

## Corihuarmi Gold Project

### National Instrument 43-101 Technical Report

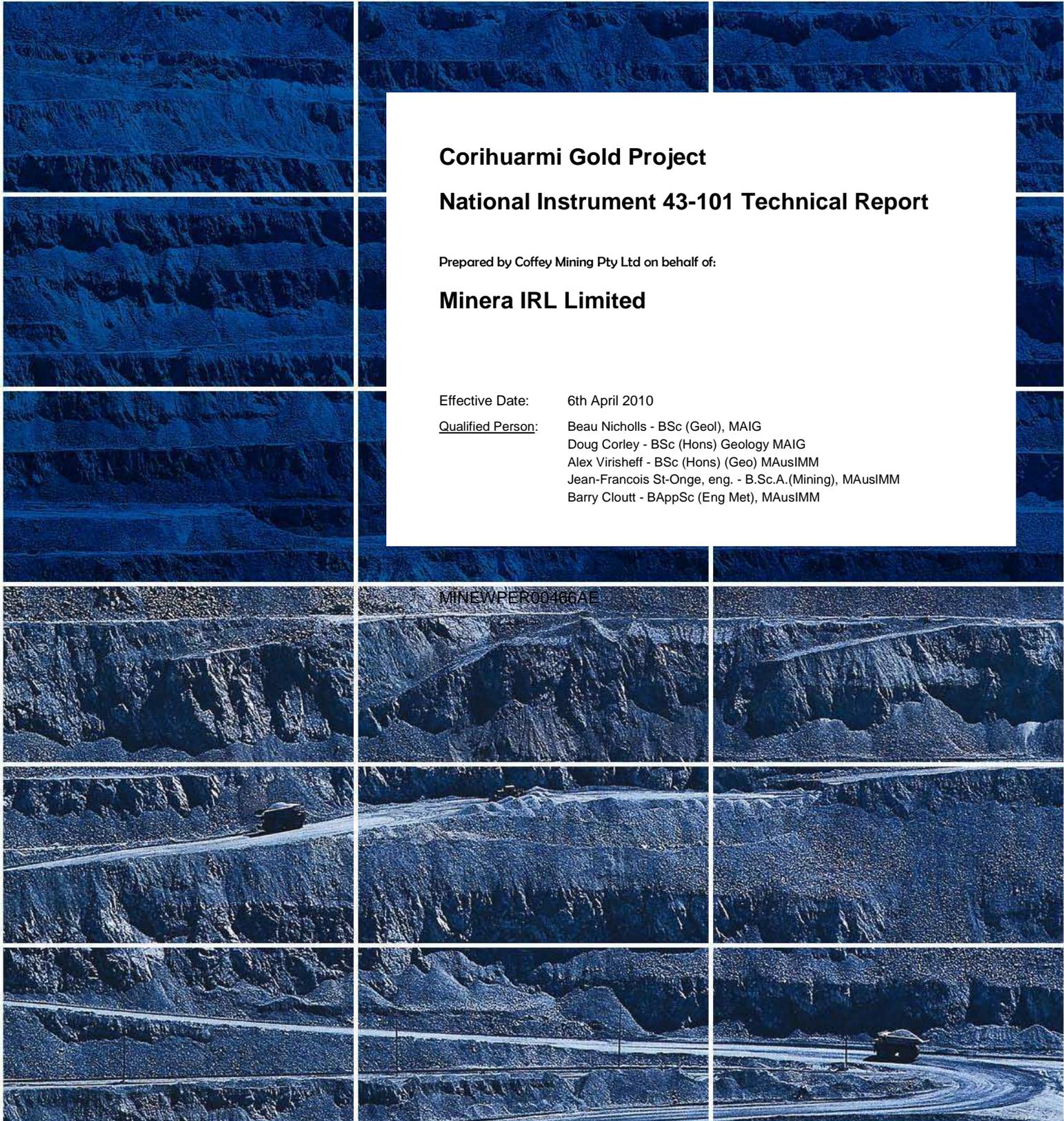
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## **1 SUMMARY**

### **1.1 Introduction**

Coffey Mining Pty Ltd (Coffey Mining) was commissioned by Minera IRL Limited (MIRL) to complete a technical report for the Corihuarmi Gold Project (the Project) in Peru. Coffey Mining was requested by MIRL to prepare the technical report for inclusion in a listing document to be submitted to the Toronto Stock Exchange (TSX).

### **1.2 Location**

The Project is located in the high Andes of Central Peru, approximately 160km southeast of the capital city of Lima (-75.57 Longitude and -12.57° Latitude). Access to the Project is via the 330km long sealed main highway east from Lima, over the Andean divide to La Oroya. More specifically, it is located southeast to the city of Huancayo, the regional capital of Junin Department.

The Project lies at elevations between 4,500m and 5,050m above sea level, straddling the main Andean divide. Despite the elevation, the topography is relatively subdued, comprising a series of hills and ranges that rise approximately 500m above an undulating alpine plateau.

### **1.3 Tenure**

The Property consists of 14 concessions totalling 9,315ha. These concessions are made out of six mining concessions totalling approximately 3,418ha and eight exploration concessions totalling 5,897ha. No litigation or legal issues related to the project are pending.

MIRL is 100% owner of the tenements, which are subject to a government royalty up to 3% of the sales as well as a vendor royalty up to 3% when the gold price is above US\$350/oz.

### **1.4 Geology and Mineralization**

The Project is situated within the northern extremity of the Southern Peru Epithermal Au-Ag Belt, associated with middle to upper Tertiary volcanics and intrusives of the Andean Cordillera, which lies between the Peru-Chile oceanic trench to the west and the Brazilian Craton to the east.

Mineralization identified to date within the Project comprises a high sulphidation epithermal precious metal system that formed at relatively shallow depth. Gold and silver mineralization is essentially confined to remnant zones of silicification and brecciation that dominantly lie along the northeast margin of the volcanic complex.

Two main deposits are currently being mined. The Susan deposit measures approximately 200m by 350m in size, being confined at the margins by cliffs. The smaller Diana Zone is approximately 150m by 250m in area, and to some extent remains open to the northwest and southeast along the ridge-line.

A scree (colluvial) deposit is located at the base of the Diana and Susan deposits. This material is directly related to the weathering and collapse of the Diana and Susan peaks.

## 1.5 Resources and Reserves

Coffey Mining has reviewed the Mineral Resource for the Susan and Diana Deposits as completed by Mr. Miguel Zulueta Torres in May 2009 (Senior Geologist with MZT Consulting (MZT) based in Peru). Coffey Mining has depleted the Mineral Resource as of 1st January 2010, using MIRL's preferred cutoffs (0.3g/t gold cutoff at Susan deposit and a 0.25g/t gold cutoff at Diana deposit). A total Measured and Indicated Resource of 5.3Mt at an average gold grade 0.6g/t Au for 103k oz Au are reported from the combined deposits, remaining in-situ as of the 1<sup>st</sup> January 2010 (Table 1.5\_1).

<b>Table 1.5_1</b> <b>Corihuarmi Project</b> <b>MZT 2009 Models for Susan and Diana Deposits</b> <b>Grade Tonnage as of January 1, 2010</b> <b>Gold Grade Estimates obtained Using Ordinary Kriging (OK)</b> <b>Block Model (5m x 5m x 5m Parent Cell size)</b>									
Lower Cutoff Grade	Measured			Indicated			Measured + Indicated		
	Tonnes (kt)	Au (g/t)	Metal (kozs)	Tonnes (Kt)	Au (g/t)	Metal (kozs)	Tonnes (Kt)	Au (g/t)	Metal (kozs)
<b>Diana Deposit</b>									
0	1,345	0.42	18.3	1	0.27	0.008	1,346	0.42	18.3
0.2	1,173	0.46	17.4	1	0.27	0.008	1,174	0.46	17.4
0.25	1,028	0.50	16.4	1	0.28	0.006	1,029	0.49	16.4
<b>0.3</b>	<b>871</b>	<b>0.53</b>	<b>15.0</b>	-	-	-	<b>871</b>	<b>0.53</b>	<b>15.0</b>
0.5	371	0.73	8.7	-	-	-	371	0.73	8.7
<b>Susan Deposit</b>									
0	8,197	0.41	107.1	136	0.15	0.7	8,333	0.40	107.7
0.2	5,508	0.54	95.6	19	0.29	0.2	5,527	0.54	95.8
<b>0.25</b>	<b>4,448</b>	<b>0.62</b>	<b>88.0</b>	<b>11</b>	<b>0.33</b>	<b>0.1</b>	<b>4,459</b>	<b>0.61</b>	<b>88.1</b>
0.3	3,509	0.71	79.7	6	0.37	0.07	3,515	0.71	79.8
0.5	1,817	1.01	59.0	0.2	0.63	0.004	1,817	1.01	59.0
<b>Susan and Diana Combined (Susan @ 0.25 g/t cutoff &amp; Diana @ 0.3 g/t cutoff)</b>									
	5,318	0.60	102.9	11	0.33	0.1	5,329	0.60	103.0

In addition, Coffey Mining has estimated the Mineral Resource for the Scree Deposit of the Corihuarmi Gold Project as at 28<sup>th</sup> of February 2010 (Table 1.5\_2). The estimation of gold grades was completed using Ordinary Kriging (OK). A total Inferred Resource of 3.76Mt at an average gold grade 0.45g/t Au for 55k oz Au are reported.

The resource estimate for Corihuarmi has been classified as an NI 43-101 compliant Mineral Resource, in accordance with the NI 43-101 and the CIM standards, based on the confidence levels of the key criteria that were considered during the resource estimation.

<b>Table 1.5_2</b> <b>Minera IRL Limited</b> <b>Corihuarmi Scree Deposit</b> <b>Grade Tonnage- 28th February 2010</b> <b>Gold Grade Estimates obtained Using Ordinary Kriging (OK)</b> <b>Block Model (12.5m x 12.5m x 2.5m – Parent Cell size)</b> <b>No Lower Grade Cutoff Applied</b>									
Lower Cutoff Grade	Measured			Indicated			Inferred		
	Tonnes (Mt)	Au (g/t)	Metal (kozs)	Tonnes (Mt)	Au (g/t)	Metal (kozs)	Tonnes (Mt)	Au (g/t)	Metal (kozs)
<b>Corihuarmi Scree Deposit</b>									
0	-	-	-	-	-	-	3.765	0.45	54.6

The Diana and Susan resource models were also reconciled against 6 months of actual mining data, from January 1, 2009 to June 30, 2009 comparing the resource model with the reported mined figures. Grade control drilling has shown a positive reconciliation to the resource model to date at Diana; however with depth there appears to be a closer reconciliation developing. The reconciliation data at Susan to date is showing a much closer reconciliation.

The Mineral Reserve estimates are, in accordance with the NI 43-101 and the CIM standards, based on the current operating parameters described in this report. Table 1.5\_3 provides a summary of the Mineral Reserves that were determined for the Susan and Diana gold deposits. All stated reserves are completely included within the quoted resources. No reserves have been allocated to the Scree Deposit due to the Inferred classification.

<b>Table 1.5_3</b> <b>Corihuarmi Project</b> <b>Minable Reserve Summary</b> <b>As of 31 December 2009</b>										
Cutoff (g/t)	Deposit	Mineral Reserves								
		Proven			Probable			Total		
		Tonnes [Mt]	Grade [g/t Au]	In-Situ Au [Koz]	Tonnes [Mt]	Grade [g/t Au]	In-Situ Au [Koz]	Tonnes [Mt]	Grade [g/t Au]	In-Situ Au [Koz]
0.30	Diana	0.7	0.54	11.9				0.7	0.54	11.9
0.25	Susan	4.4	0.67	93.9				4.4	0.67	93.9
<b>Total</b>		<b>5.1</b>	<b>0.65</b>	<b>105.9</b>				<b>5.1</b>	<b>0.65</b>	<b>105.9</b>

## 1.6 Other Relevant Data and Information

### 1.6.1 Geotechnical and hydrogeological studies

The geotechnical evaluation was completed by Vector (2005). The evaluation was based on existing geological data, field structural and geotechnical mapping and drillhole core logging. In summary, the evaluation resulted in the recommendation of 70° batters and 8.5m berms for every 20m in vertical wall height. The final wall, located to the north of the Diana pit was exposed during the first year of mining. The wall condition is good and the recommended wall parameters appear to be adequate. No bench scale failures were identified during the Coffey Mining site visit.

A hydrogeology study conducted by Vector (2006) concluded that given the elevated nature of the mineralized outcrops above the surrounding plateau, no material adverse effects due to groundwater are expected to interfere with the mining operation and haven't been observed during the site visit.

### 1.6.2 Life of Mine Plan

The life of mine pit (LOM) design was completed by AMC to conventional industry standards during the feasibility study.

The mine design respects the geotechnical slope angle proposed. No issues were noted either for the pits or the waste dump designs.

The current LOM plan uses this same design. The pit inventory comprises 5.1Mt of mill feed at 0.65g/t Au with 1.2Mt of waste for a waste to ore strip ratio of 0.2: 1. The mining schedule is summarised in the Table 1.6.2\_1

Table 1.6.2_1 Corihuarmi Project Life of Mine Plan Summary						
Year	Tonnes Ore	Grade Au (g/t)	Ounces	Tonnes waste	Ratio (SR)	Rec Au Ounces
2010	1.45Mt	0.8	39.5koz	125.0kt	0.09	28.1
2011	1.45Mt	0.8	35.0koz	336.7kt	0.23	25.0
2012	1.45Mt	0.5	22.3koz	460.8kt	0.32	16.1
2013	0.73Mt	0.4	9.0koz	254.7kt	0.35	6.7
<b>Total</b>	<b>5.08Mt</b>	<b>0.6</b>	<b>105.8koz</b>	<b>1,177.2kt</b>	<b>0.23</b>	<b>75.9</b>

MIRL has opted for a contract mining operation to establish the project. The Contractor, CyM Contratistas Generales SAC (CyM), supplies and operates all the mining equipment under MIRL staff supervision.

### 1.6.3 Mining Capital Costs

CyM is employed to carry out the mining activities and, as such, the capital depreciation of the mining equipment is incorporated into the mine operating unit rates.

The sustaining capital expenditure that MIRL has planned is related to mining computer hardware and software, light vehicles, office requirements and other miscellaneous items and is expected to be \$250k per year from 2010 to 2013.

#### **1.6.4 Mining Operating Costs**

The mining operating costs are based on the historical data and contract information for 2010. For the following three years MIRL is looking into the possibility of changing its mining contractor to reduce the current mining contract cost. The anticipated cost saving in the mining cost is about 15% and 18% when including the administration fees. On the overall budget cost this represent an average cost reduction of about 16.8% per year. The cost reduction is based on MIRL's current knowledge of the cost structure from other contractors doing other work on site. MIRL plans to use these other contractors with similar equipment as those already in use by CyM to reduce the mining cost. As the contract with CyM was negotiated at the peak of the mining industry's boom period, these potential economies are considered realistic.

#### **1.6.5 Economical Considerations**

MIRL has adopted US\$850/oz as the Project base case gold price.

#### **1.6.6 Tax and Royalties**

The Peruvian corporate income tax is levied at a flat rate of 30%. The Peru Government Royalty is based on a percentage of the sale value varying between 1%, 2% and 3% of the sales based on a sale value below US\$60M, above US\$60M and below US\$120M and above US\$120M respectively. The vendor royalty is 1.5% of gold revenue for a gold price up to US\$300/oz, 2% between US\$300/oz and US\$350/oz and 3% for gold price greater than US\$350/oz.

#### **1.6.7 Cash Flow and Sensitivity**

The Project is robust and cash positive. A positive or negative variation of 30% in gold price, ore grade or total cost is not sufficient to jeopardise the economics of the project. The price of gold can go as low as US\$460 before the NPV @ 10% becomes negative.

### **1.7 Recommendations**

The following recommendations are made for the Project and are discussed in further detail within the body of this report:

#### **1.7.1 Exploration**

- Coffey Mining recommends that the current MIRL exploration targets within the Corihuarmi region should be re-assessed in further detail to compile all historical data into a useable format and to potentially look at testing additional targets. Minimal drilling has been undertaken outside of the Diana and Susan deposits. .

## 1.7.2 Resource

- That no factor be applied to the resource model for the Diana deposit. Grade control drilling has shown a positive reconciliation to the resource model to date; however with depth there appears to be a closer reconciliation developing.
- Susan deposit is performing well against the mining data collected to date.
- That mined ore tonnes are reconciled against a weightometer, to check whether the truck factor assumptions are correct. Ore volumes should also be reconciled against weightometer values to check if bulk density assumptions for each deposit are correct.
- Continue to monitor QA/QC for BH sampling, including field duplicates, inclusion of certified standards and blanks and umpire laboratory testing.
- Although additional close spaced drilling is required to increase the resource confidence of the Scree deposit, MIRL should weight the associated risks of this additional drilling investment as opposed to direct mining.

## 1.8 Authors

Table 1.8\_1 summarises the responsibility of each qualified person as authors of this report.

<b>Table 1.8_1</b>			
<b>Corihuarmi Project</b>			
<b>Responsibility of Qualified Persons</b>			
<b>Qualified Person</b>	<b>Association</b>	<b>Responsible for Sections</b>	<b>Co-Responsible for Sections</b>
Beau Nicholls	MAIG	All sections excluding 16, 17 and 18	1
Jean-Francois St-Onge	Eng., AusIMM	17.6, 18	1
Barry Cloutt	AusIMM	16	
Doug Corley	MAIG	17.1-17.3	1, 17.5 and 19-21
Alex Virisheff	AusIMM	17.4	1, 17.5 and 19-21

## **2 INTRODUCTION**

### **2.1 Scope of Work**

Coffey Mining Pty Ltd (Coffey Mining) was commissioned by Minera IRL Limited (MIRL) to complete a technical report for the Corihuarmi Project (the Project) in Peru. Coffey Mining was requested by MIRL to prepare the technical report for inclusion in a listing document to be submitted to the Toronto Stock Exchange (TSX).

The Project is an operating open pit gold mine located in the high Andes of Central Peru, approximately 160km southeast of the capital city of Lima.

This report is prepared to comply with reporting requirements set forth in the Canadian National Instrument 43-101 (NI 43-101).

### **2.2 Qualifications and Experience**

Coffey Mining is an international mining consulting firm specializing in the areas of geology, mining and geotechnical engineering, metallurgy, hydrogeology, hydrology, tailings disposal, environmental science and social and physical infrastructure.

The “qualified persons” (as defined in NI 43-101) for the purpose of this report are Mr. Beau Nicholls, Mr. Barry Cloutt, Mr. Jean-Francois St-Onge eng, Mr Alex Virisheff and Mr. Doug Corley, each of whom is an employee of Coffey Mining.

Mr. Nicholls is a professional geologist with 15 years experience in exploration and mining geology. He is a consulting geologist for Coffey Mining’s Brazil operations. Mr. Nicholls is also a Member of the Australian Institute of Geosciences (MAIG) and has the appropriate relevant qualifications, experience and independence as defined in the Canadian National Instrument 43-101. Mr Nicholls visited the Corihuarmi Project between 12<sup>th</sup> and 14<sup>th</sup> May 2009.

Mr Corley is a professional resource geologist with 16 years experience in resource and mining geology. Mr Corley is a member of the Australian Institute of Geoscientists (MAIG) and has the appropriate relevant qualifications, experience and independence as defined in the Canadian National Instrument 43-101. Mr Corley has not visited the Corihuarmi Project. Mr Corley is currently employed as an Associate Resource Geologist with the firm of Coffey Mining Pty Ltd.

Mr Virisheff is a professional resource geologist with over 25 years experience in resource and mining geology. Mr Virisheff is a member of the Australasian Institute of Mining and Metallurgy (AusIMM) and has the appropriate relevant qualifications, experience and independence as defined in the Canadian National Instrument 43-101. Mr Virisheff has not visited the Corihuarmi Project. Mr Virisheff is currently employed as a Principal Resource Geologist with the firm of Coffey Mining Pty Ltd.

