind P80 of 106 micron.

6.2 Gold Extraction by Cyanide Leach of Combined Gravity Tails

For each of the grind P80s tested the gravity tailings and ICL solid residue were combined and homogenised, prior to being split 50:50. One split was subjected to a 24 hour direct cyanidation leach with oxygen sparging, while the other split was subjected to a 24 hour direct cyanidation leach with air sparging.

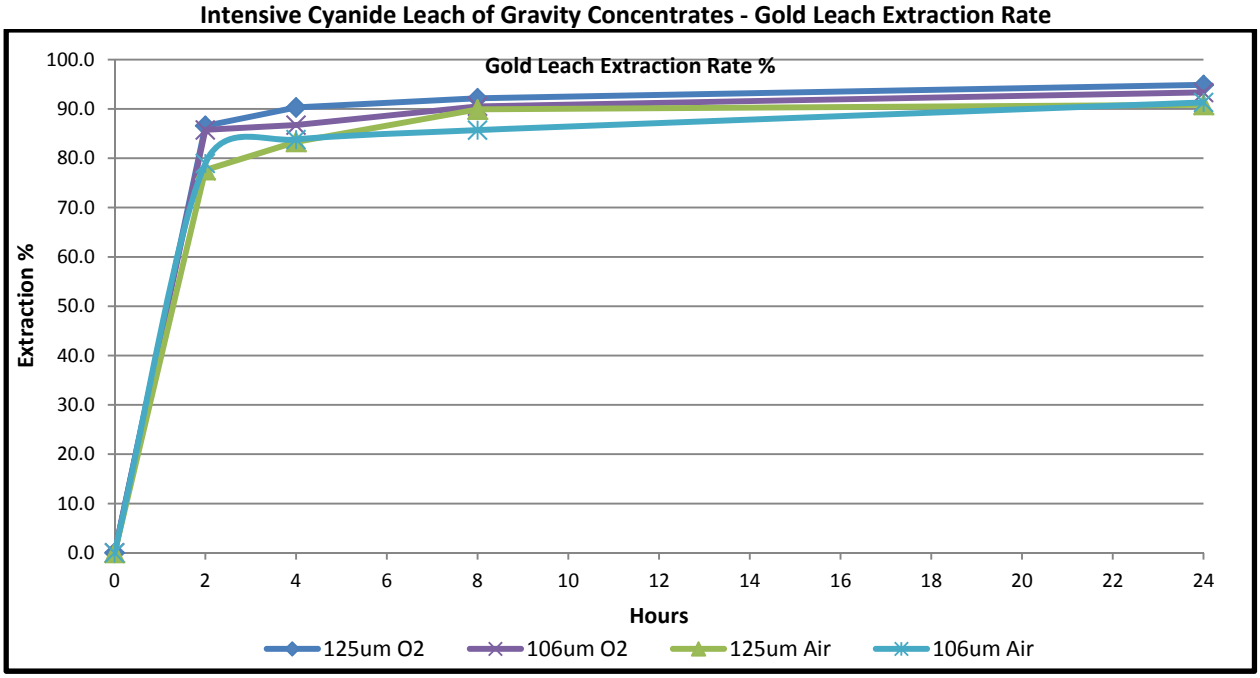
Results of the 24 hour direct cyanide leach of combined Gravity tailing and ICL residue products are presented in Table 6.2.

Table 6.2 – Results for 24 Hours Direct Cyanide Leach of Combined Gravity Separation Tails and Tails from Intensive Cyanide Leach of Gravity Concentrates - Gold Leach Extraction Rate

Sample ID	Grind Size P80	Sparged with	Gold Leach Extraction at 2hrs	Gold Leach Extraction at 4hrs	Gold Leach Extraction at 8hrs	Gold Leach Extraction at 24hrs	Final Assay Residue g/t Au	Calc Leach Feed g/t Au
COMP6	125 um	Oxygen	86.56%	90.30%	92.14%	94.85%*	0.04	0.77
COMP6	125 um	Air	77.61%	83.33%	89.89%	90.81%	0.07	0.79
COMP6	106 um	Oxygen	85.74%	86.71%	90.52%	93.33%*	0.05	0.73
COMP6	106 um	Air	78.94%	83.79%	85.70%	91.32%	0.07	0.75

Note * The results for P80 of 125 µm and Oxygen are higher than those for P80 of 106 µm and Oxygen at all four sampling points. (Refer to comments at end of Section 6.2 for an explanation.)