Mr. Cloutt is a professional metallurgist with 28 years of metallurgical experience. He is Chief Metallurgist for Coffey Mining. Mr. Cloutt is also a Member of the AusIMM and has the appropriate relevant qualifications, experience and independence as defined in the Canadian National Instrument 43-101. Mr Cloutt has not visited the Corihuarmi Project.

Mr. St-Onge is an engineer non-resident member of the Ordre des Ingénieurs du Québec (OIQ) with 15 years experience in mining engineering. He is a Specialist Mining Engineer with Coffey Mining. Mr. St-Onge is also a Member of the AusIMM and has the appropriate relevant qualifications, experience and independence as defined in the Canadian National Instrument 43-101. Mr. St-Onge visited the Corihuarmi Project between 12<sup>th</sup> and 14<sup>th</sup> May 2009.

### **2.3 Independence**

Neither Coffey Mining, nor the authors of this report, have or have had previously any material interest in MIRL or related entities or interests. Our relationship with MIRL is solely one of professional association between client and independent consultant. This report is prepared in return for fees based upon agreed commercial rates and the payment of these fees is in no way contingent on the results of this report.

Specific sections of the report that the Qualified Persons are responsible for are provided in Table 1.8\_1 and are repeated in the attached Qualified Persons certificates.

### **2.4 Principal Sources of Information**

In addition to site visits undertaken to the Corihuarmi Project between the 12<sup>th</sup> and 14<sup>th</sup> May 2009 by Mr. Nicholls and Mr. St-Onge, the authors of this report have relied extensively on information provided by MIRL, extensive discussion with MIRL, and studies completed by other independent consulting and engineering groups. A full listing of the principal sources of information is included in Section 21 of this report and a summary is provided below:

- Coffey Mining (formerly RSG Global Consulting Pty Ltd (April 2007) – Competent Person's Report.
- Kappes, Cassiday & Associates, 2006, "Corihuarmi Feasibility Study 1,000,000 Tonne per Year Heap Leach Project" Technical report prepared for Minera IRL S.A.
- Vector Peru S.A.C. 2006, "Bankable Feasibility Study Leach Pad, Waste Rock Disposal and Mine Access Road Facilities Design" Technical report prepared for Minera IRL S.A
- Smee and Associates Consulting Ltd (February, 2009) - A Review of the Minera IRL S.A Quality Control Protocol, Core and Blasthole Sampling Protocol, and Two Laboratories, Peru

Coffey Mining has made all reasonable enquiries to establish the completeness and authenticity of the information provided, and a final draft of this report was provided to MIRL along with a written request to identify any material errors or omissions prior to lodgement.

## 2.5 Abbreviations

A full listing of abbreviations used in this report is provided in Table 2.5\_1 below.

Table 2.5_1 Corihuarmi Project List of Abbreviations			
	Description		Description
\$	United States of America dollars	l/hr/m <sup>2</sup>	litres per hour per square metre
μ	microns	M	Million
3D	three dimensional	M	Metres
AAS	atomic absorption spectrometer	Ma	thousand years
Au	gold	MIK	Multiple Indicator Kriging
Bcm	bank cubic metres	MI	Millilitre
CC	correlation coefficient	Mm	Millimetres
Cfm	cubic feet per minute	MMI	mobile metal ion
CIC	carbon in column	Moz	million ounces
CIL	carbon-in-leach	Mtpa	million tonnes per annum
Cm	centimetre	N (Y)	Northing
Cusum	cumulative sum of the deviations	NaCN	sodium cyanide
CV	coefficient of variation	NATA	National Association of Testing Authorities
DDH	diamond drillhole	NPV	net present value
DTM	digital terrain model	NQ <sub>2</sub>	size of diamond drill rod/bit/core
E (X)	easting	°C	degrees centigrade
EDM	electronic distance measuring	OK	Ordinary Kriging
EV	expected value	Oz	troy ounce
G	gram	P80 -75μ	80% passing 75 microns
g/m <sup>3</sup>	grams per cubic metre	PAL	pulverise and leach
g/t	grams per tonne	Ppb	parts per billion
HARD	half the absolute relative difference	Ppm	parts per million
HDPE	high density poly ethylene	Psi	pounds per square inch
HQ <sub>2</sub>	size of diamond drill rod/bit/core	PVC	poly vinyl chloride
Hr	hours	QC	quality control
HRD	half relative difference	Q-Q	quantile-quantile
ICP-MS	inductivity coupled plasma mass spectroscopy	RAB	rotary air blast
ID	Inverse Distance weighting	RC	reverse circulation
ID <sup>2</sup>	Inverse Distance Squared	RL (Z)	reduced level
IPS	integrated pressure stripping	ROM	run of mine
IRR	internal rate of return	RQD	rock quality designation
ISO	International Standards Organisation	SD	standard deviation
ITS	Inchcape Testing Services	SGS	Société Générale de Surveillance
Kg	kilogram	SMU	simulated mining unit
kg/t	kilogram per tonne	T	tonnes
Km	kilometres	t/m <sup>3</sup>	tonnes per cubic metre
km <sup>2</sup>	square kilometres		

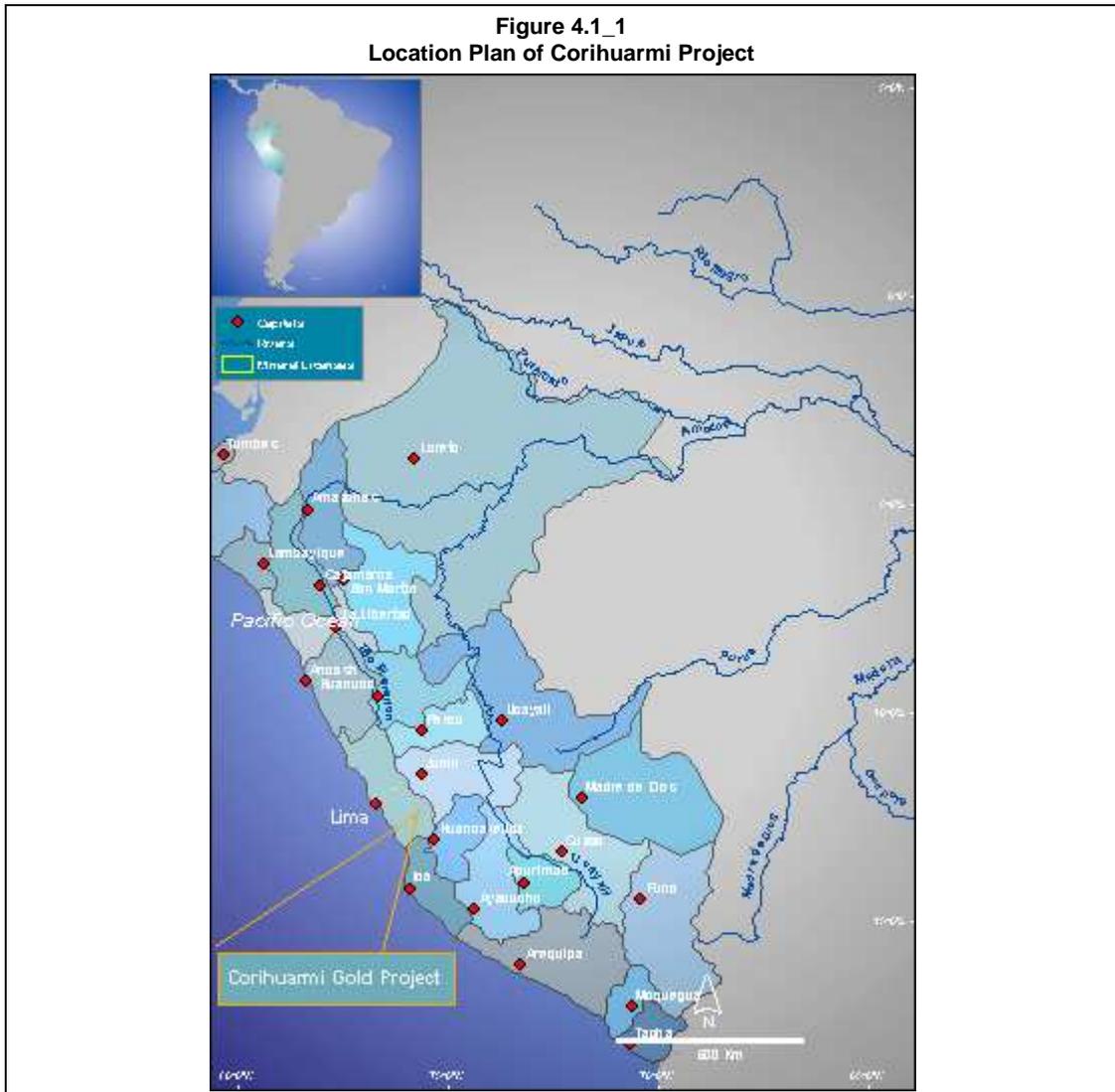
### **3 RELIANCE ON OTHER EXPERTS**

Neither Coffey Mining nor the authors of this report are qualified to provide comment on legal issues associated with the Project included in Section 4 of this report. Inclusion of these aspects was based on information provided by MIRL solicitors, Francisco Tong, Estudio Rodrigo, Elías y Medrano Abogados and has not been independently verified by Coffey Mining.

## 4 PROPERTY DESCRIPTION AND LOCATION

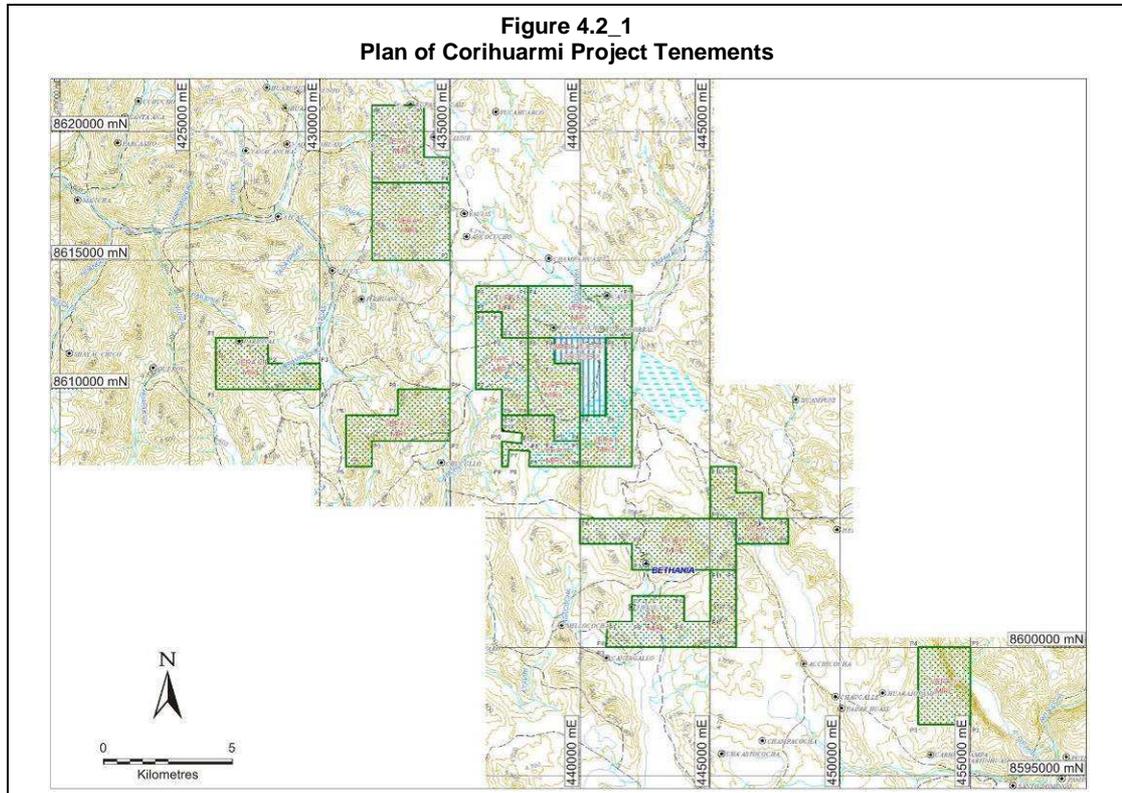
### 4.1 Project Location

The Project is located in the high Andes of Central Peru, approximately 160km southeast of the capital city of Lima (-75.57 Longitude and -12.57° Latitude) (Figure 4.1\_1). The boundaries of the concessions have not been surveyed as this is not a requirement of Peru's mining code, however the concession corners have been physically marked in the field by previous owners. The tenement boundaries are defined by UTM coordinates with the datum of PSAD 56, Zone 18S. The Project tenements straddle the junction between the administrative Departments of Junin, Lima and Huancavelica.



## 4.2 Tenement Status

As shown in Figure 4.2\_1 and Table 4.2\_1, the Corihuarmi Property consists of 14 concessions totalling 9,315.83ha. These concessions are held 100% by MIRL and are made out of six mining concessions totalling approximately 3,418.65ha and eight exploration concessions or petitorios (application stage for mining concession, totalling 5,897.18ha.



The Main Block is an irregular rectangle approximately 6km by 7km that consists of six contiguous mining concessions totalling 3,418.65ha. As shown in Figure 4.2\_1, totally enclosed within the Main Block is an exploration concession, Tambo Nuevo 11, held by a third party (Geologix Explorations Inc.), since early 2004.

The eight exploration concessions (5,897.18ha) which make up the other five blocks cover early-stage exploration targets with minimal work completed over them.

The mining concessions are in good standing. No litigation or legal issues related to the project are pending. Concessions are generally irrevocable but may lapse or terminate in the following two circumstances:

- Failure by a concession holder to pay the mining validity fee (*derecho de vigencia*) for two consecutive years; or
- Failure by a concession holder to pay the penalty (*penalidad*) for two consecutive years, for not achieving exemption from the penalty by meeting investment requirements or for not meeting minimum annual production targets.

**Table 4.2\_1**  
**Corihuarmi Project**  
**Tenement Schedule**

Concession Name	Number	Type	Holder	Area (ha)	Application Date	Expiry Date
Tupe 2	01-02016-94	Mining Concession	Minera Andina Exploraciones SAA	600	06/04/1994	See Note 1
Tupe 3	01-02017-94	Mining Concession	Minera Andina Exploraciones SAA	600	06/04/1994	See Note 1
Tupe 5	01-03635-94	Mining Concession	Minera Andina Exploraciones SAA	300	20/06/1994	See Note 1
Vera I	01-03795-04	Mining Concession	Minera IRL SA	800	10/12/2004	See Note 1
Vera II	01-03796-04	Mining Concession	Minera IRL SA	700	10/12/2004	See Note 1
Vera III	01-03797-04	Mining Concession	Minera IRL SA	418.65	10/12/2004	See Note 1
Vera IV	01-00713-05	Exploration Concession	Minera IRL SA	700	18/03/2005	See Note 1
Vera V	01-00713-05	Exploration Concession	Minera IRL SA	900	18/03/2005	See Note 1
Vera VI	01-00715-05	Exploration Concession	Minera IRL SA	700	18/03/2005	See Note 1
Vera VII	01-00716-05	Exploration Concession	Minera IRL SA	600	18/03/2005	See Note 1
Fiopo I	01-03379-05	Exploration Concession	Minera IRL SA	1,000	01/09/2005	See Note 1
Vera IX	01-01317-05	Exploration Concession	Minera IRL SA	900	01/06/2005	See Note 1
Vera X	01-03795-05	Exploration Concession	Minera IRL SA	600	01/06/2005	See Note 1
Vera XI	01-03795-05	Exploration Concession	Minera IRL SA	500	22/05/2005	See Note 1

Note 1 No extinction provision applies to Mining Concessions under Peruvian legislation, as long as its titleholder complies with the administrative obligations established by law in order to maintain its validity.

### 4.3 Permits

The permits presented in Table 4.3\_1 are in place for the current mining operation.

### 4.4 Royalties and Agreements

The Peru Government Royalty is based on a percentage of the sale value varying between 1%, 2% and 3% of the sales based on a sale value below US\$60M, above US\$60 and below US\$120M and above US\$120M respectively.

In October, 2005 MIRL fulfilled the terms of an option agreement with Minera Andina Exploraciones to acquire 100% interest in the Tupe 2, 3 and 5 mining concessions. The terms of the agreement called for MIRL to make a series of quarterly cash payments (totaling US\$903,309) over a three year period. Minera Andina retains a sliding scale Net Smelter Royalty based on the price of gold. This vendor royalty is 1.5% of gold revenue for a gold price of up to US\$300/oz, 2% between US\$300/oz and US\$350/oz and 3% for a gold price greater than US\$350/oz.

### 4.5 Environmental Liabilities

Vector Engineering (Vector), as part of the April 2006 feasibility study, had prepared the Environmental and Social Impact Assessment (EIA) in accordance with Peruvian legislation and international standards. According to the newly released IFC performance standards, the Project is classified as a Category B project, with limited adverse social and environmental impacts that are few in number, generally site-specific, largely reversible and readily addressed through mitigation measures.

The primary impacts identified and to be resolved under the mine closure plan are

- Changes of topography created by the principal mining infrastructure components, namely removal of the Diana and Susan outcrops, partial fill of the upper reaches of the ravine that faces the Ujujuy lake by waste rock, and creation of a flat pad at the base of Cayhua mountain;
- A total surface impact limited to 40ha at the end of operation and after restoration;
- Long-term potential impacts to water quality with the waste rock and the ore stacked on the leach pad having potential for causing acid rock drainage issues. Therefore, mitigation measures have been implemented for an adequate control.

**Table 4.3\_1**  
**Corihuarmi Project**  
**Permits**

Date	Permit Type	Group	Report Number	Purpose	Expiry
19-May-06	R.A. NRO. 094-2006-Inrena-IRH/ATDRM	ATDR JUNIN	Notification NRO. 381-2006-INRENA-IRH/ATDRM.	Approves the Projects: "Corihuarmi Mining Camp Drinkable Water Supply System" and "Pumping System of the Coyllorcocha Lagoon for Mining and Industrial Purposes".	
February 2007	Technical Opinion NRO. 059-07-Inrena-OGATEIRN-UGAT	INRENA		Environmental Impact Study of the Corihuarmi Exploitation and Benefit Project to be Developed In Tupe 2, 3 and 5.	ND
27 March 2007	R.D. NRO. 117-2007-MEM/AAM	DGAA/MEM	Report NRO. 372-2007/MEM-AAM/EA/FVF/MRC	Environmental Impact Study of the Corihuarmi Exploitation and Benefit Project to be Developed in Tupe 2, 3 and 5.	ND
31 July 2007	R.D. NRO.1950/2007/DIGESA/SA	DIGESA	File N° 085-2006 PD)	Sanitary Authorization for the Domestic Residual Water Treatment System and Sanitary Authorization for Using Again Domestic Residual Water Treated in the Indicated System for use in the Land Flattening, Dust Control in the Access Routes and Irrigation of Vegetables	31/07/2009 (2 años)
3 September 2007	NRO REGISTRO: 0016-CDMV-15-2007	DGH	File NRO. 1715533	Proof OF Direct Consumer Registry with Installations (Permit to have a service station while constructing the definitive service station).	In Process
17 September 2007	Work Design Certificate	OSINERG	File NRO. 138071-CD-051-2007	Work Design Certificate of Liquid Combustible Direct Consumer (To construct the definitive service station).	In Process
27 September 2007	R.P. NRO. 1372-2007-INGEMMET/PCD/PM	INGEMMET		Approves the Metallic Rights Tupe 2, 3 and 5, Vera I, II and III with the Constitution of the Administrative and Economic Unit (UEA) Corihuarmi in Favor of IRL S.A.	ND
05 November 2007	NRO. COM215-2007	DGM/MEM	File NRO. 1731167	COM 2007	
14 December 2007	NRO. COM 084-2008-C	DGM/MEM	File NRO. 1741836	COM 2008	
19 December 2007	NRO. 20505174896-DICIQ	DIRANDRO	Report NRO. 1099-DICIQ-CYV	IQPF User Certificate	12/19/2009
28 December 2007	R.D. NRO. 4031-2007-IN-1703-2	DICSCAMEC		To Grant THE Functioning Permit OF 5 Special Magazines Type "C" (Containers).	12/28/2008
09 January 2008	R.D. NRO. 0037/2008/DIGESA/SA	DIGESA	File N° 139.07.VI	To Grant Sanitary Authorization FOR THE Treatment System and Sanitary Disposition of Industrial Residual Water of Corihuarmi Production Unit Project	ND
February 2008	Technical Opinion NRO. 046-08-Inrena-OGATEIRN-UGAT	INRENA		Environmental Impact Study "Definitive Study of the First Line IN 22,9Kv S.E. CHUMPE - Corihuarmi Mining Unit and Corihuarmi Exit Module 22,9/12.6Kv, 1 MVA DE LA S.E. CHUMPE".	ND
20 February 2008	R.D. NRO. 0615-2008-IN-1703-2	DICSCAMEC		Global Authorization for the 1ST Semester 2008	--
28 March 2008	Under Current Evaluation BY MEM	DGAA/MEM		Submit of the Mine Closure Plan Study	
21 April 2008	R.D. Nro. 090-2008-MEM/AAM	DGAA/MEM	Report NRO. 425-2008/MEM-AAM/PRN/EA	Environmental Impact Study "Definitive Study of the Primary Line in 22,9Kv S.E. CHUMPE - Corihuarmi Mining Unit and Corihuarmi Exit Module 22,9/12.6Kv, 1 MVA OF S.E. CHUMPE".	ND
28 Aril 2008	Administrative Resolution N° 329-2008-ATDRM-DRA/J	Junin Agricultural Regional Office	Notification NRO. 376-2008-ATDRM-DRA/J	Water Use License with Population Purposes of Coyllorcocha Lagoon	ND
28 April 2008	Administrative Resolution N° 330-2008-ATDRM-DRA/J	Junin Agricultural Regional Office	Notification NRO. 377-2008-ATDRM-DRA/J	Water Use License with Mining-Industrial Purposes Granted to Minera IRL - Coyllorcocha Lagoon	ND
9-May-08	R.D. NRO. 1716-2008-IN-1703-2	DICSCAMEC		Use of Explosives as an Advance of the Second Semester of the Global Authorization 2008.	-
22-May-08	R.D. NRO. 937-2008-MEM/DGM	DGM/MEM	Report NRO. 022-2008-MEM-DGM-DTM/PM	Approval of the Mining Plan of Susan and Idana Pits and Authorization of the Beginning of Open Pit Exploitation Activities	ND
05 June 2008	R.D. NRO. 2025/2008/DIGESA/SA. I	DIGESA	Report N° 915-2008/DSB/DIGESA	Sanitary Authorization for the Treatment System of Drinkable Water for Corihuarmi Mining Camp	-
06 June 2008	R.D. NRO. 334-2008-MEM-DGM/V	DGM/MEM	Report NRO. 098-2008-MEM-DGM-DTM/PB	Approval of Supervision Report of Construction, Installation and Conditioning Verification of Corihuarmi Benefit Plant.	ND
06 June 2008	R.D. NRO. 954-2008-MEM/DGM	DGM/MEM	Report N° 0031-2010/DSB/DIGESA	Grant the Corihuarmi Benefit Concession Title and the Functioning of Corihuarmi Benefit Plant- Capacity of 3000TM/Day.	ND
24 June 2008	R.D. NRO. 2356-2008-IN-1703-2	DICSCAMEC		Grants the Global Authorization for the Second Semester 2008	-
21 August 2008	OFICIO N  6393-20087DG7DIGESA	DIGESA	Report N  1422-20087DSB7DIGESA	Favorable Technical Opinion of the Infrastructure Project of Corihuarmi Solid Residues	
22 August 2008	R.D N°3113-2008-IN-1703-2	DICSCAMEC	File N° 308557	Extension of the Global Authorization with RDN°615 -2008-IN-1703-2 Dated February 20 and R.D N°2356-2 008-IN-1703-2 Dated June 24 2008 of the 1°and 2°Semester 2008, use of Explosives	1°and 2°Semester 2008
23 December 2008	R.D N°4592	DICSCAMEC	File N°3133 76	Functioning License of 5 Magazines "Special Type" (Containers), for the Storage of Explosives and Blasting Accessories.	1 Year
31 December 2008	Resolution N° 4713/2008-IN-1703-2	DICSCAMEC	File N° 313375	Global Authorization for t he Use of Explosives and/OR Related	1°Semester 2009

Date	Permit Type	Group	Report Number	Purpose	Expiry
30 March 2009	R.D N°971/2009-IN-1703-2	DICSCAMEC	File N° 302530	Functioning License of 1 Magazine "Special" Type (Container) for the Storage of Ammonitrate, ANFO, Located in Corihuarmi Landscape	1 Year
4-May-09	Resolution N°090-2009-MEM/DGM	DGM/MEM	Report N°106-2009-MEM-DGM/PB	Extension of the Corihuarmi Benefit Concession AREA in 67.5 Hectares, and Modification of the Total Area of the Concession to 127.5 Hectares. Authorization for Minera IRL S.A for the Leach Pad Operation PHASE II (2A) and the Functioning of the Crushing System Incorporated in the Corihuarmi Benefit Plant.	ND
5 June 2009	OSINERGMIN N°2522-2009-OS/GFHL-UCHL	OSINERGMIN	Technical Report N° 159506-itf-051-2009	Authorization for Direct Consumer of Liquid Combustibles, Located on the West Side of Corihuarmi Mining Project- Yanacancha, District of Huantan, Province of YAUYOS, Department of Lima, with OSINERGMIN Code N°83472	ND
15 July 2009	Resolution N°2354/2009-IN-1703-2	DICS CAMEC	File N°306402	Global Authorization for the Use of Explosives and or Related	2° Semester 2009
21 October 2009	Official Letter N° 4080-2009/DEPA/DIGESA	DIGESA	Report N° 4768-2009/DEPA-APRHI/DIGESA	Favorable Technical Opinion for Granting the Authorization of Treated Industrial Residual Water Discharges of Waste Dump, Inappropriate Material Dump and Sedimentation Ponds	ND
28 October 2009	Resolution N°858-2009-MEM-DGM/V	DGM/MEM	Report N°274-2009-MEM-DGM-DTM/PB	Authorization for the Benefit Modification of Corihuarmi, for the Capacity Extension of Corihuarmi Benefit Plant from 3000 to 4500 TM/day, Presented BY Minera IRL S.A.	ND
29 October 2009	OFICIO N° 4080-2009/DEPA/DIGESA	DIGESA	Report N° 4908-2009/DEPA-APRHI/DIGESA	Favorable Technical Opinion for Granting the Authorization of Exit Treated Industrial Residual Water from the Grease Trap of THE Service Station, Vehicle Washhouse, Warehouse of Dangerous Residues and Sedimentation Pond.	ND
14 December 2009	Certificate N° 20505174896-DIV/CIQ	Production Department	Written Evidence N° 15-01810	IQPF User Certificate	14 December 2011
12 January 2010	Oficio N ° 002-2010/DSB/DIGESA	DIGESA	Report N° 0031-2010/DSB/DIGESA	Favorable Technical Opinion of the Treatment System and Sanitary Regulation of Domestic Residual Water Through the Re-Use of the Corihuarmi Mining Unit - Minera IRL S.A.	ND
19 January 2010	R.D N°235 / 2010-IN_1703-2	DICSCAMEC	Report N°90-2010-IN-1703-2	Functioning License of 1 Magazine "Special" Type (Container) for the Storage of AMMONITRATE, ANFO, Located in the Corihuarmi Landscape	12 January 2011
25 January 2010	R.D N°308-2010-IN-1703-2	DICSCAMEC		Global Authorization for the Use of Explosives and or Related Products	30 June 2009

## **5 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY**

### **5.1 Project Access**

Access to the Project is via the 330km long sealed main highway east from Lima, over the Andean divide to La Oroya. More specifically, it is located southeast to the city of Huancayo, the regional capital of Junin Department. Vehicle travel between Lima and Huancayo takes approximately six hours due to the rough route over the Andes. From Huancayo, access is gained via the Andean plateau by travelling southwest on formed gravel roads for a further 115km through the villages of Chupuro and Vista Alegre to the mine. This portion of the journey takes approximately four hours by vehicle due to the rough road conditions.

### **5.2 Physiography and Climate**

The Project lies at elevations between 4,500m and 5,050m above sea level, straddling the main Andean divide. Despite the elevation, the topography is relatively subdued, comprising a series of hills and ranges that rise approximately 500m above an undulating alpine plateau.

The Project experiences a high mountain dry tundra climatic regime. Precipitation is markedly seasonal and total annual precipitation averages 730mm. The vegetation is solely comprised of alpine tussock grassland across the plateau, with the adjacent hills and ridges essentially barren of vegetation, particularly in areas of argillic alteration. Agricultural activities are confined to extensive summer livestock grazing, principally sheep, cattle and camelids (alpaca and llama).

### **5.3 Local Infrastructure and Services**

A camp accommodating approximately 140 employees has been constructed to the east of the plant facilities. Existing buildings includes the offices, warehouse, messing facilities a soccer field and other buildings.

The principal mining related infrastructure comprise the waste dump, haul roads, mining contractor workshop and related infrastructure, fuel farm and explosives storage facility.

Although poorly maintained, the access dirt road from Huancayo is passable in all weather conditions. Power is provided from the grid via an overhead line a limited backup power capacity is also available for the mine by way of diesel generator. Abundant water is available from two main reservoirs feeding the regional hydro-electric system, along with numerous natural alpine lakes and tarns. Huancayo represents the nearest centre providing goods and services.

## **6 HISTORY**

### **6.1 Exploration History**

Between 1996 and 1997, Minera Andina de Exploraciones (Minandex) identified the Project based on Landsat imagery colour anomalies defining the extensive alteration system. Minandex completed geological mapping, chip-channel sampling and limited diamond core drilling (3 holes; 775m), identifying the Susan and Diana zones.

The Project was held by Cardero Resource Corporation (Cardero) between 1998 and 2000, with work variously completed in their own right and under joint venture arrangements with Barrick Gold Corporation (Barrick) and Newmont Mining Corporation (Newmont). Exploration involved geological mapping, an alteration study, portable infrared mineral analysis (PIMA), a controlled source audio magnetotellurics (CSAMT) survey that was reinterpreted by Newmont, and drilling to test the CSAMT anomalies (9 holes; 1,971.15m). Only one hole was drilled near the north end of the Diana Zone and no drilling was completed at the Susan Zone. The company concluded that the environment was not favourable for the development of large zones of epithermal gold mineralization, electing to return the property to Minandex in late 2000.

MIRL acquired the project in 2002. Between 2003 and 2005, the company completed a programme, primarily concentrating on the Susan and Diana zones, comprising geological mapping, extensive horizontal and vertical chip-channel sampling, three phases of diamond core drilling (53 holes; 3,551.95m), metallurgical testwork, geotechnical studies, internal and independent resource estimates, and an internal feasibility study. An external feasibility study was subsequently commissioned and completed by Kappes Cassiday and Associates (KCA) in April 2006.

MIRL also initiated investigations into the potential for additional low grade mineralization comprising a veneer of scree on the slopes directly beneath the Diana and Susan deposits. The mineralization was delineated via a ground penetrating radar (GPR) survey, 625 samples collected from surface pits on a 25m by 25m grid, along with 85 shallow RC drillholes completed on a nominal 50m by 50m grid. The programme confirmed the presence of a persistent blanket of generally low grade mineralization along the flanks of the Susan and, to a lesser extent, Diana outcrops that may ultimately represent additional resources for the proposed heap leach processing operations. This resource has been estimated by Coffey Mining and is included in Section 17 of this report.

### **6.2 Mining History**

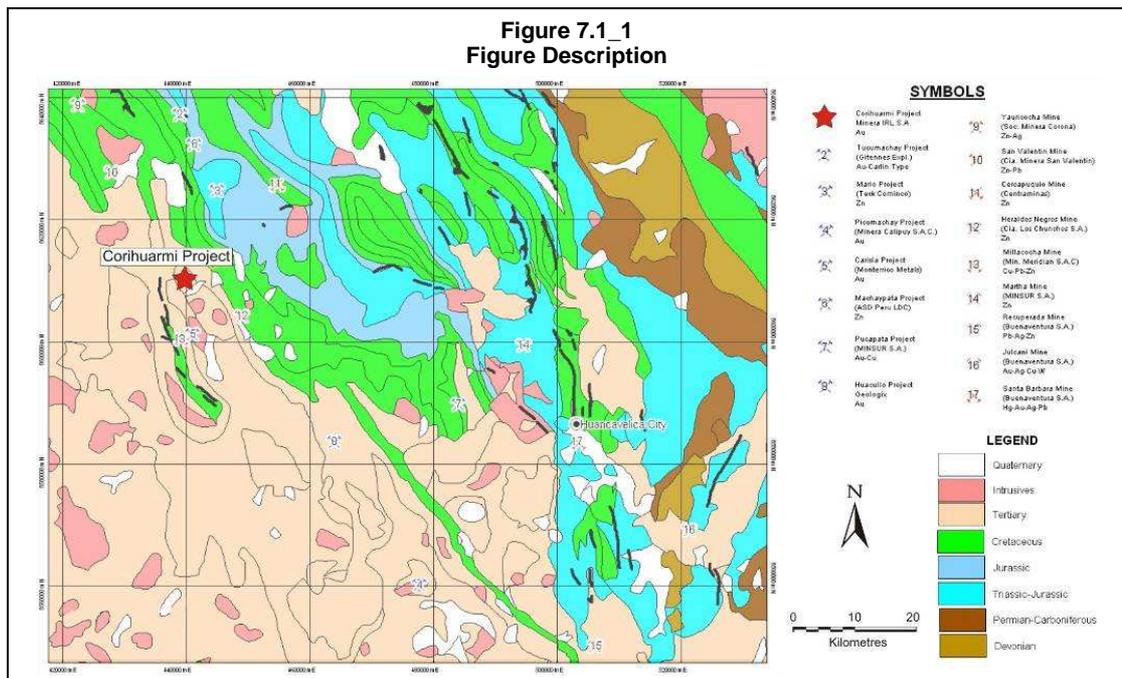
Prior to the commencement of mining by MIRL only small scale artisan workings existed in the area.

## 7 GEOLOGICAL SETTING

### 7.1 Regional Setting

The Project is situated within the Andean Cordillera, which lies between the Peru-Chile oceanic trench to the west and the Brazilian Craton to the east. The Andes Range formed as a result of the convergence between the oceanic Nazca Plate (of the Pacific Basin) and the South American continent. The denser lower portion of the Nazca Plate was subducted beneath the South American continent along the Peru-Chile Trench, resulting in crustal melting and magmatic (volcanic) activity, while the lighter marine sediments of the upper Nazca Plate were obducted onto the continental landmass, resulting in collision and compression.

The Andean Cordillera consists of two parallel ranges, with the younger Western Cordillera corresponding to a Cenozoic magmatic arc, while the Eastern Cordillera represents a zone of progressive uplift since Permian times. The intervening zone is occupied by the Altiplano, a high plateau of relatively subdued relief where inter-montaine basins were developed during the Cenozoic period. The Western Cordillera and Altiplano host the majority of Peru's economically significant precious and base metal deposits, occurring in a series of metallogenically distinct belts or domains as shown in Figure 7.1\_1.

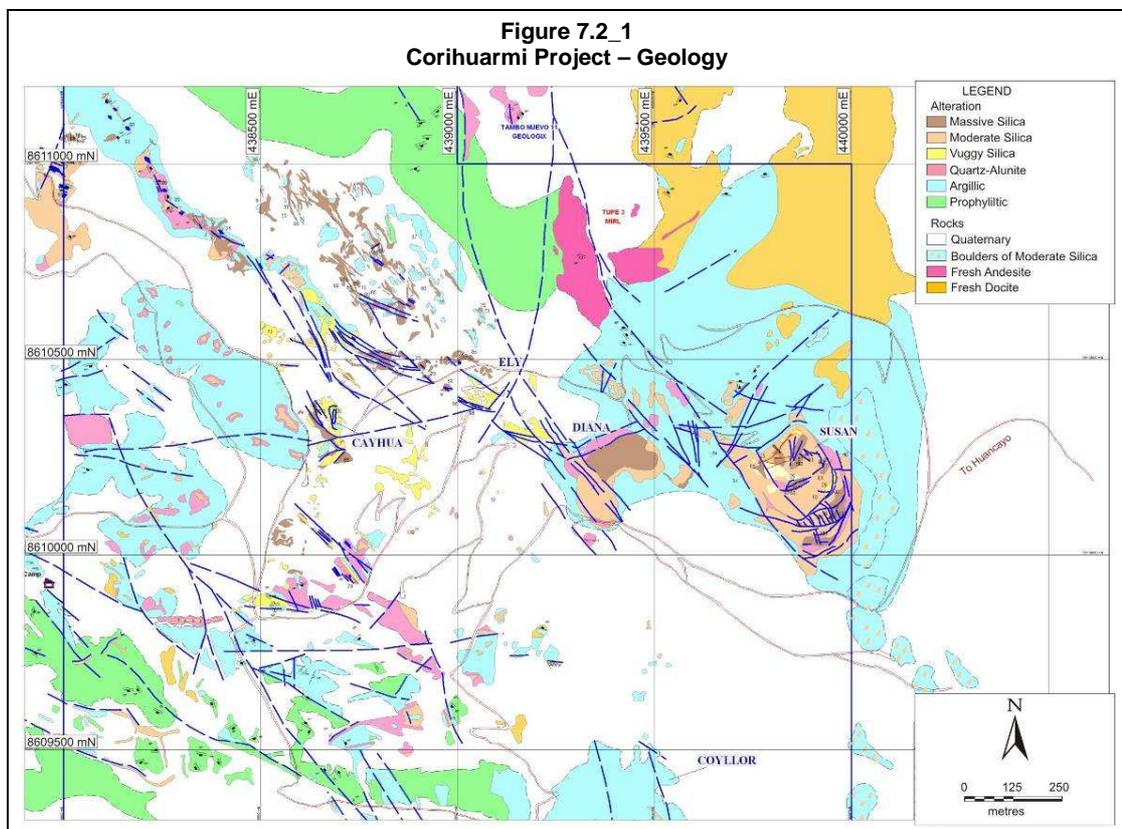


The Project is located at the northern extremity of the Southern Peru Epithermal Au-Ag Belt, associated with middle to upper Tertiary volcanics and intrusives of the Western Cordillera. These are separated from deformed Mesozoic sediments of the Altiplano immediately east of the project area by a major northwest trending thrust.

## 7.2 Project Geology

The geological understanding of the Project is essentially confined to the central group of tenements, referred to as the Main Block, which host all known Resources and Reserves, and the majority of significant prospects.

The geology of the Main Block is dominated by a significant volcanic centre of Miocene to Pliocene age, comprising a series of dacite and rhyodacite domes of the Caudalosa Formation and broadly coeval volcanics of the overlying Astobamba Formation (Figure 7.2\_1). The dacite domes broadly define the margins of a collapsed caldera structure, measuring some 4.5km by 3.5km and elongate in a north-northwest orientation. The overlying volcanics variously comprise dacitic and andesitic flows, ignimbrites and pyroclastic tuffs that conform to the dome margins.



The general structural orientation within the Corihuarmi area is consistent with the northwest Andean trend, mimicked by fold axes within Mesozoic sediments to the east, the major thrust separating these sediments from the younger volcanics, and the general orientation of the alteration system and associated caldera structure within the volcanics themselves. A series of east-west and northeast trending tensional structures appear to provide the focus for breccia development, alteration and mineralization within the vicinity of dacite domes. These high angle faults are variously characterised by either normal vertical or dextral horizontal displacements.