Chart 6.2 – Results for 24 Hours Direct Cyanide Leach of Combined Gravity Separation Tails and Tails from Intensive Cyanide Leach of Gravity Concentrates - Gold Leach Extraction Rate



Comments on the results of direct cyanide leach include the following:-

- Gold leach extraction rates for all four tests were fast to very fast:-
  - All reported >77% of the gold extracted into solution after 2 hours leaching.
  - All reported >90% of the gold extracted into solution after 24 hours leaching.
- Sparging with oxygen, compared to air, increased the gold extraction rate:-
  - For a P80 of 106 micron and 2 hours leaching, gold extraction increased from 78.94% to 85.74%,
  - For a P80 of 125 micron and 2 hours leaching, gold extraction increased from 77.61% to 86.56%,
  - Sparging with oxygen had a greater influence on gold extraction at the coarser P80 of 125 micron compared to 106 micron.
- The beneficial effect of oxygen sparging reduced as leach residence time increased.
  - For a P80 of 106 micron, after 2 hours leaching the differential between oxygen and air sparged was 6.80%. This differential reduced progressively with time until after 24 hours leaching the differential was only 2.01%.
  - For a P80 of 125 micron, after 2 hours leaching the differential between oxygen and air sparged was 8.75%. This differential also reduced progressively with time until after 24 hours leaching the differential was only 4.04%.
- All assayed final leach residue grades were low, between 0.04 to 0.07 g/t Au.
  - Leach residue grades were lowest where oxygen sparging was employed.
- The highest gold extraction after 24 hours leaching and lowest final residue grade was for P80 of 125 micron with oxygen sparging.
  - This is an unexpected result, as normally the highest leach extraction would be expected to be associated with the finer grind, namely P80 of 106 micron.

- This could possibly be due to the lower cyanide level of 0.038% at 2 hours for P80 of 106 micron compared to the higher cyanide level of 0.053% for the P80 125 micron sample. Both cyanide levels were above the lower limit of 0.030% resulting in no additional cyanide being added until the 4 hour sampling point. This caused the rate of gold extraction between 2 hours and 4 hours to decrease significantly for the P80 of 106 micron test to only 0.97% compared to the 3.74% for the P80 125 micron sample. Even with the addition of cyanide at 4 hours the differential was too great to allow the P80 of 106 micron sample to recover by the time 24 hours leaching was completed. This is an expected trend, as normally high leach extractions will occur at finer grinds.
- The above anomaly is possibly also related to the lower final cyanide level at 24 hours of 0.005% recorded in the P80 of 106 micron compared to 0.015% in the P80 of 125 micron test. For future tests it would be better to include an additional assaying stage at either 12 or 16 hours or both to ensure cyanide levels are maintained at the required levels.

6.3 Summary of Gravity Gold and Leached Gold Extraction by Cyanide Leach of Combined Gravity Tails

Results of gravity gold, leached gold and total gold recoveries are presented in Table 6.3.

Table 6.3 – Summary of Gravity Separation (Intensive Cyanide Leach of Concentrates) followed by 24 Hours of Direct Cyanide Leach of Gravity Tails - Gold Recovery

Sample ID	Grind Size P80	Sparged with	Avg Head Grade by FA g/t Au	Avg Head Grade by SFA g/t Au	Calc Head From Gravity & Leach g/t Au	Calc Leach Feed g/t Au	Final Assay Residue g/t Au
COMP6	125 um	Oxygen	1.56	1.59	1.54	0.78	0.04
COMP6	125 um	Air	1.56	1.59	1.56	0.76	0.07
COMP6	106 um	Oxygen	1.56	1.59	1.56	0.75	0.05
COMP6	106 um	Air	1.56	1.59	1.58	0.75	0.07
COMP1-5#	75um	Oxygen	1.56	1.59	1.62	0.69	0.04

Sample ID	Grind Size P80	Sparged with	Gravity Gold Recovery%	24hr Leach Gold Recovery%	Total Gold Recovery%	NaCN Consumption Kg/t	Lime Consumption Kg/t
COMP6	125 um	Oxygen	49.72	47.70	97.41**	1.09	1.31
COMP6	125 um	Air	50.21	45.22	95.43	1.34	1.20
COMP6	106 um	Oxygen	52.49	44.35	96.83**	1.27	1.28
COMP6	106 um	Air	52.52	43.36	95.88	1.19	1.25
COMP1-5#	75um	Oxygen	57.54	39.43	97.03	1.01 (Avg)	2.21 (Avg)

COMP1-5# results from 1st stage testwork are included for comparison only.