## 8 DEPOSIT TYPES

The Susan and Diana Au oxide mineralization of Corihuarmi are associated with epithermal deposit types. Epithermal gold deposits form in hydrothermal systems related to volcanic activity. These systems, while active, discharge to the surface as hot springs or fumaroles.

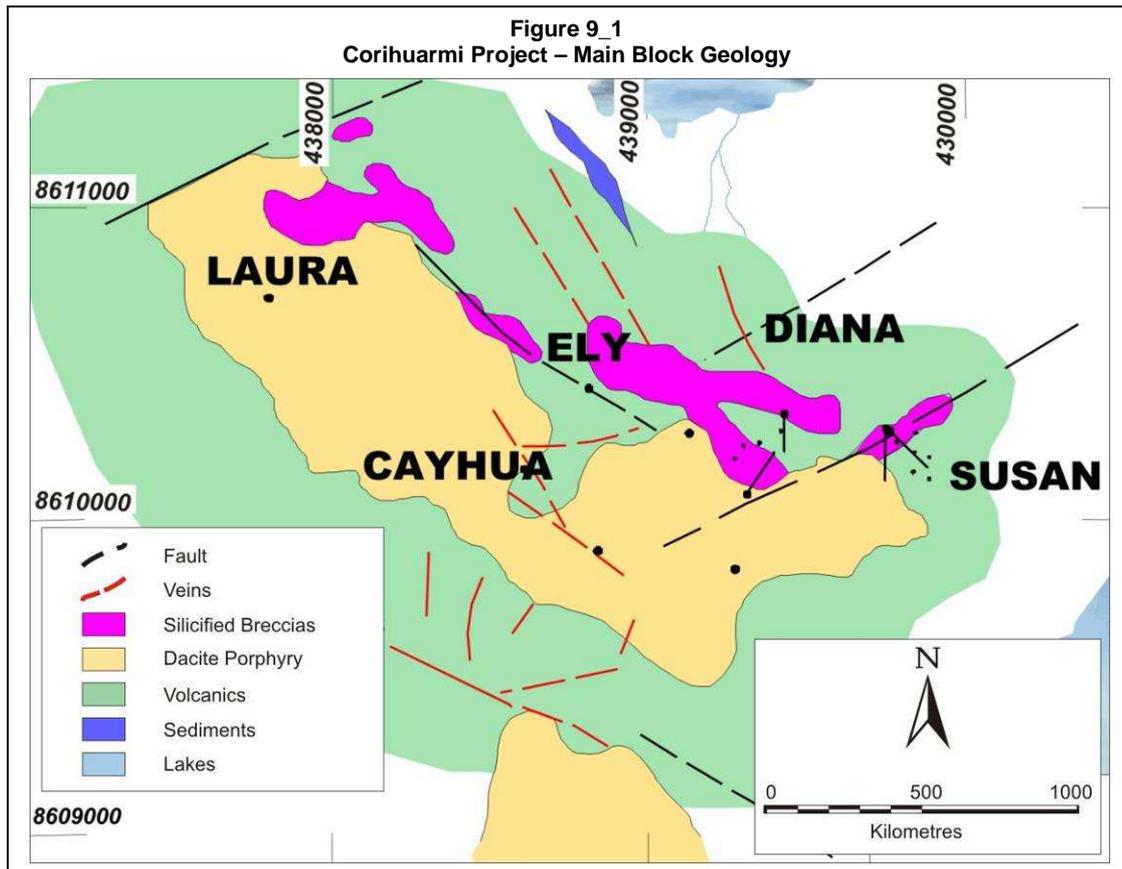
Epithermal gold deposits occur largely in volcano-plutonic arcs (island arcs as well as continental arcs) associated with subduction zones, with ages similar to those of volcanism. The deposits form at shallow depth, <1km, and are hosted mainly by volcanic rocks.

There are two end-member styles of epithermal gold deposits, high sulfidation (HS) and low sulfidation (LS). The two deposit styles form from fluids of distinctly different chemical composition in contrasting volcanic environment. The Diana and Susan deposits are of the HS style.

Examples of economically significant epithermal gold deposits are Yanacocha, Pierina and Lagunas Norte in Peru, Pueblo Viejo in the Dominican Republic, Pascua-Lama, El Indio and El Peñon in Chile, Veladero and Cerro Vanguardia in Argentina, Porgera and Ladolam in Papua New Guinea, Bagio and Lepanto in the Philippines, McLaughlin, Round Mountain, Summitville and Goldfields in the USA, and Emperor in Fiji.

## 9 MINERALIZATION

Mineralization identified to date within the Corihuarmi Project comprises a high sulphidation epithermal precious metal system that formed at relatively shallow depth. Gold and silver mineralization is essentially confined to remnant zones of silicification and brecciation that dominantly lie along the northeast margin of the volcanic complex (Figure 9\_1). Horizontal metallogenic zonation provides evidence that this siliceous layer was once continuous, effectively capping the hydrothermal system.



The most significant mineralization is associated with the Susan and Diana zones (Figure 9\_2), which comprise resistant remnant mineralized silicified bluffs separated by some 180m. The Susan deposit measures approximately 200m by 350m in size, being confined at the margins by cliffs. The smaller Diana Zone is approximately 150m by 250m in area, and to some extent remains open to the northwest and southeast along the ridge-line. The siliceous layer is shallow dipping to sub-horizontally disposed, ranging in thickness from 10m to 75m, and averaging approximately 45m.

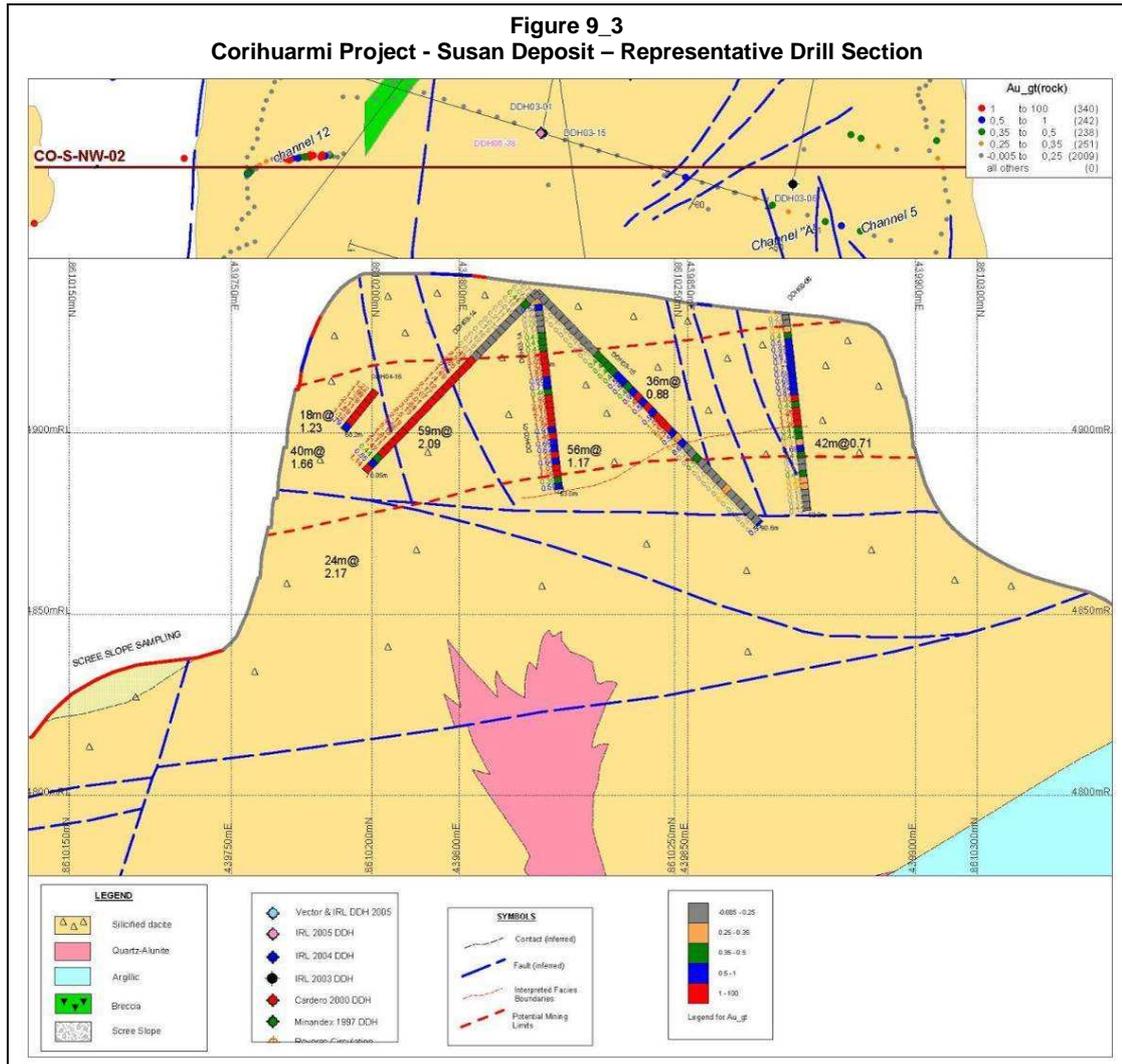
**Figure 9\_2**  
**Corihuarmi Project – Susan (right) and Diana (left) Zones**



Drilling has defined a zone of higher relative grade ( $>1\text{g/t Au}$ ) near the top of the Diana deposit and immediately below a barren siliceous cap at the Susan deposit (Figure 9\_3 and Figure 9\_4). These zones range from 5m to 50m in thickness and their attitude is consistent with the sub-horizontal morphology of the exposures. The tenor of mineralization diminishes rapidly below these higher grade zones, the exception being isolated intersections of higher grade that are interpreted to represent a series of northwest and northeast trending faults that acted as 'feeder' structures for multiple hydrothermal mineralising events.

The mineralized material is almost exclusively comprised of amorphous vuggy silica with the dacite protore generally being modified beyond textural or mineralogical recognition. Subordinate interstitial alunite increases in abundance towards the base of the mineralized zones, while zones of annealed breccias and quartz veining attest to multiple episodes of hydrothermal activity. The massive siliceous material grades laterally downwards into a zone of intense silica-alunite alteration.

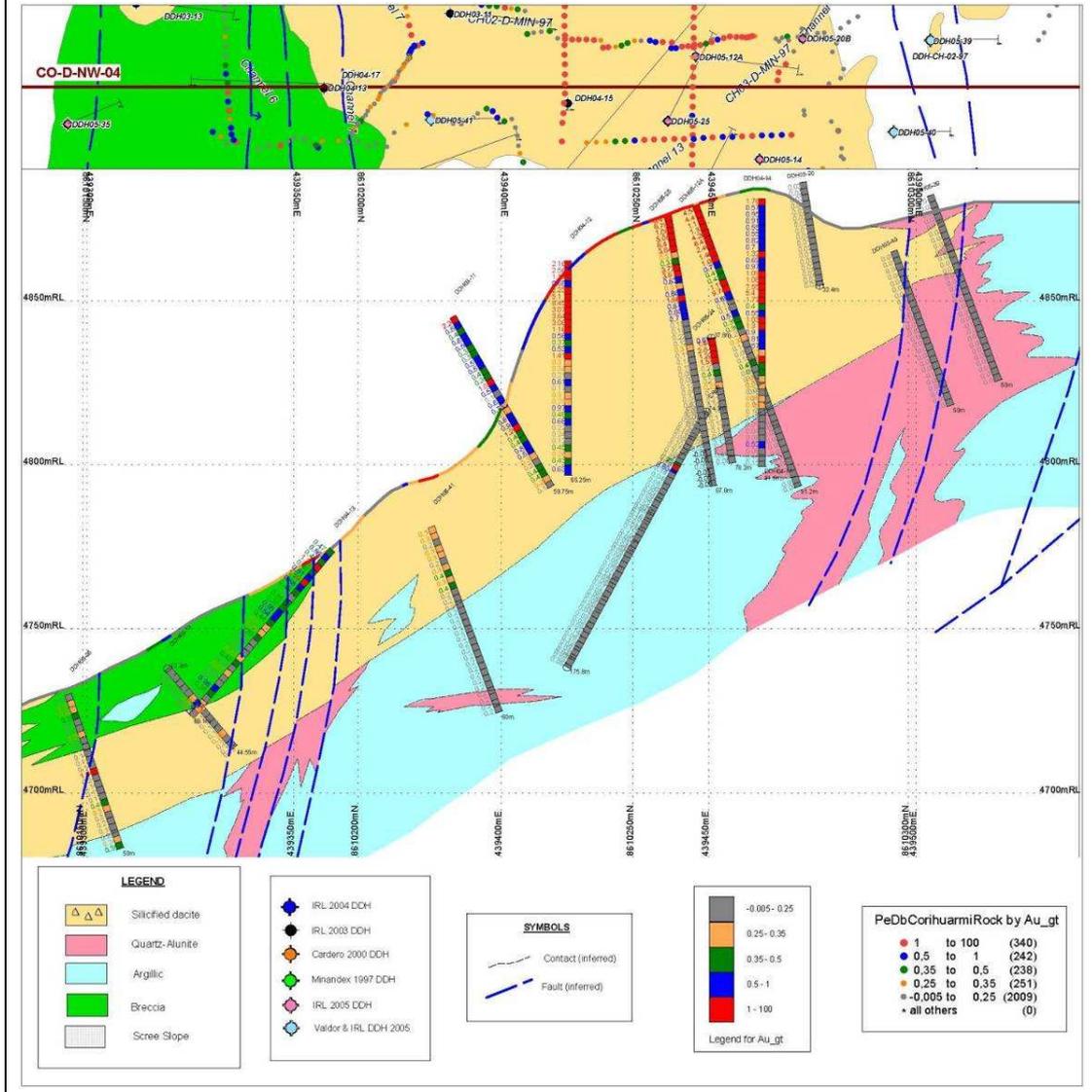
While the project resources and reserves are confined to the Susan and Diana zones, a series of other siliceous exposures have been recognised elsewhere within the Main Block tenements. These include the prospective Ely, Cayhua, Laura, Coyllor and Elena areas.

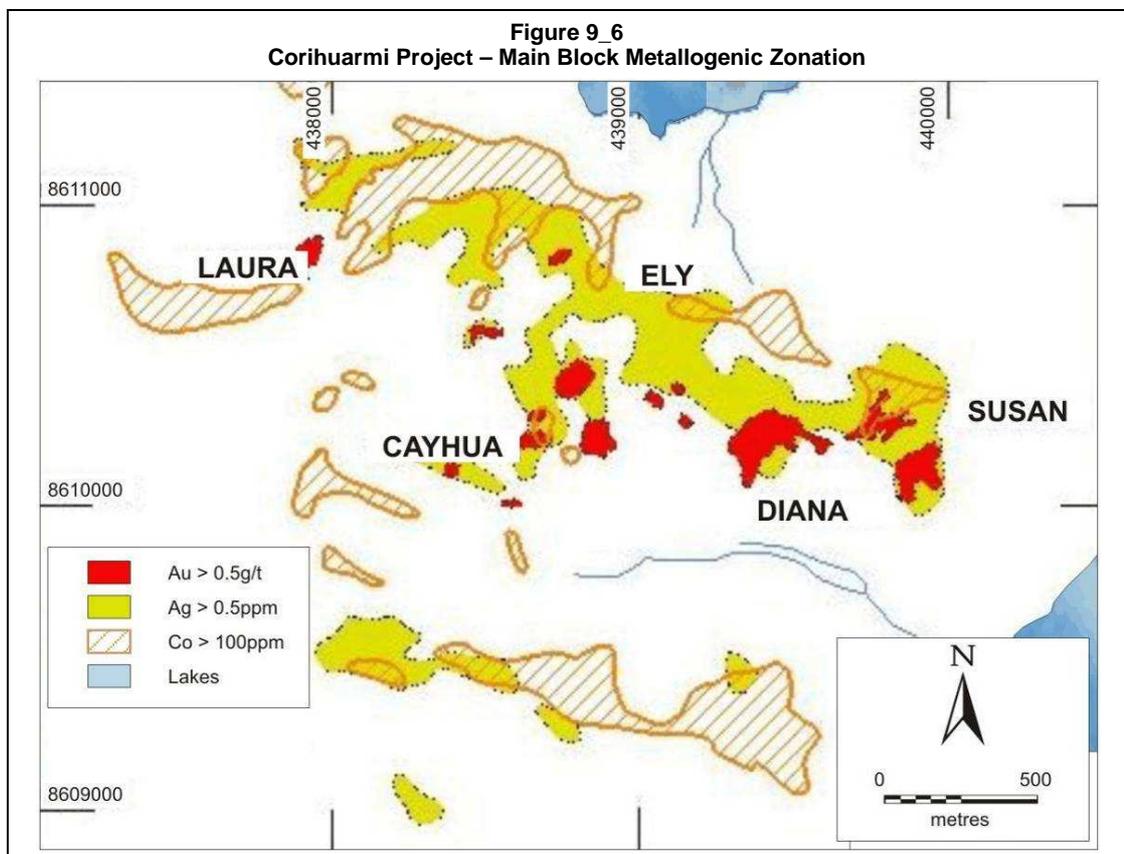
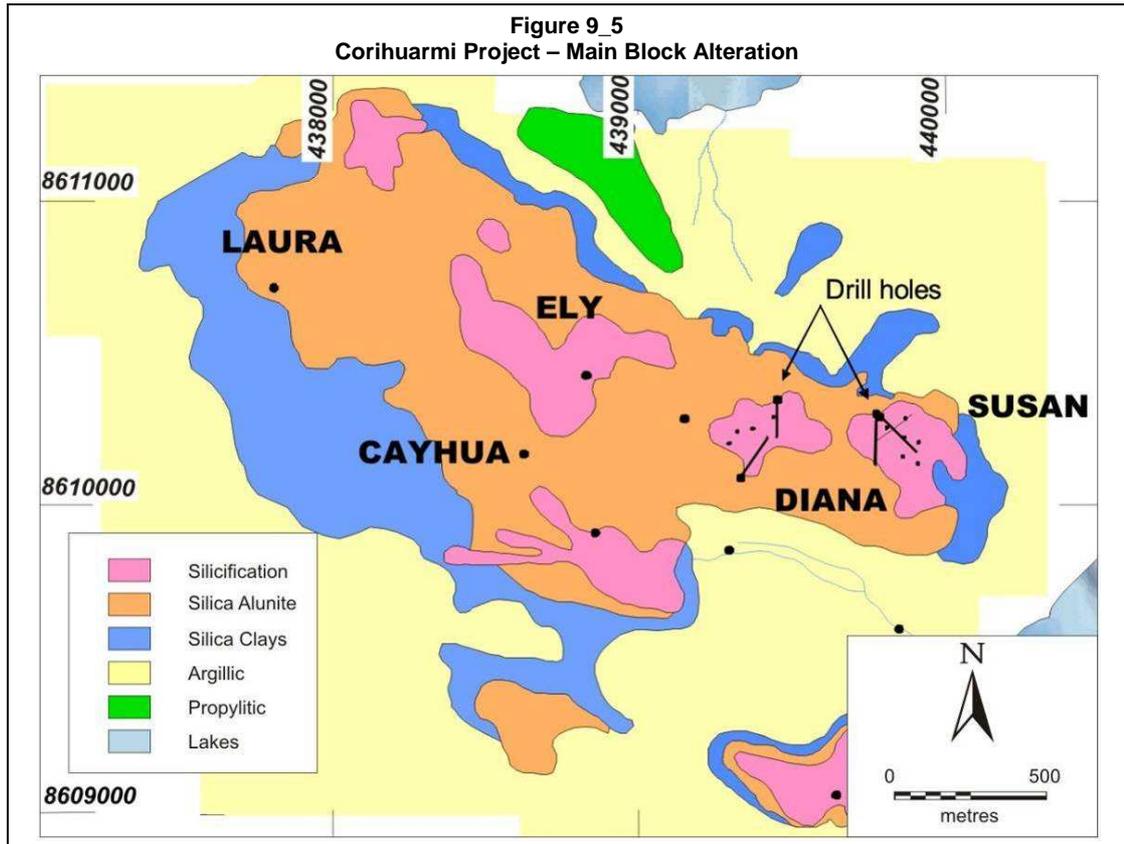


Mapping has identified a zoned alteration halo that broadly conforms to the interpreted caldera structure. The mineralogical zonation grades vertically downwards and laterally away from the identified zones of mineralized silicic material comprising the remnant cap to the hydrothermal system as shown in Figure 9\_5. Immediately below and laterally away from the exposures of vuggy silica is an extensive zone of silica-alunite alteration, which grades into a silica-clay zone, essentially defining the caldera structure. This is surrounded by pervasive argillic alteration that extends throughout remaining portions of the entire volcanic centre.

A distinctive metallogenic zonation also appears to define elements of the caldera structure, as evident in a compilation of the various geochemical datasets as shown in Figure 9\_6. The caldera appears to be defined by an outer halo of anomalous zinc, along with an inner halo of coincident barium, gold, arsenic, antimony, bismuth and mercury. Stronger copper and molybdenum identified by drilling along the southern margin of the mineralized bodies is most likely to represent root zone or feeder structures that transgress the dacite dome. An isolated zone of propylitic alteration is mapped at the northern extremity of the structure. It is unclear, however, if this is related to the same system or a preserved remnant of an earlier regional alteration event that has been over-printed by the main mineralising system.

**Figure 9\_4**  
**Corihuarmi Project - Diana Deposit – Representative Drill Section**





## 10 EXPLORATION

Bedrock sampling, particularly chip channel sampling in conjunction with diamond core (DC) and Reverse Circulation (RC) drilling have been the dominant exploration tools of MIRL for defining Mineral Resources at the Diana and Susan Zones. In addition they have utilised geological mapping, and geochemistry sampling, along with CSAMT geophysical surveys.

In addition to the main Susan and Diana current mine areas, the property includes the Laura, Ely and Cayhua prospects that have been defined by a combination of soil geochemistry and exploration diamond drilling. Results from the drilling have not been positive and as such no further proposed drilling has been proposed by MIRL on these prospects.

Exploration surveys and interpretations completed to date within the Project have largely been planned, executed and supervised by national MIRL personnel, supplemented by consultants and contractors for more specialised or technical roles. The data is considered to be of good quality (refer to Sections 11 to 14).

Coffey Mining considers the exploration targets justify further exploration as drilling of these epithermal targets to date is minimal and there is potential to identify additional mineralization in the MIRL permits.

## 11 DRILLING

### 11.1 Introduction

The principal methods used for exploration drilling at Corihuarmi have been diamond core (DC) drilling. Reverse circulation (RC) drilling has also been utilised in grade control definition and drilling of the Scree mineralization. In addition, 60 surface trenches were completed, totalling 4,120m in length.

Table 11.1\_1 summarises pertinent drilling statistics. The Susan and Diana deposits have been drilled at a nominal spacing of 25m to 50m.

Table 11.1_1 Corihuarmi Project Summary Drilling Statistics					
Company/Year	Drillholes	Metres	Contractor	Drill Rig	Sample Size
Minandex (1997)	3	755	Unknown	Longyear LF70	Unknown
Cardero (2000)	9	1975,15	Unknown	Unknown	HQ, NQ
MIRL (2003 - 2010)	109	6621	MDH	Longyear 34	HQ
MIRL (2005 - 2010)	148	8190	Not provided	Not provided	RC – 5 ¼
MIRL (2005 - 2010)	18955	97743	Not provided	Not provided	Blast Hole -6'

### 11.2 Drilling Procedures

#### 11.2.1 Diamond Drilling Procedures

All diamond drilling was completed by MDH contractor. Most diamond core holes were drilled HQ diameter.

Based upon inspection of various core trays available on site and review of the available reports, Coffey Mining considers that diamond core drilling has been carried out to expected industry standards. One issue that has potentially affected the underestimation of gold from the initial feasibility resource estimate is that the diamond drilling and subsequent cutting of the core has effectively washed some of the fines material out of the sample. These fines can preferentially contain gold and as a result the sample method may underestimate the contained gold.

#### 11.2.2 Reverse Circulation Drilling Procedures

Sample recoveries were not recorded by MIRL although were reportedly high. Coffey Mining is unable to validate the recoveries of this RC drilling.

#### 11.2.3 Blasthole Drilling

Blasthole drilling is used for blasting and also for grade control sampling. The holes are all vertical to about 5m depth and are rotary air blast samples which effectively result in wall contamination.

### **11.3 Drilling Orientation**

DC and RC Drillholes were generally drilled to north northwest at between -34 degrees to -90 degrees dip. Holes were targeted to perpendicularly intersect the main trend of mineralization. The Diana and Susan deposits have been drilled at a nominal spacing of 25m to 50m.

### **11.4 Surveying Procedures**

#### **11.4.1 Accuracy of Drillhole Collar Locations**

Drillhole collars were surveyed by MIRL surveyors using total station. Survey accuracy is reported as  $\pm 0.5\text{m}$ .

Accuracy of the survey measurements meets acceptable industry standards.

#### **11.4.2 Downhole Surveying Procedures**

No downhole surveys have been undertaken. The deviation is however expected to be limited as the holes are generally less than 100m.

Coffey Mining would expect the short holes to have minimal deviation but have recommended to MIRL that in future they undertake surveys at the commencement of drilling to verify this.

## **12 SAMPLING METHOD AND APPROACH**

### **12.1 Diamond Core Sampling**

HQ and NQ diameter diamond core was sampled at lengths on average of 2m. Samples were numbered and collected in individual plastic bags with sample tags inserted inside.

Core mark-up and sampling has been conventional and appropriate. Core is not orientated for structural measurements. Coffey Mining recommends orienting core in future.

### **12.2 Reverse Circulation Sampling**

RC samples were collected at 5m intervals and quartered in riffle splitters. Sub-samples weighed approximately 1kg and were collected in cloth-lined sample bags.

Coffey Mining considers that 5m composites are too big to accurately and representatively split down to 1kg sub samples. The mineralization shows moderate homogeneity and Coffey recommend that shorter sample lengths (Commencing with 1m then potentially trialling 2m intervals be used in future).

The samples for the Scree RC drilling were collected on 1m and 2m intervals.

### **12.3 Blast Hole Sampling**

Smee (2009) observed the blasthole sampling methodology and made the following comments:

“Samples are taken with a small blasthole drill that is equipped with a suction device at the head that removes the finer particles from the cuttings as they are being blown up the hole. The cuttings are sent to a cyclone that dumps the coarser fragments into a bucket, and the fine particles are sent down a pipe to be discharged at the rear of the drill. That is, the sample is divided into three fractions according to particle size.

This division of sample according to particle size may compromise the validity of the grade estimate. It would be far better to have the blasthole drill produce a single pile of sample at the drill head. The normal method of collecting blasthole samples is to place a skirt around the head to prevent cuttings from flying all over and to protect the cuttings from wind and water loss. Pie samplers are used to collect a representative sample of the cuttings. The pie samplers are inserted under the skirt before the hole is started, and removed when the proper depth of hole is reached. The sampler can be removed before the over drill is done so as to alleviate the potential of dilution from the overdrill cuttings.”

## 12.4 Surface Trench Sampling

Digging and sampling procedures for the surface trenches were not available. The trench data was used in a very broad manner to help model the mineralized zones, but was not included in the actual resource estimation completed by Miguel Zulueta Torres on behalf of MIRL (refer to Section 17.2).

RSG Global (now Coffey Mining) undertook a number of analyses in the 2006 Resource estimate to establish if trench/channel samples are materially different to those obtained from drillholes.

Coffey Mining did not identify any conclusive and consistent bias between the average trench and diamond drilling grades, and between sampling with significantly different volumetric support and orientations. Based on this analysis, Coffey Mining did not identify any reason for the trench data to be excluded from the resource estimate.

## 12.5 Logging

Diamond core was logged in detail for geological, structural and geotechnical information, including rock quality designation (RQD) and core recovery. Whole core was routinely photographed. Review by Coffey Mining of selected geological logs against actual core showed no significant discrepancies or inconsistencies.

Diamond core and RC chip logging have been conventional and appropriate.

## **13 SAMPLE PREPARATION, ANALYSES AND SECURITY**

### **13.1 Sample Security**

Reference material is retained and stored in Lima, including half-core and photographs generated by diamond drilling, and duplicate pulps and residues of all submitted samples. All pulps are stored in Lima at the MIRL storage base.

### **13.2 Sample Preparation and Analysis**

#### **13.2.1 CIMM Laboratory**

The CIMM laboratory was responsible for the preparation and analysis of the assay samples taken from the resource holes. The procedure for this laboratory is described below.

Samples were digitally weighed, dried to a maximum of 120°C (for wet samples), crushed to 70% < 2mm (10 mesh), riffle split to 250g, and pulverised to 85% < 75µm (200 mesh). 50g pulps were submitted for chemical analysis.

Chemical analysis consisted of fire assay (FA) with atomic absorption spectrometry (AAS) finish, using 50g sub-samples. Those samples that analysed  $\geq 5\text{g/t Au}$  were analysed using gravimetric methods.

#### **13.2.2 Corihuarmi Mine Assay Laboratory**

The Mine laboratory was commissioned in 2007 and commenced analysis of all blast hole sampled for grade control purposes. (CIMM continued to analyses for the resources holes) Smee (Feb 2009) completed a mine laboratory audit and made a number of recommendations to improve the mine laboratory procedures. His recommendations included:

- Replace the old jaw crusher
- Replace pulverisers with LM-2 units
- Increase compressed air for cleaning units
- Insert preparation duplicates 1 in 30
- Use certified weights for the microbalance
- Improve overall ventilation and extraction and save the crushed reject
- Utilise certified standards

MIRL had implemented these changes which were in place during the Coffey Mining visit in May 2009. The laboratory has a similar methodology to the CIMM laboratory including:-

- 500g sample pulverised to 90% passing #200
- 50g sample digested by aqua regia then analysed by 50g Fire Assay with an AAS finish.

### **13.3 Adequacy of Procedures**

Coffey Mining considers the sample preparation to be conventional with no issues identified.

## 14 DATA VERIFICATION

### 14.1 AMEC Review 2006

In January 2006 AMEC completed a review of the QAQC data up until that date. The study into the QAQC of the collected data for the Project included the history of exploration, drilling, sample collection, sample preparation and analysis and documents the results of AMEC's investigation into the data quality and data validation. The following summarizes their key findings:

- AMEC identified inconsistencies in the location of drillholes but concluded these were not significant as the differences were of 1 to 2m in any direction.
- Downhole surveys were not obtained for all drillholes. AMEC concluded that significant deviations are unlikely given most drillholes were of less 100m in depth.
- AMEC assessed the results of the final MIRL QAQC program and concluded that in general results were within acceptable limits of  $\pm 10\%$ .
- For the trench and channel sampling, AMEC identified a number of inconsistencies. MIRL subsequently resurveyed their locations and modified the database accordingly to resolve the inconsistencies.
- AMEC have stated that no QAQC was completed on the surface channel samples and suggested that perhaps the area of influence of these samples be restricted for the purpose of grade estimation or alternatively excluded all together.
- Several errors in both drillhole and trench/channel information were identified by AMEC during the review of the project's database. MIRL has reported that it has been able to resolve a majority of the issues.

AMEC have acknowledged that MIRL has attempted to resolve many of the anomalies and issues identified during their study but consider most not to be of a material impact for resource estimation. The exception is the reliability of the surface trench samples.

### 14.2 Standards and Duplicates Review

Coffey Mining completed a review of the available standards and duplicates data using the QC Assure statistical software. MIRL never utilised a QAQC program up until 2005 at which time it commenced inserting standards, blanks and duplicates at a frequency of 1 in 30.

#### 14.2.1 MIRL Standards

MIRL has utilized 11 standards that were certified by the Actlab laboratory in Lima. The standards were prepared with mineralized rock from Corihuarmi.

Coffey Mining has not been provided the results for A9051, B9052 and C9053 but it was reviewed by AMEC in 2005 and AMEC reported no outliers.

Table 14.2.1_1 Corihuarmi Project Standards Utilized by Minera Submitted Standards										
Standard (ppm)	Expected Value (EV)	+/-10% (EV)	Failed	No. of Analyses	Min. (%)	Max. (%)	Mean (%)	% Within +/- 10 of EV	% RSD (from EV)	% Bias (from EV)
A9051	0.74	0.66 to 0.81	0	10				100		5
B9052	0.429	0.38 to 0.47	0	5				100		8.2
C9053	0.326	0.29 to 0.36	0	11				100		6.2
A	1.168	1.05 to 1.28	3	23	0.94	1.17	1.06	87		
B	1.133	1.02 to 1.25	3	23	0.96	1.14	1.04	87		
C	1.59	1.43 to 1.75	3	24	1.04	1.71	1.43	88		
D	10.035	9.03 to 11.04	2	23	10.01	10.57	10.26	91		
STD9051	0.752	0.68 to 0.83	1	14	0.6	0.85	0.76	93		
STD9052	0.412	0.37 to 0.45	10	12	0.39	0.51	0.48	17		
STD9053	0.327	0.29 to 0.36	1	15	0.1	0.38	0.32	93		
STD9054	Blank	<0.05	0	16				100		

Coffey Mining reviewed the remaining standards results. Generally the laboratory results returned for these standards show acceptable accuracy with some obvious outliers that could be attributed to sample mix-ups and most just outside the 10% threshold applied by Coffey Mining. STD9052 was consistently high but this could be a factor of the quality of the standard used.

Coffey Mining recommends that MIRL purchase a sequence of commercially available certified standards which undergo more rigorous certification processes under a round robin program.

#### 14.2.2 MIRL Duplicate Analysis

##### Diamond Core Field Duplicates

A field duplicate was completed every 20 to 30 samples by MIRL. The method explained by MIRL was to randomly select one sample interval every 20m and to break it up using a hammer into small fragments <2cm, then to split these either by parting manually or via a splitter. Coffey Mining considers this practice flawed in that it is susceptible to human error and does not guarantee the crushing of the core to <2mm and to equal split.

Coffey Mining compared the results using the QC Assure software. The precision returned is poor as shown in Figure 14.2.2\_1 with 69% of the data within 30% HARD precision limits (305 samples in dataset).

This is possibly a reflection of the poor methodology of preparation explained above.

##### Diamond Core Pulp Duplicate

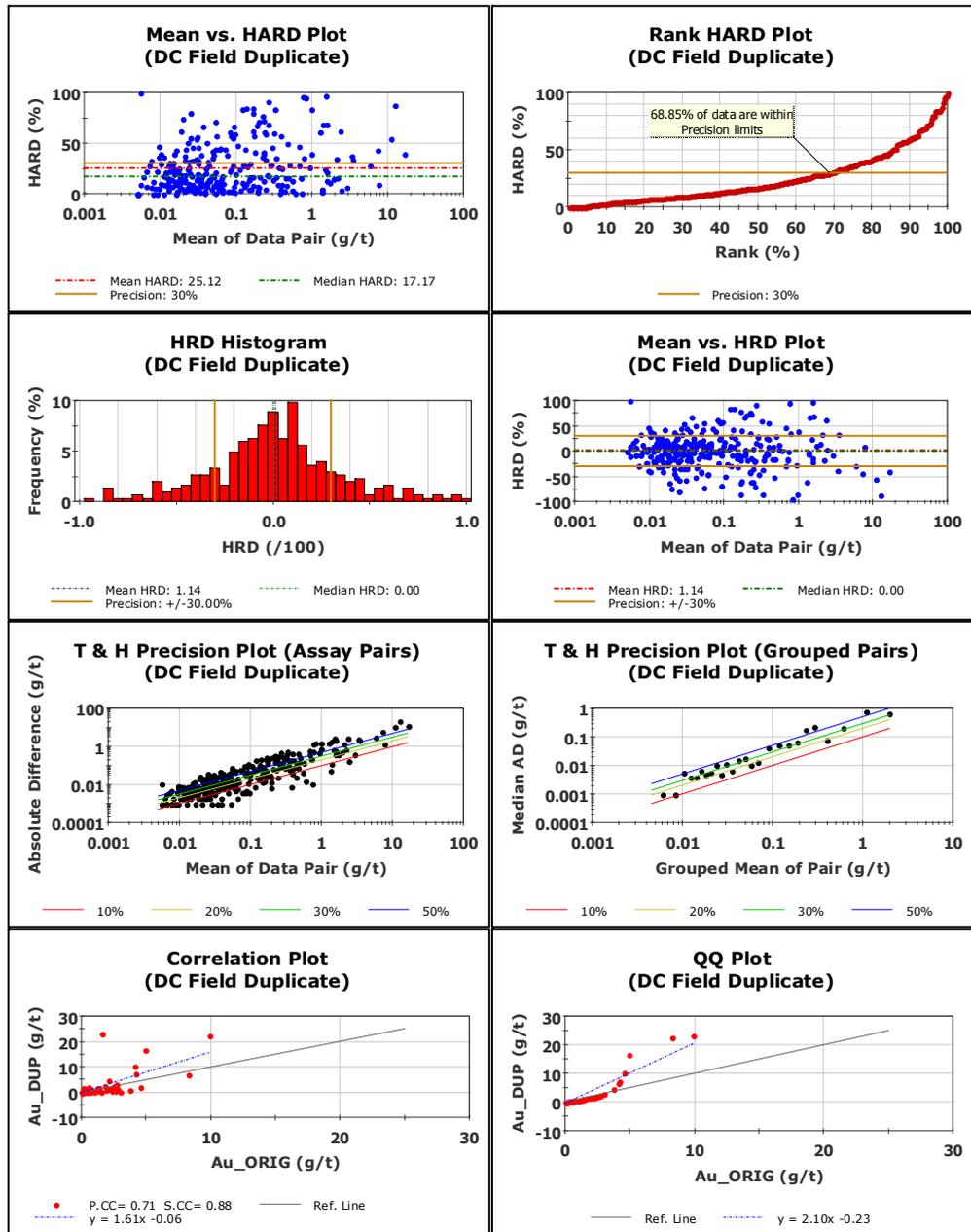
During the Corihuarmi Drilling Program, CIMM laboratory provided two pulps obtained from each sampled interval. MIRL personnel recoded all the samples and regularly sent the second pulp of the same sample as a Quality Control Procedure, with a new code, so it was blind to the laboratory.

The pulp duplicates returned a very good precision (104 samples) of 96% passing 10% HARD.