Note ** Lower total gold recovery for P80 of 106 micron is due to the low leach extraction rate between 2 hours and 4 hours due to reduced cyanide concentration during that period. (See comments at end of Section 6.2.)

The following points are noted from Table 6.3:-

- All tests recorded very high gravity gold recoveries, ranging between 49.7% and 52.5%. [*Previously COMP1 to COMP5 at P80 of 75 micron reported gravity gold recoveries between 52.2% and 69.2%.*]
- All tests recorded high total gold recoveries, ranging between 95.4% and 97.4%. [*Previously COMP1 to COMP5 at P80 of 75 micron with oxygen sparging reported total gold recoveries between 96.0% and 98.0%.*]

- Both tests with oxygen sparging recorded higher total gold recoveries than those with air sparging.
- When considered against the average results for P80 of 75 micron with oxygen sparging, the coarser grinds are very promising.
- From these limited results, both P80s of 106 micron and 125 micron have the potential to achieve total gold recoveries in excess of 95% with air sparging. Replacing air with oxygen sparging has the potential to increase the total gold recovery by approximately 2% to 97%. However four tests are insufficient to determine the optimum P80 grind size, further testwork is necessary. This additional testwork should also test P80 of 150 micron, as this coarser grind size has not been ruled out.
- The use of oxygen instead of air, increased the gold extraction rate to such an extent, it may be possible to reduce the overall leach residence time to less than 24 hours if oxygen is used. Eighteen hours leach residence time could be acceptable with oxygen sparging.
- Based upon the limited testwork undertaken to date, sparging with oxygen is the preferred oxygenation method. The very fast leach kinetics during the initial two hours sets up the leaching process to achieve an acceptable final gold extraction value within or less than 24 hours of leach residence time.

7. Results of Simulated Heap Leach Test by Intermittent Cyanide Bottle Roll.

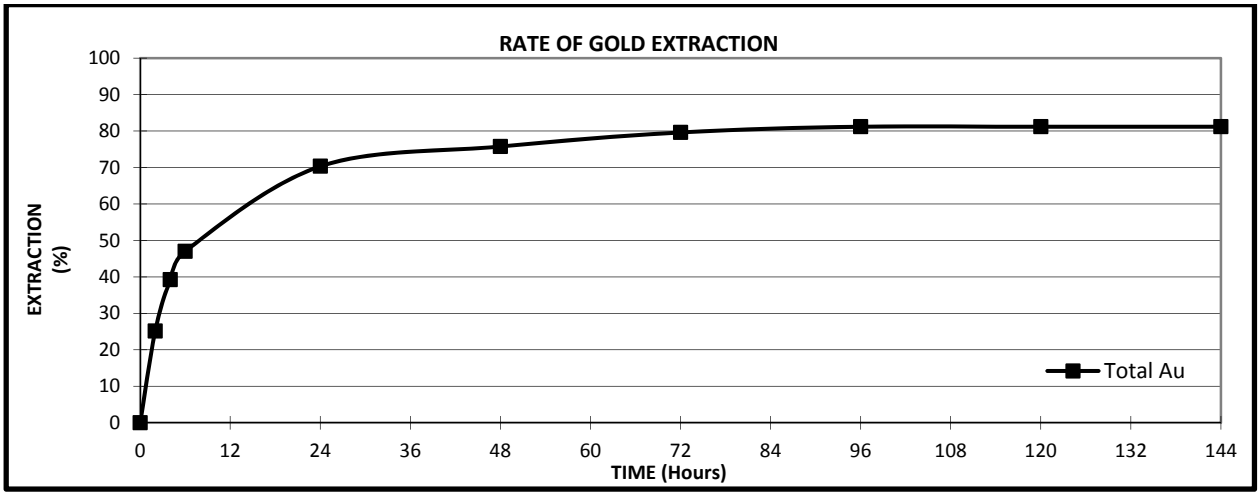
From the existing COMP1 to COMP5 samples, a 5kg sample of COMP6 at -3.35mm size was prepared. 1kg of sample was held in reserve. A 4kg sample of COMP6 at P100 of -3.35mm underwent a simulated heap leach test by undergoing an intermittent cyanide leach bottle roll for 144 hour (six days). In this test the bottle roll is not continuous. Agitation is restricted to 1 minute of rotation every hour. Solution sub-samples for gold assay and monitoring of pH and cyanide concentration were taken at 2, 4, 6, 24, 48, 72, 96, 120 and 144 hours. The final bottle roll leached residue was sized to determine the distribution of the gold remaining in the leach residue.