Figure 14.2.2\_1  
Diamond Core Field Duplicates

### Summary (DC Field Duplicate)

	Au_ORIG	Au_DUP	Units		Result
No. Pairs:	305	305		Pearson CC:	0.71
Minimum:	0.00	0.00	g/t	Spearman CC:	0.88
Maximum:	9.87	23.29	g/t	Mean HARD:	25.12
Mean:	0.34	0.49	g/t	Median HARD:	17.17
Median:	0.04	0.04	g/t	Mean HRD:	1.14
Std. Deviation:	1.00	2.26	g/t	Median HRD:	0.00
Coefficient of Variation:	2.92	4.58			



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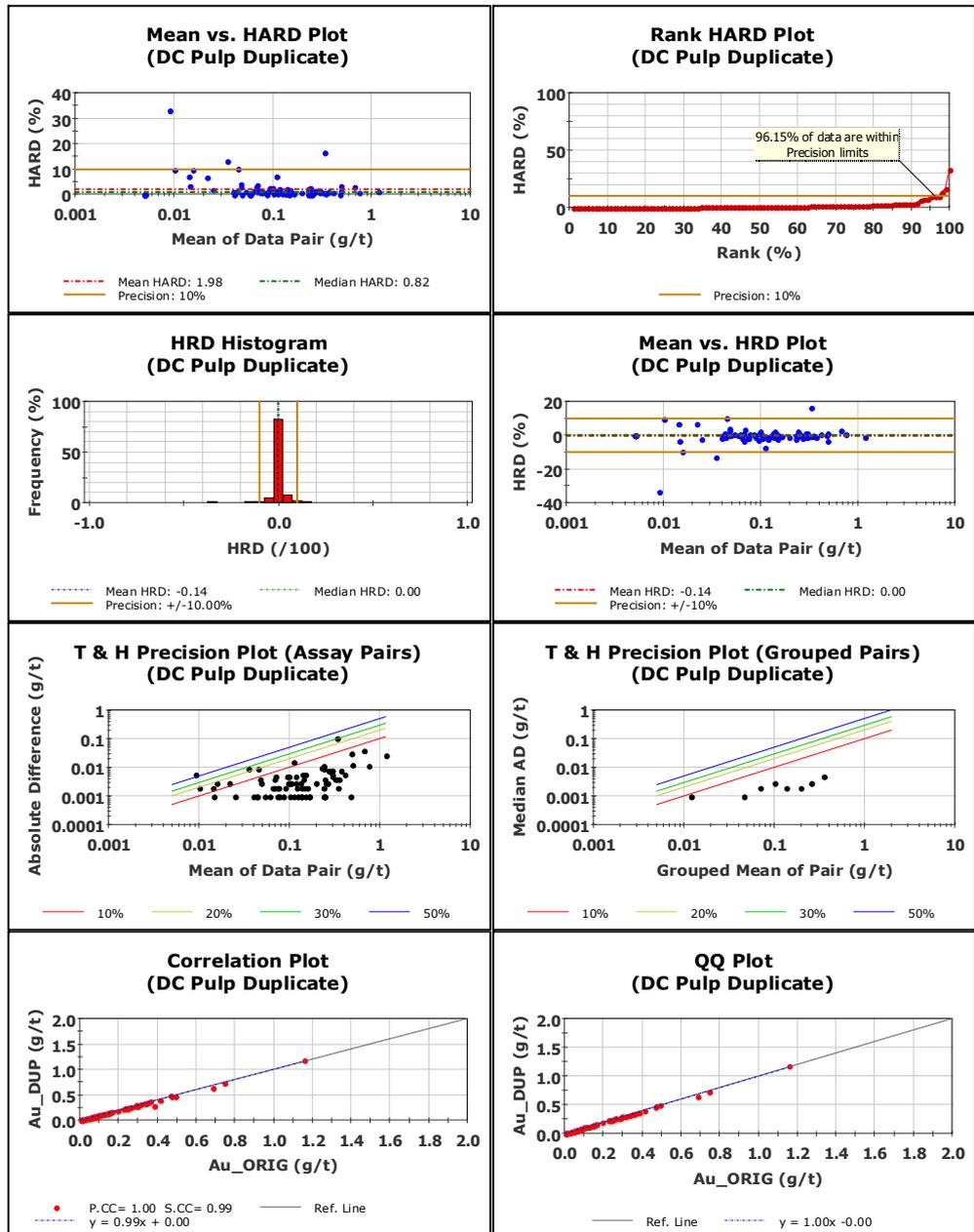
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Page 1

Figure 14.2.2 2  
Corihuarmi Project- Diamond Core Pulp Duplicate

### Summary (DC Pulp Duplicate)

	Au_ORIG	Au_DUP	Units		Result
No. Pairs:	104	104		Pearson CC:	1.00
Minimum:	0.01	0.01	g/t	Spearman CC:	0.99
Maximum:	1.16	1.18	g/t	Mean HARD:	1.98
Mean:	0.16	0.16	g/t	Median HARD:	0.82
Median:	0.10	0.11	g/t	Mean HRD:	-0.14
Std. Deviation:	0.17	0.17	g/t	Median HRD:	0.00
Coefficient of Variation:	1.11	1.11			



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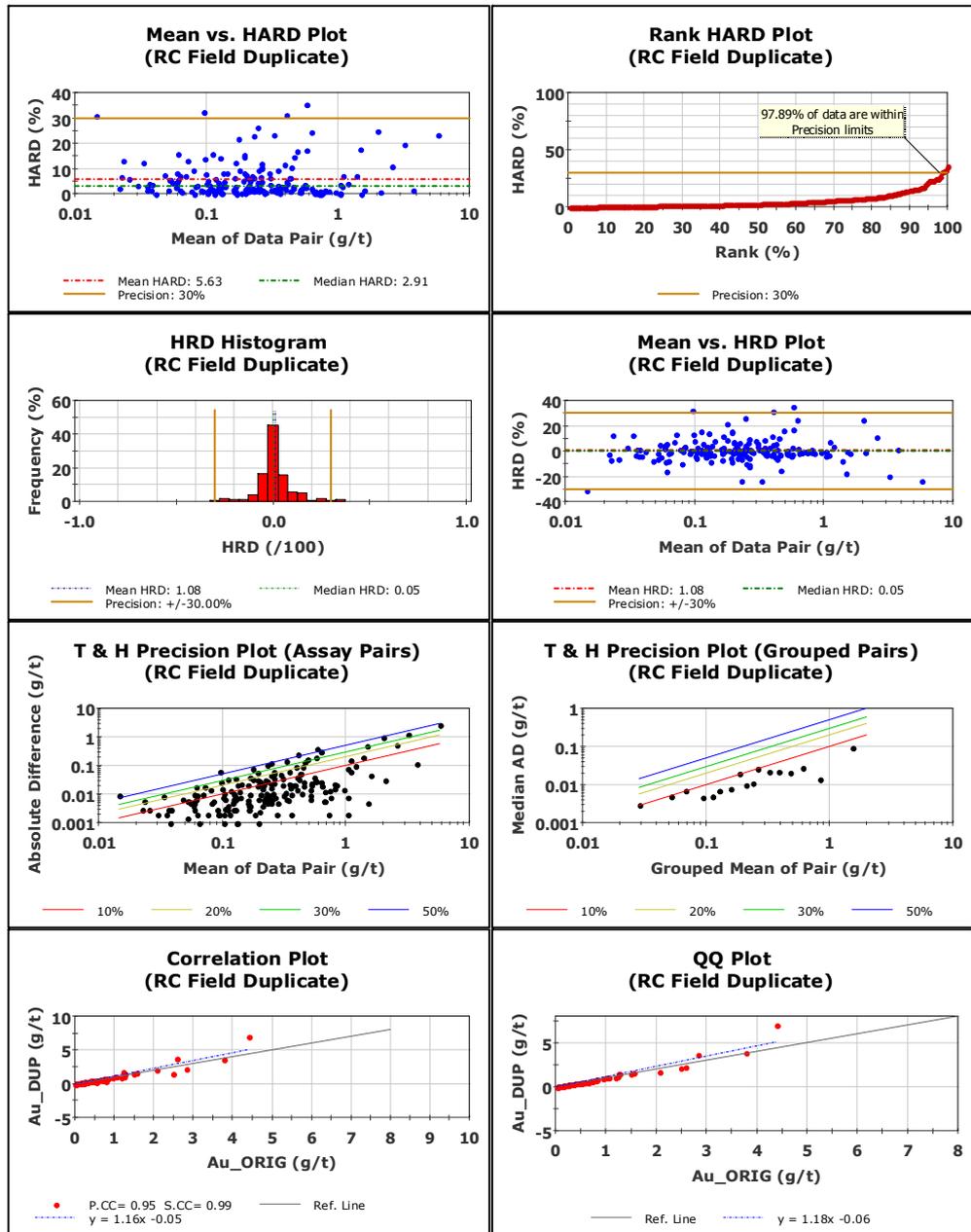
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Figure 14.2.2.3  
RC Field Duplicates

### Summary (RC Field Duplicate)

	Au_ORIG	Au_DUP	Units		Result
No. Pairs:	190	190		Pearson CC:	0.95
Minimum:	0.01	0.02	g/t	Spearman CC:	0.99
Maximum:	4.40	7.07	g/t	Mean HARD:	5.63
Mean:	0.39	0.40	g/t	Median HARD:	2.91
Median:	0.22	0.21	g/t	Mean HRD:	1.08
Std. Deviation:	0.58	0.70	g/t	Median HRD:	0.05
Coefficient of Variation:	1.47	1.76			



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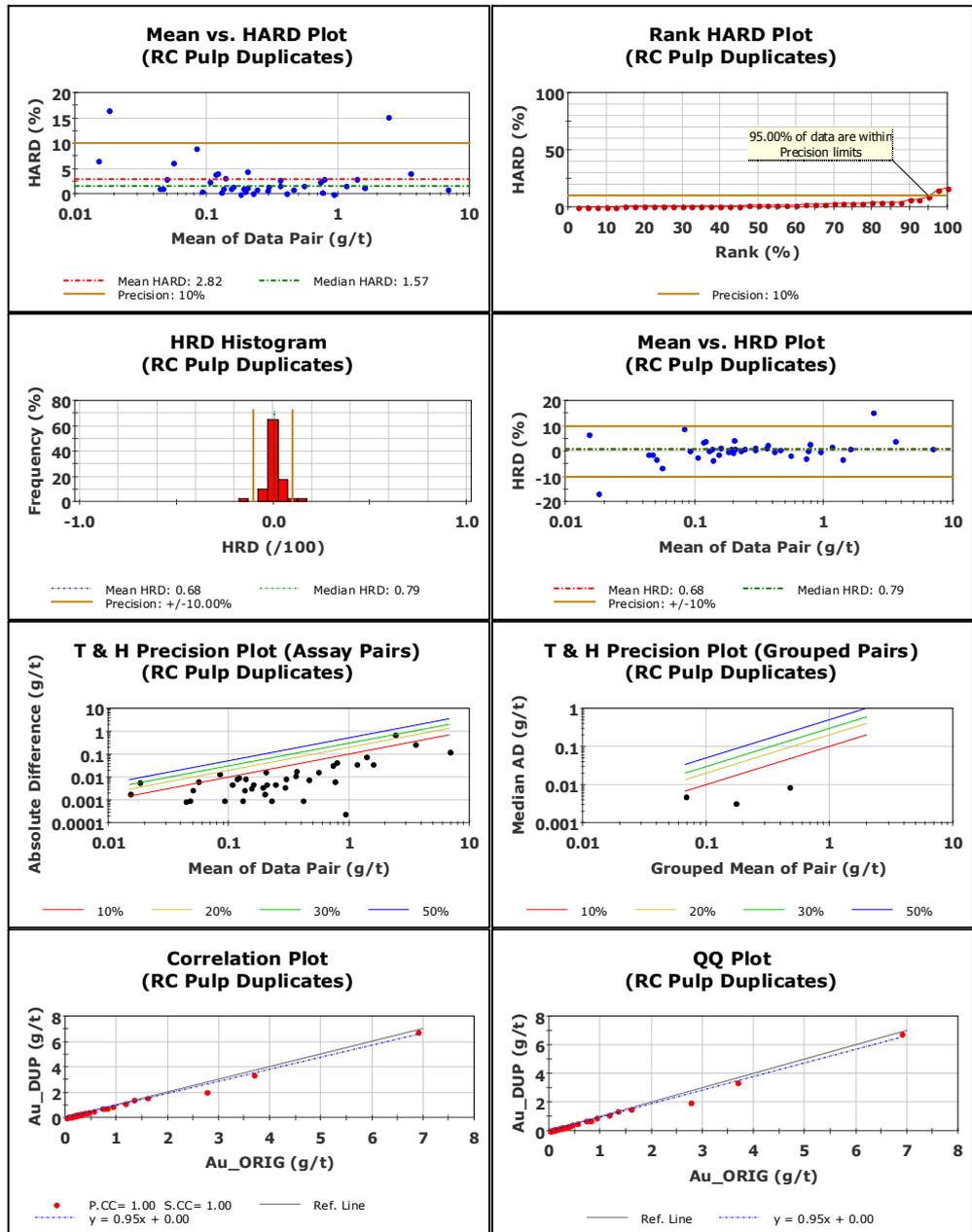
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Page 1

Figure 14.2.2 4  
Corihuarmi Project- RC Pulp Duplicate

### Summary (RC Pulp Duplicates)

	Au_ORIG	Au_DUP	Units		Result
No. Pairs:	40	40		Pearson CC:	1.00
Minimum:	0.02	0.01	g/t	Spearman CC:	1.00
Maximum:	6.90	6.77	g/t	Mean HARD:	2.82
Mean:	0.66	0.62	g/t	Median HARD:	1.57
Median:	0.21	0.20	g/t	Mean HRD:	0.68
Std. Deviation:	1.24	1.18	g/t	Median HRD:	0.79
Coefficient of Variation:	1.89	1.89			



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### RC Field Duplicates

A RC field duplicate is completed every 30 samples by MIRL. This field duplicate is complete on the final 5kg sample remaining after reducing from 5m. This is not a true reflection of the precision of a 5m composite but a reflection of a 5kg composite. To complete a true field duplicate Coffey Mining would recommend that the duplicate is created in the same method as the original sample.

Coffey Mining compared the data using the QC Assure software. The RC Field Duplicate returned a very good precision (190 samples) of 98% passing 30% HARD. This reflects that the precision of splitting a 5kg sample is very good but as explained above does not reflect the 5m samples. Coffey Mining recommends that a maximum 2m composite is used in future.

### RC Pulp Duplicate

During the Corihuarmi drilling program, CIMM laboratory provided two pulps obtained from each sampled interval. MIRL personnel recoded all the samples and regularly sent the second pulp of the same sample as a Quality Control Procedure, with a new code, so it was blind to the laboratory.

The RC pulp duplicates returned a very good precision (40 samples) of 96% passing 10% HARD.

## **14.3 Verification Sampling**

Independent verification sampling has not been carried out by Coffey Mining as this is an operating mine.

## **14.4 Adequacy of Procedures**

Up until 2005 MIRL had no QAQC program in place. A comprehensive study was undertaken by AMEC at this time including some umpire assaying of pulps. AMEC did not identify any material issues.

Coffey Mining believes that the field duplicate results are not appropriately reflecting the 5m composite methodology and recommends reducing the composite length of RC to a maximum of 2m, given the style of gold mineralization

Coffey Mining has reviewed the available QAQC data from MIRL and can conclude that although there are a number of deficiencies in the methodologies that no material flaws were identified.

Coffey Mining recommends that although not practical given the stage of mining at Corihuarmi, that in future twin holes of the DC and the RC be undertaken to identify if any washing of gold bearing fines is occurring that will result in a negative gold bias.

## 15 ADJACENT PROPERTIES

There are no advanced gold properties in the immediate vicinity of Corihuarmi.

## **16 MINERAL PROCESSING AND METALLURGICAL TESTING**

### **16.1 Mill Operations**

#### **16.1.1 Introduction**

The metallurgical section of this report was based on data sent by MIRL in the form of spreadsheets and monthly reports from the Corihuarmi project site and the Corihuarmi Feasibility Study.

#### **16.1.2 Process Description and Flowsheet**

The Project is a heap leach operation utilizing a multiple-lift, single-use leach pad. Prior to placing the ore onto the leach pad the ore is primary crushed. Processing of ore began in January 2008 when irrigation of the heaps was started.

Figure 16.1.2\_1 provides a flowsheet of the heap leach process. The following describes the heap leach operation in more detail.

##### Crushing

Ore from the mine, with a moisture content of 4 to 5% is transported by trucks to the Run of Mine (ROM) pad. The ore is then either dumped directly into the coarse ore bin (COB) or can be placed on the ROM pad and fed into the COB by front end loader.

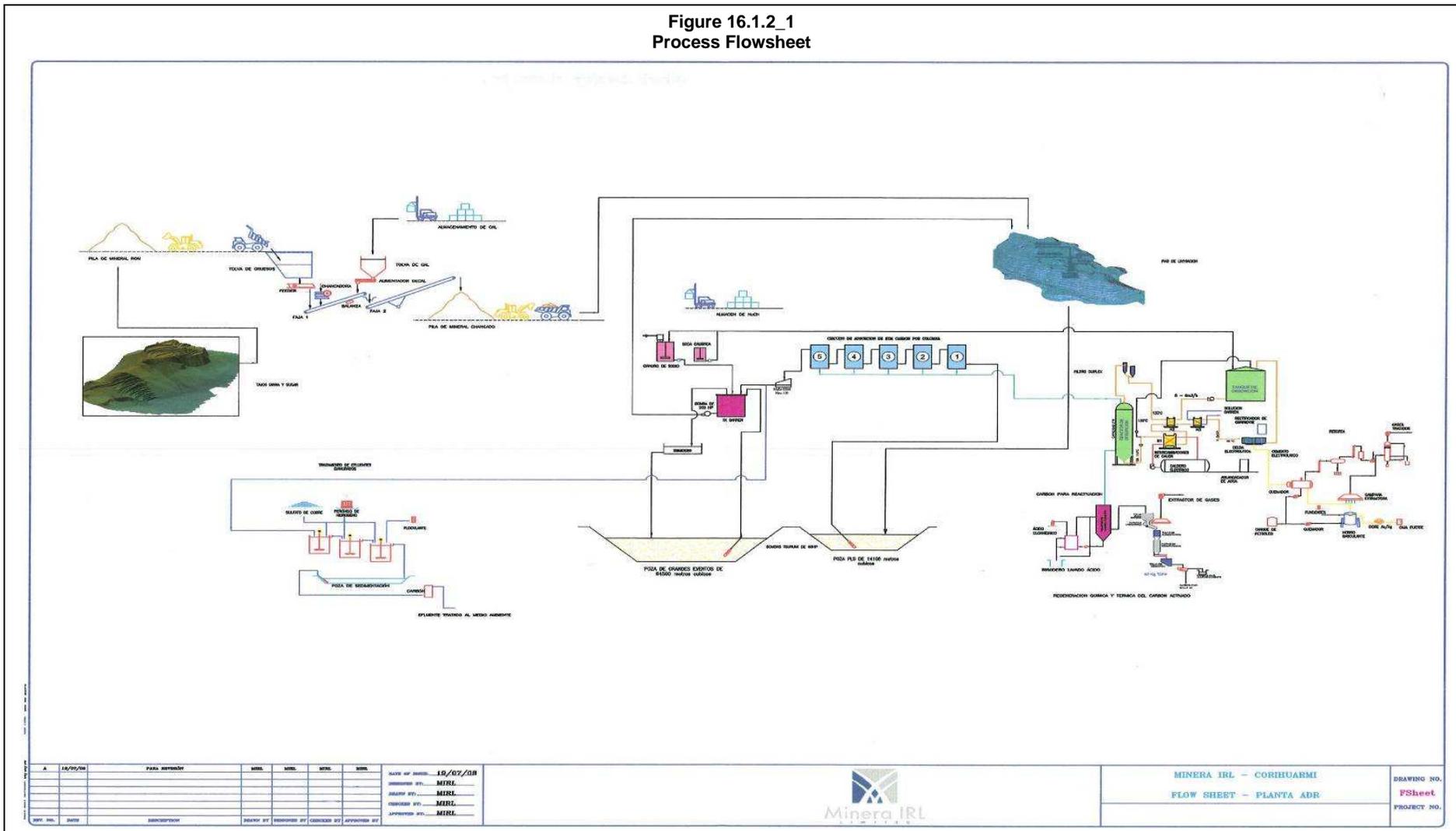
Ore is withdrawn from the COB by a vibrating scalping grizzly feeder with 100mm gap size. The plus 100mm is fed into the primary jaw crusher. The minus 100 mm grizzly undersize material and the crusher product both drop onto the jaw crusher discharge conveyor. As the ore travels along the conveyor it is weighted and lime is added. From this conveyor the ore is discharged onto a stacking conveyor and is stockpiled. The crushed material is reclaimed using a front end loader and trucks and transported to the heap leach pad.

##### Heap Leaching

Heap Leaching is carried out in a single stage system. Pregnant Leach Solution (PLS) is delivered to activated carbon contactors to remove the gold after which the solution is pumped back to the heap leach pad. The activated carbon in the contactors is stripped from the carbon in a Zadra elution plant and the gold is electrowon onto cathodes. Sludge is removed from the cathodes and retorted to recover mercury prior to being direct smelted to recover the gold into bullion ready for sale.