Results of simulated heap leach by intermittent bottle roll are presented in Table 7.1 and Chart 7.1.

Table 7.1 – Gold Extraction from Simulated Heap Leach Bottle Roll

Time (Hours)	Total Gold Extraction %
0	0.0
2	25.1
4	39.2
6	47.0
24	70.3
48	75.8
72	79.6
96	81.2
120	81.2
144	81.2

Chart 7.1 – Results of Simulated Heap Leach Bottle Roll



The following points are noted from Table 7.1 and Chart 7.1:-

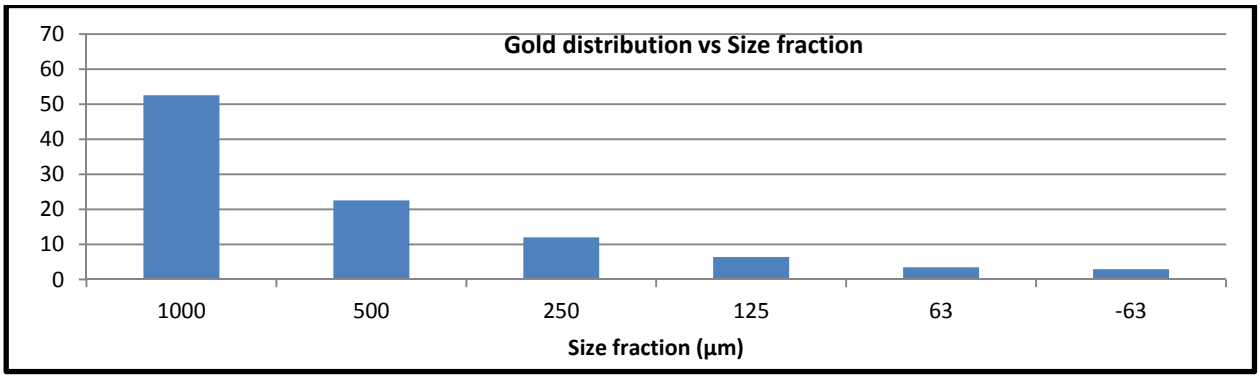
- Initial gold extraction was rapid, with 70.3% of the gold extracted after 24 hours.
- Gold extraction continued, at a reducing rate, until reaching a plateau at 96 hours, when 81.2% of the gold had been extracted.
- No further gold was extracted after an additional 48 hours leaching.
- Results from this one test indicate heap leach could be a treatment option and should achieve at least 70% gold extraction. Further heap leach testwork is warranted.

2 kg of bottle roll leached residue was sized to produce six size fractions for assaying (by duplicate FA) and determination of gold distribution within the residue. Results are presented in Table 7.2 and Chart 7.2.