The current heap leach pad covers an area of seven hectares (Phase 1) and is designed to treat 3000tpd. The Phase 2 leach pad has been extended by eight hectares to increase production to 4500tpd.

Figure 16.1.2\_1  
Process Flowsheet



Trucks enter the leach pad via a ramp at one end and dump the ore within one to two metres from the edge of the heap. A bulldozer is then used to push the material over the edge to achieve an even surface over the top at the lift height of eight metres.

The leach pad has a polyethylene geomembrane layer on the base and is divided into cells with an average area of 2,000m<sup>2</sup>. Each cell holds 20,000 tonnes of ore.

Irrigation of the cells begins with the primary pipe network, consisting of a barren solution tank, 200HP pump and 10" Ø HDPE. This line is located in lined channel and runs to a manifold at the top of the heap. From the manifold the secondary pipe network completes the irrigation. The secondary pipe network consists of a 4" Ø Lay Flat pipes running down the leaching cells. Each Lay Flat pipe has hoses branching from them with drippers for irrigation. Sprinklers that are connected to the pipes have been in use since 2008 as a means of increasing the production rate to 4500t/d. The heap is irrigated at a rate of 10Lt/h/m<sup>2</sup>.

Caustic soda is added to the barren solution tank to maintain the pH of the solution between 10.0 and 10.5 to avoid cyanide losses. Cyanide is also added to the barren solution tank to maintain a concentration of 200ppm

The solution that percolates through the heap is collected by the underdrainage piping network which is connected to two HDPE pipes that transfer the solution to the Pregnant Leach Solution (PLS) pond. From the PLS pond the solution is pumped to the adsorption circuit. The adsorption circuit is filled with activated carbon. The activated carbon adsorbs the gold from solution and the barren solution (BS) exiting the adsorption circuit gravity flows back to the barren solution tank and is used for re-irrigating the heap again. The leaching cycle is completed in 90 days.

Anti-scalant is added to the barren solution to reduce the formation of scales on the irrigation pipes, heap top and the activated carbon.

An excess solution (storm water) pond is included to contain leach solution in excess of that required for normal operations due to storm events. Excess solution will ultimately return to the barren tank as makeup solution to replace water lost in the process due to evaporation and wetting of the ore.

### Adsorption and Elution

The present adsorption plant is capable of treating 200m<sup>3</sup>/hr of solution pregnant. The circuit consists of 5 cascade columns configure in series each containing 2t of activated carbon. The activated carbon adsorbs the cyanided gold complexes, silver and other metals in solution to remove them from the solution. When the carbon is loaded up 8,000g/t Au in the first carbon column, the carbon is removed from the column and sent to the elution circuit. Once this column is empty of carbon, carbon from the second column is loaded until it also reaches approximately 8,000g/t Au. All of the columns in the circuit will be cycled in series in this manner, with any of the columns being able to used to load gold prior to stripping. The last tank in the series is always filled with activated carbon that has been stripped and reactivated.

Stripping of the gold from the carbon (elution) is conducted in a 2t Zadra circuit at a temperature of 135°C. Barren solution, from the desorption tank, is pumped through a secondary heat exchanger and then into the primary heat exchanger prior to entering the column. The solution exiting the top of the column passed through the other side of the secondary heat exchanger, through a cooling heat exchanger to drop the temperature to 65°C. After cooling the solution passes into the electrowinning cell where the gold and any silver that is present is electrowon. The solution exiting the cell gravitates into the desorption tank and is then reused for stripping the gold from the carbon. The total time for desorption ranges between 11 hours and 13 hours.

The activated carbon is reactivated in a regeneration kiln followed by acid washing prior to being cycled back to the adsorption columns for further adsorption of gold and silver.

#### Harvesting and Smelting

The electrowinning cell contains 18 stainless steel cathodes and 19 anodes. The loaded cathodes are washed with high pressure water to remove the gold and silver from the surfaces. The precious metals are collected and filtrated and placed in a retort to remove any mercury that was collected in the process. The mercury free material is then smelted in a tilting furnace to produce Doré.

### **16.1.3 Plant Production**

#### Ore to Heap Leach Pad

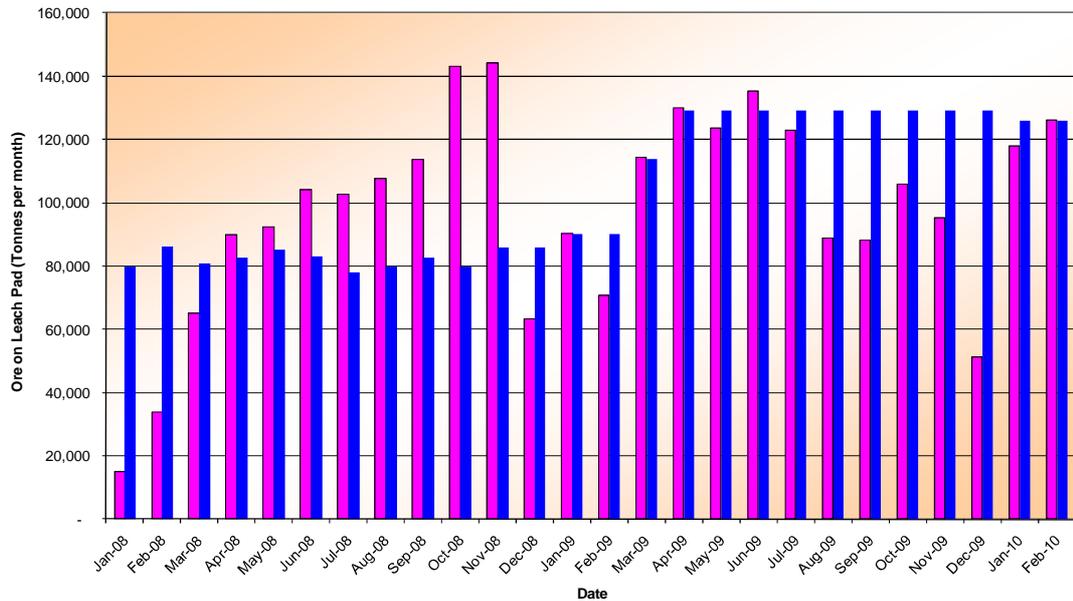
The ore placed on the heap leach pad since inception in January 2008 up to February 2010 is presented in Figure 16.1.3\_1 in tonnes per month and tonnes to date.

Initially ore placement on the leach pad was slow due to commissioning issues such as having a tight mining area and oversize in the ore to feed to the crusher.

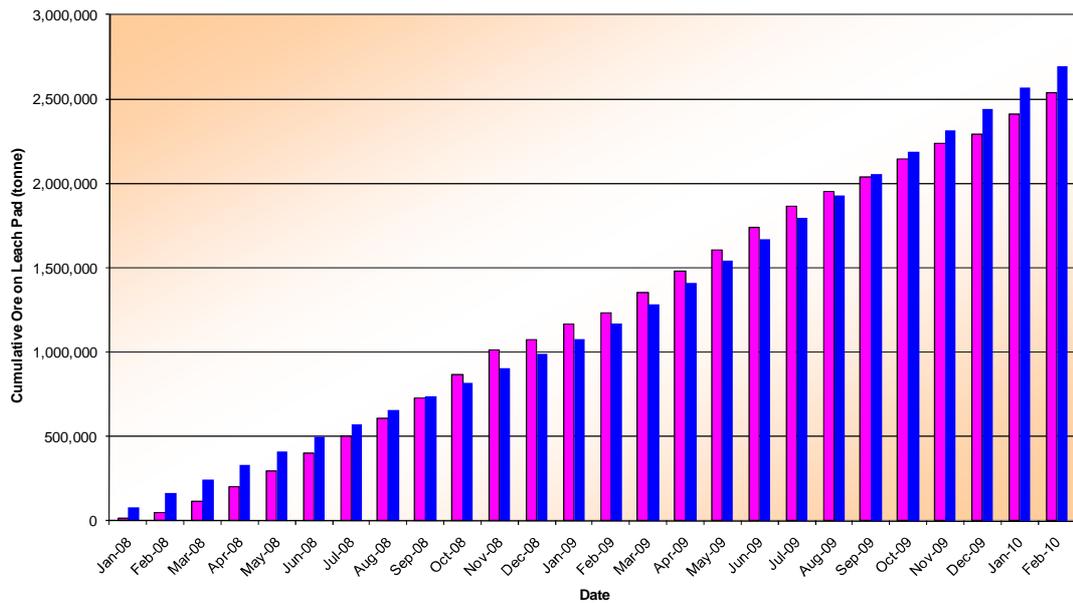
After April 2009 the rate of placement has exceeded the budget every month and hence the yearly budget. In the last month of 2008 the placement rate slowed again due to cessation of mining as the budgeted tonnes had been exceeded.

In early 2009 the placement was slow as a priority was placed on mining waste from the Susan pit to reach the high grade benches.

**Figure 16.1.3\_1**  
**Ore placed on Heap Leach Pad**



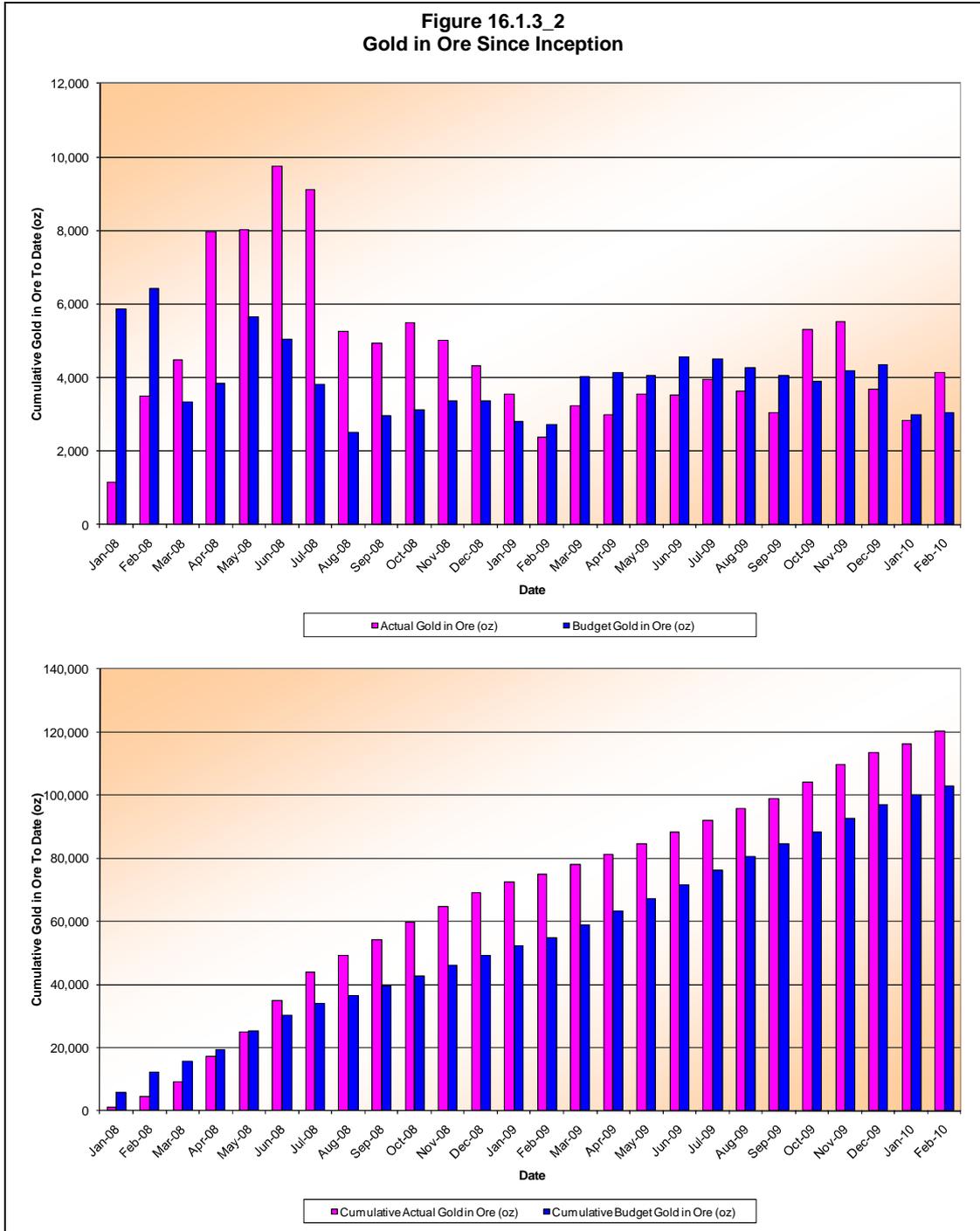
Actual Tonnes Processed Budgeted Tonnes Processed



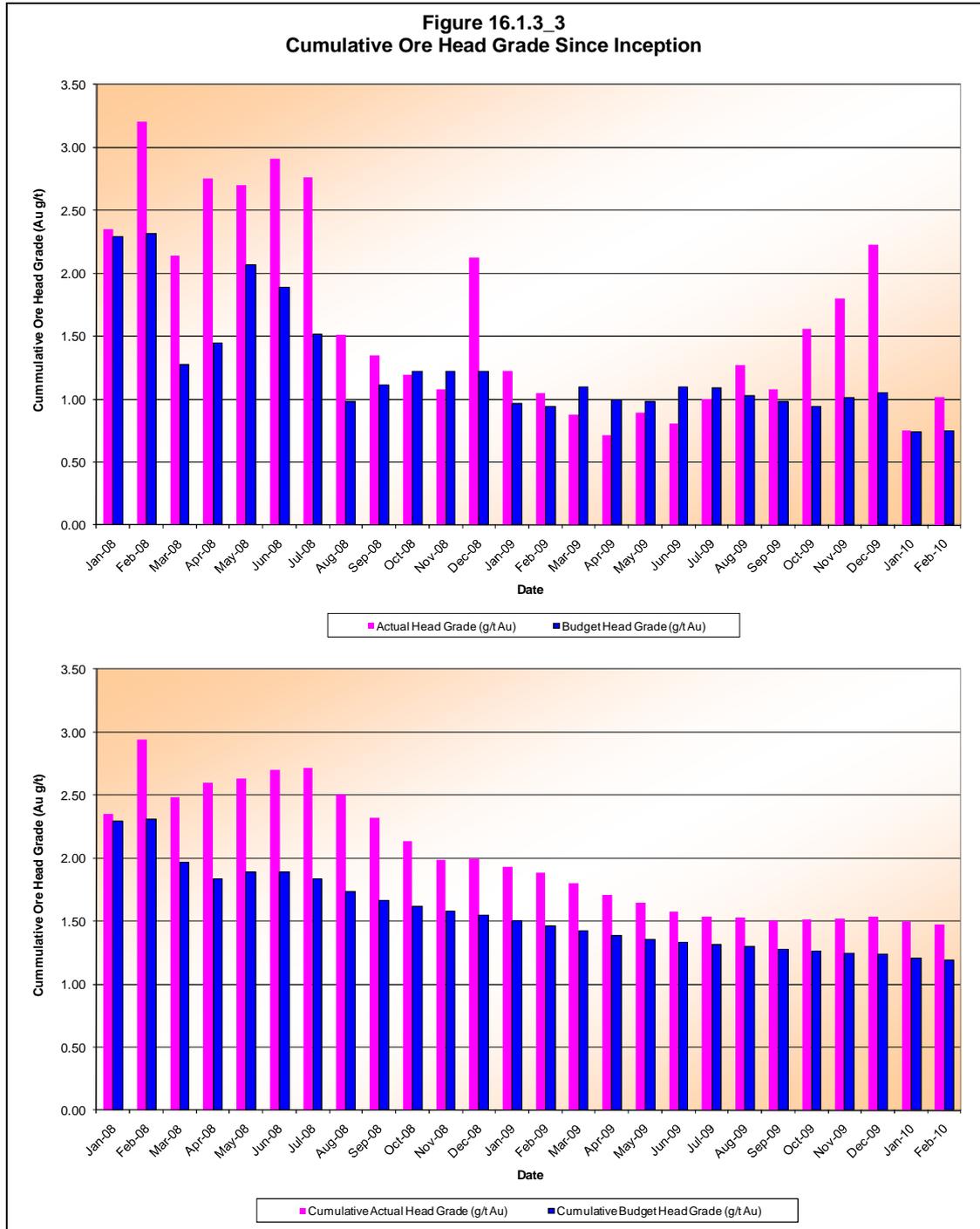
Cumulative Actual Tonnes Processed Cumulative Budget Tonnes Processed

Gold in Ore

Figure 16.1.3\_2 shows the gold in the ore compared with the budgeted gold since January 2008.to date.

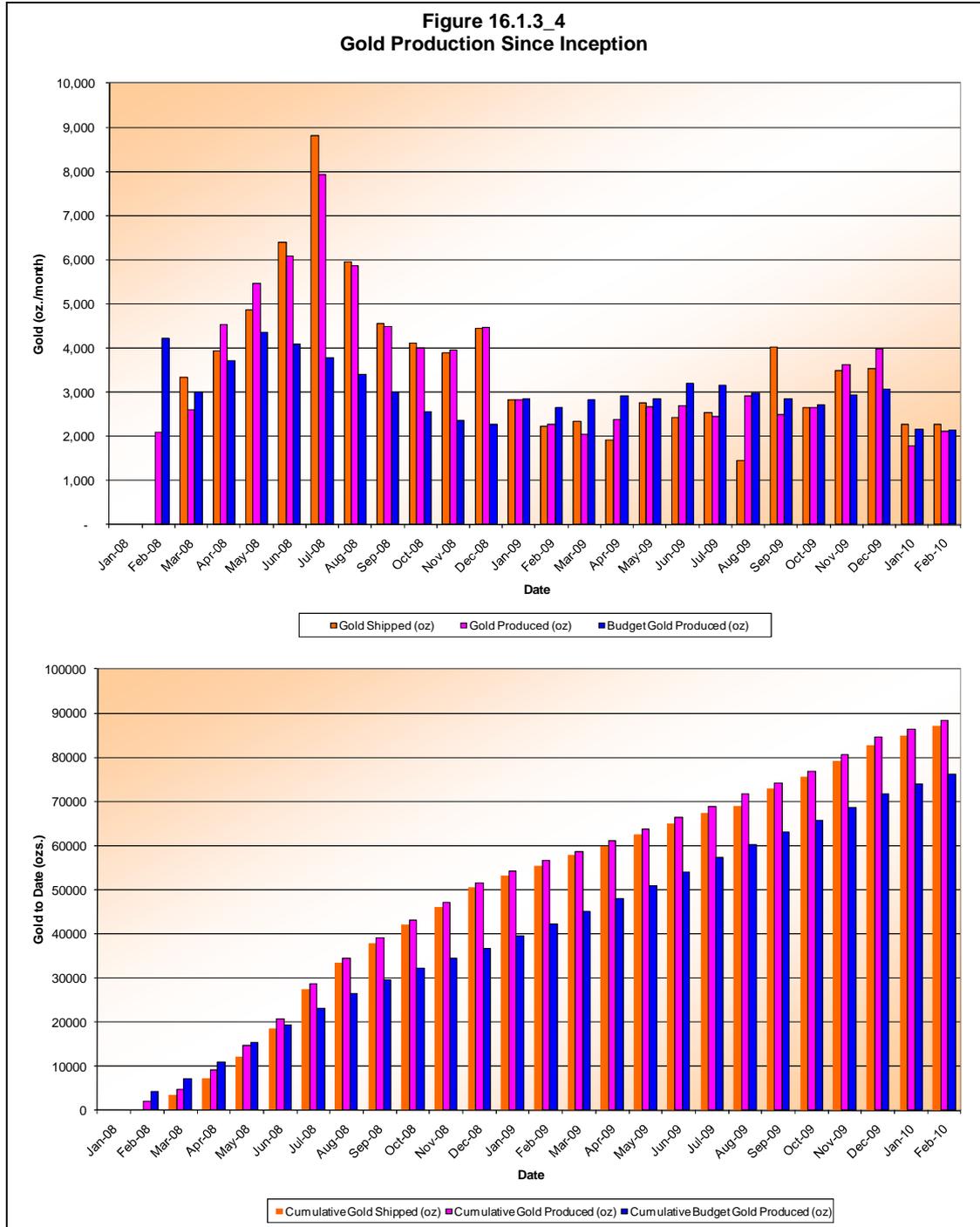


It can be seen that the gold in the ore to date has exceeded the budgeted gold for the majority of months. This is due to the actual head grade being significantly higher than budget in some months. The tonnage mined has fallen significantly behind budget from August to December 2009 placing extra pressure on the operations. Figure 16.1.3\_3 shows the cumulative gold head grade for the project up to January 2010. The actual head grade has exceeded the budgeted head grade by 24%.