Table 7.2 – Gold Distribution in Residue from Simulated Heap Leach Bottle Roll

Size (micron)	Weight (gm)	Weight %	Residue Au1 g/t	Residue Au2 g/t	Residue Au Avg g/t	Gold Dist %
-3,350/+1,000	576.6	28.99	0.31	0.47	0.39	52.57
-1,000/+500	292.6	14.71	0.33	0.33	0.33	22.57
-500/+250	263.5	13.25	0.25	0.14	0.20	12.01
-250/+125	249.6	12.55	0.12	0.10	0.11	6.42
-125/+63	186.1	9.36	0.08	0.08	0.08	3.48
-63	420.8	21.15	0.03	0.03	0.03	2.95
Total	**1989.2**	**100.0**		**Calc Grade**	**0.22**	**100.00**
				Assay Grade	**0.28**	

Chart 7.2 – Gold Distribution in Residue from Simulated Heap Leach Bottle Roll



The following points are noted from Table 7.2 and Chart 7.2:-

- 29.0% of the mass containing 52.6% of residue gold is found in the coarsest fraction, the -3,350/+1,000 micron size fraction.
- 43.7% of the mass containing 75.1% of residue gold is found in the -3,350/+500 micron size fraction.
- 43.1% of the mass containing only 12.9% of residue gold is found in -250 micron fraction, while 30.5% of the mass containing 6.4% of residue gold is found in -125 micron fraction.

The above gold distributions indicate that for both the medium-coarse and the fine particles gold dissolution is satisfactory. However, a crushed product of -3.35mm is considered to be too fine for heap leaching without agglomeration.

Excessive fines could adversely affect liquor flow rates and have the potential to disrupt liquor flow through areas of the heap.

Further tests should be carried out with coarser feed. The initial top size to test should include both -10mm and -15mm feed sizes. However at this early stage, there is no reason not to test an ever coarser feed size of -25mm.

Initially simulated heap leach test by intermittent cyanide bottle roll should be adequate for sighter tests but ultimately heap leach tests by column tests will be required to confirm results of sighter tests.

8. Conclusions and Recommendations

Considering the limited number of tests completed, the three objective of the test program were fulfilled.

Gravity separation and leach extraction testwork at grind P80s coarser than the previously tested 75 micron were successful. Leach kinetics were assessed for both sparging with air and sparging with oxygen.

- All tests recorded very high gravity gold recoveries, ranging between 49.7% and 52.5%. [*Previously COMP1 to COMP5 at P80 of 75 micron reported gravity gold recoveries between 52.2% and 69.2%.*]
- All tests recorded high total gold recoveries, ranging between 95.4% and 97.4%. [*Previously COMP1 to COMP5 at P80 of 75 micron with oxygen sparging reported total gold recoveries between 96.0% and 98.0%.*]
- Both tests with oxygen sparging recorded higher total gold recoveries than those with air sparging.
- When considered against the average results for P80 of 75 micron with oxygen sparging, the coarser grinds are very promising.
- From these limited results, both P80s of 106 micron and 125 micron have the potential to achieve total gold recoveries in excess of 95% with air sparging. Replacing air with oxygen sparging has the potential to increase the total gold recovery by approximately 2% to 97%. However four tests are insufficient to determine the optimum P80 grind size, further testwork is necessary. This additional testwork should also test P80 of 150 micron, as this coarser grind size has not been ruled out.
- The use of oxygen instead of air, increased the gold extraction rate to such an extent, it may be possible to reduce the overall leach residence time to less than 24 hours if oxygen is used. Eighteen hours leach residence time could be acceptable with oxygen sparging.
- Based upon the limited testwork undertaken to date, sparging with oxygen is the preferred oxygenation method. The very fast leach kinetics during the initial two hours sets up the leaching process to achieve an acceptable final gold extraction value within or less than 24 hours of leach residence time.

The simulated heap leach test by intermittent cyanide bottle roll on a sample of -3.35mm material recorded very promising initial results with regard to the potential for successfully treating Gruyere ore by heap leach treatment.

- Initial gold extraction was rapid, with 70.3% extracted after 24 hours.
- Gold extraction continued, at a reducing rate, until reaching a plateau at 96 hours, when 81.2% of the gold had been extracted.
- No further gold was extracted after an additional 48 hours leaching.
- Results from this one test indicate heap leach could be a treatment option and should achieve at least 70% gold extraction. Further heap leach testwork is warranted.

Further tests should be carried out with coarser feed. The initial top size to test should include both -10mm and -15mm feed sizes. However at this early stage, there is no reason not to test an ever coarser feed size of -25mm.

Initially simulated heap leach test by intermittent cyanide bottle roll should be adequate for sighter tests but ultimately heap leach tests by column tests will be required to confirm results of sighter tests.