Gold Production

Gold production (Gold in Dore) since inception is shown against budget and gold shipped (Payable gold) in Figure 16.1.3\_4. These figures show that the gold produced exceeded the budgeted gold by 16.2% over the first two years, due to higher head grades placed.



## Recovery

Figure 16.1.3\_5 shows the cumulative gold recovery since inception.

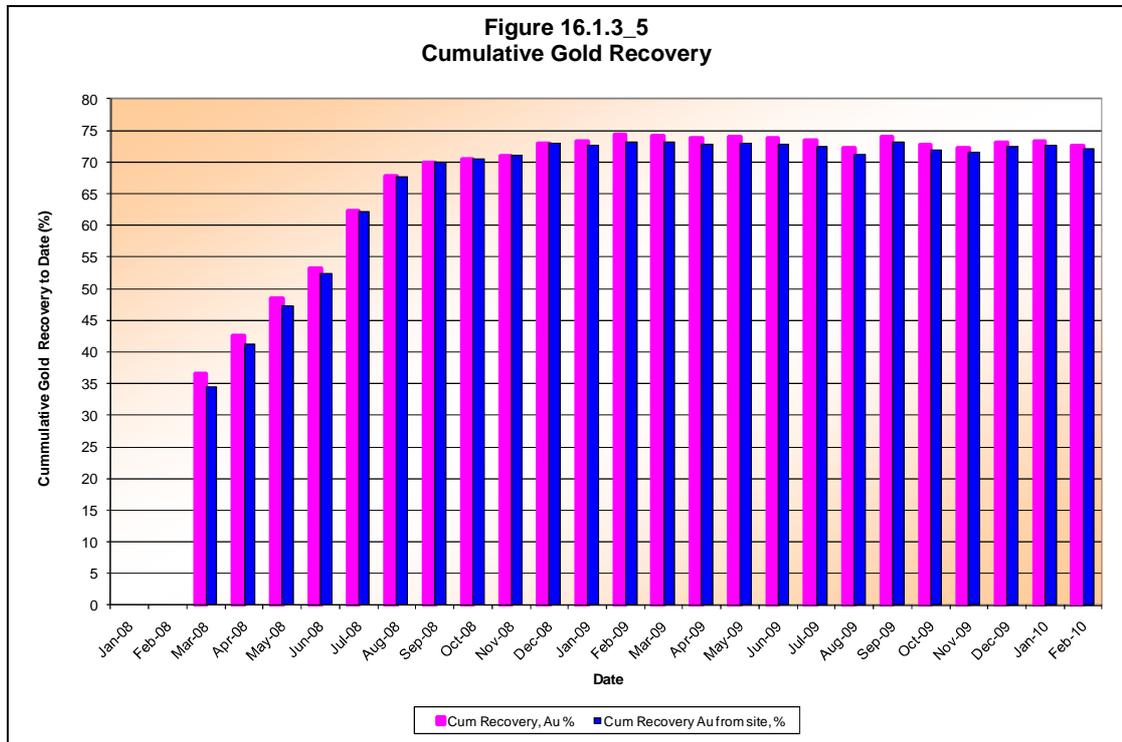


Figure 16.1.3\_5 shows that the gold recovery has been increasing, as would be expected from a heap leach operation, to reach the maximum of 73%. The expected recoveries were estimated by Kappes-Cassidy (KCA) during the feasibility study (FS) and are shown in Table 16.1.3\_1. The reconciliation of site recovery data to operational data appeared to be reasonable with an average offset of 0.7%.

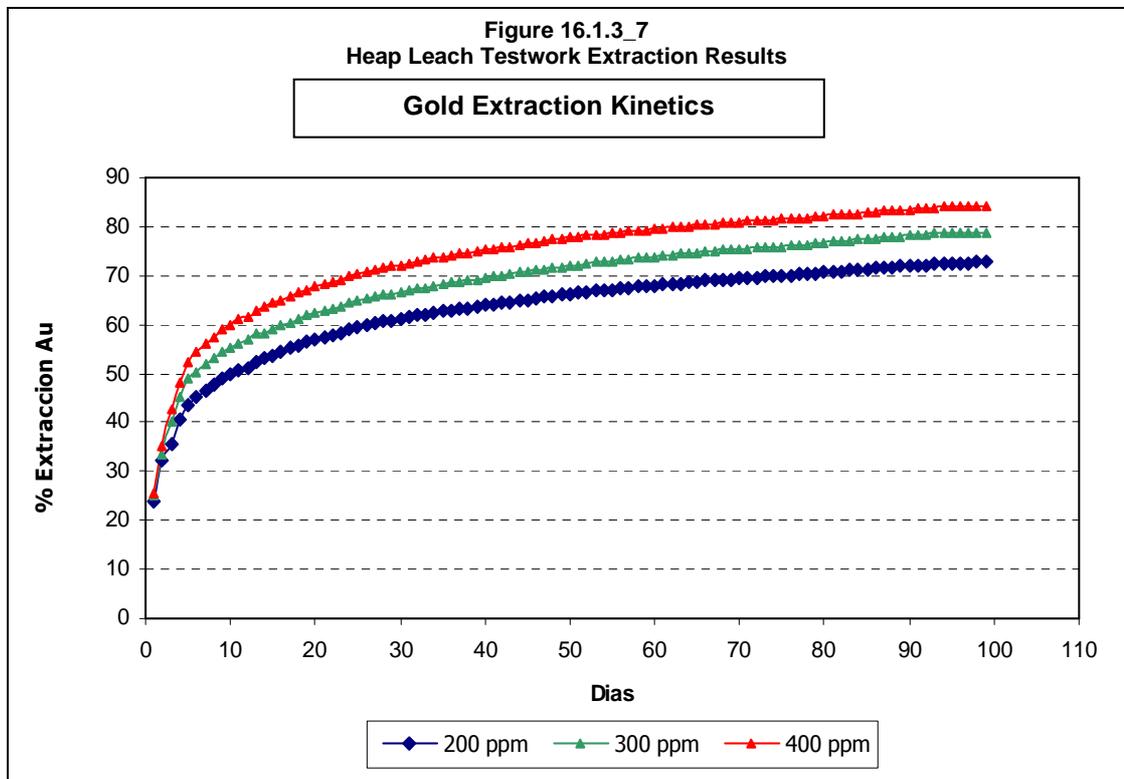
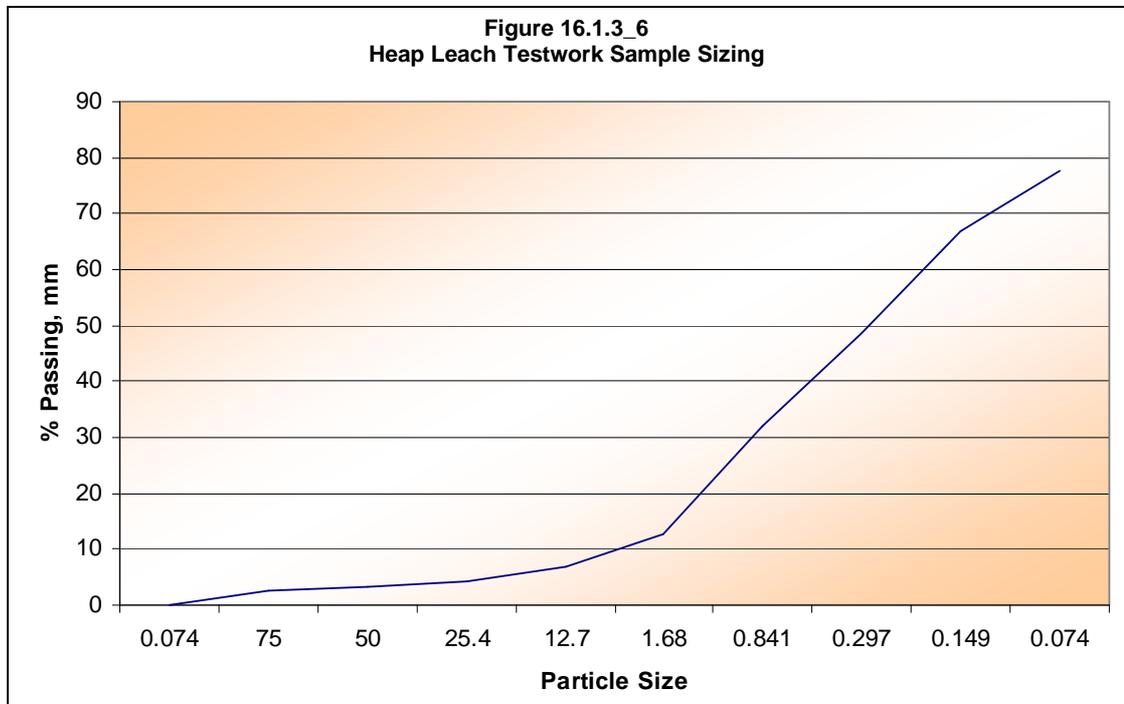
Outcrop	Average Field Recovery	Expected Recovery Range
Diana	87	83 to 92
Susan	70	61 to 85
<b>Overall</b>	<b>76.8</b>	

The current average actual recovery is more a reflection of that expected from the Susan ore, however, during the first 25 months of operation, 2,536,968 tonnes of ore have been placed on the leach pad of which approximately 76% of this material has come from the Diana pit. The head grade of the Diana ore is similar to the grades of the samples used for the FS testwork. Therefore the recovery from the Diana ore is not as high as predicted by KCA.

The lower recovery has been recognised by site personnel and column testwork was initiated to gain a better understanding of the leach conditions required. This testwork was conducted on Susan ore as the Diana ore is nearly depleted.

The testwork was conducted using 3.2m high columns. Three tests were conducted with different cyanide strengths, namely 200ppm, 300ppm and 400ppm.

The size distribution of the samples and the gold extraction rates are depicted in Figures 16.1.3\_6 and Figure 16.1.3\_7 respectively.



The following was noted from the testwork:

- The extraction data indicated that the target operating cyanide concentration of 200ppm being used on site is low. This may have contributed to the low recoveries. A new target of 350ppm cyanide concentration has now been set, although this may increase the cyanide consumption.
- Distribution of gold by size fraction showed that the majority of the gold, ~14% is not recovered from the finer fractions (<74µm).
- The extraction data also shows that at least 100 days of leaching is required to reach 74% extraction. In the first half of 2008 the leach cycle of the Diana material was less than 80 days and this would also have contributed to the lower extraction. Since then the leach cycle has been increased to almost 120 days.
- Operating costs

The plant operating costs since project commencement are shown in Figure 16.1.3\_8.

Figure 16.1.3\_8 indicates the plant operating costs were well below budget for each month when being fed from the Diana pit but cost have been shown to have risen above budget since the inception of the Susan pit. In 2008 the reclaim costs to load and haul the crushed material to the leach pad were included in the leaching budget but the actual costs were reported in the mining costs. The budget for 2009 includes the reclaim costs in the mining budget and therefore the plant is operating closer to budget as a result.

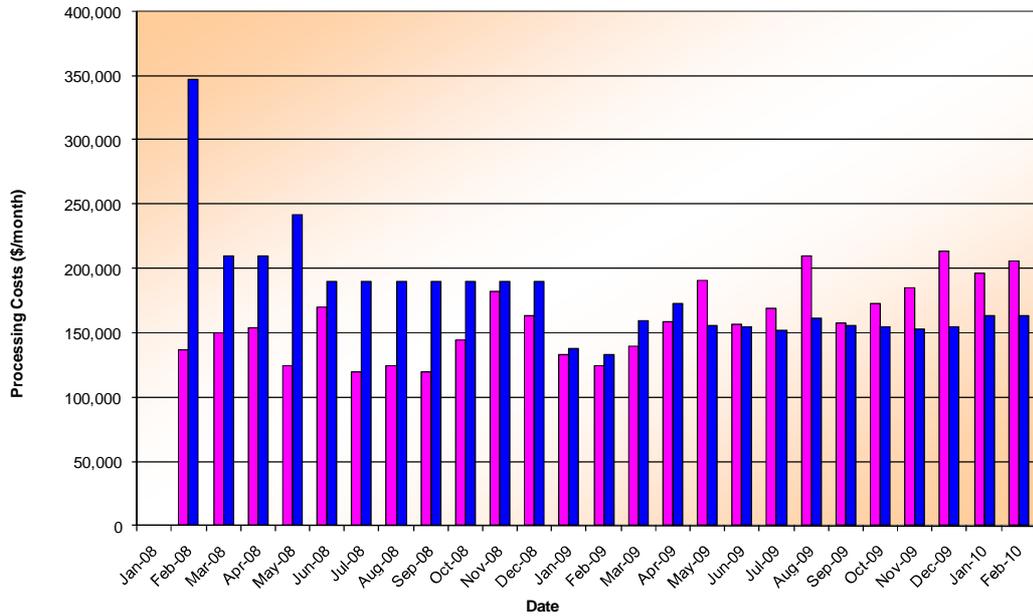
Lower operating costs are also attributed to the lower cyanide and lime consumptions which were considerably lower than that predicted by the FS.

#### Reagent Consumptions

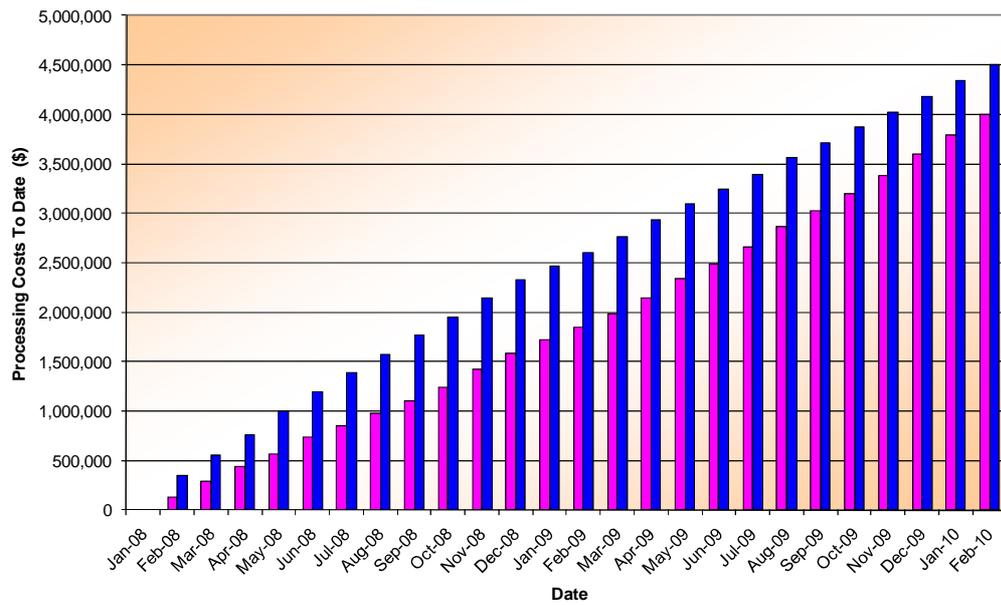
Data for the cyanide and lime consumptions rates were supplied and are depicted in Figure 16.1.3\_9.

Figure 16.1.3\_9 shows that the lime and cyanide consumptions have been well below that predicted in the FS. From November 2008 to June 2009, the consumption rate of lime rose, although both the cyanide and lime consumptions were still well below the FS prediction. Since June 2009 till February 2010, the lime consumption rate has fallen to levels similar to early commission levels. Whilst the cyanide consumption levels have been seen to fluctuate, they are now approximately twice the levels seen in 2008.

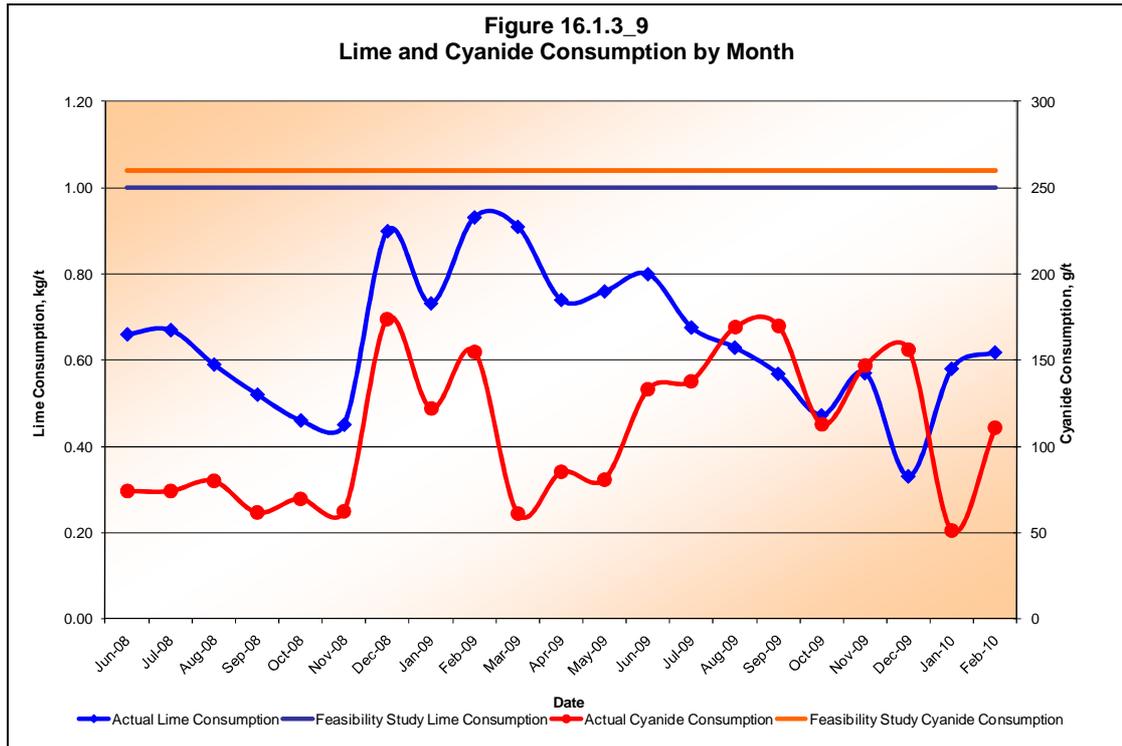
**Figure 16.1.3\_8  
Operating Cost Data**



■ Actual Processing Costs ■ Budget Processing Costs



■ Cumulative Actual Processing Costs ■ Cumulative Budget Processing Costs



## 16.2 Testwork

Two column leach tests on Scree Slope ore were carried out from October 2009 to January 2010 by MIRL metallurgical personnel. The tests were carried out to examine the response of Scree Slope material when blended with Susan ore at different ratios and cement addition rates.

The tests were carried out in columns that were 3.4m in height and 0.8m in internal diameter. The materials tested consisted of Susan and Scree Slope material at a blend ratio of 2:1 and Susan and Scree Slope material blended at a ratio of 1:1 with a cement binder addition of 2kg/t. The feed materials were screened, weighed, sampled and assayed in five discrete fractions varying from minus 100mm to material passing 12.7mm.

Table 16.2\_1 summaries the results of the testwork carried out over an 83 day period.

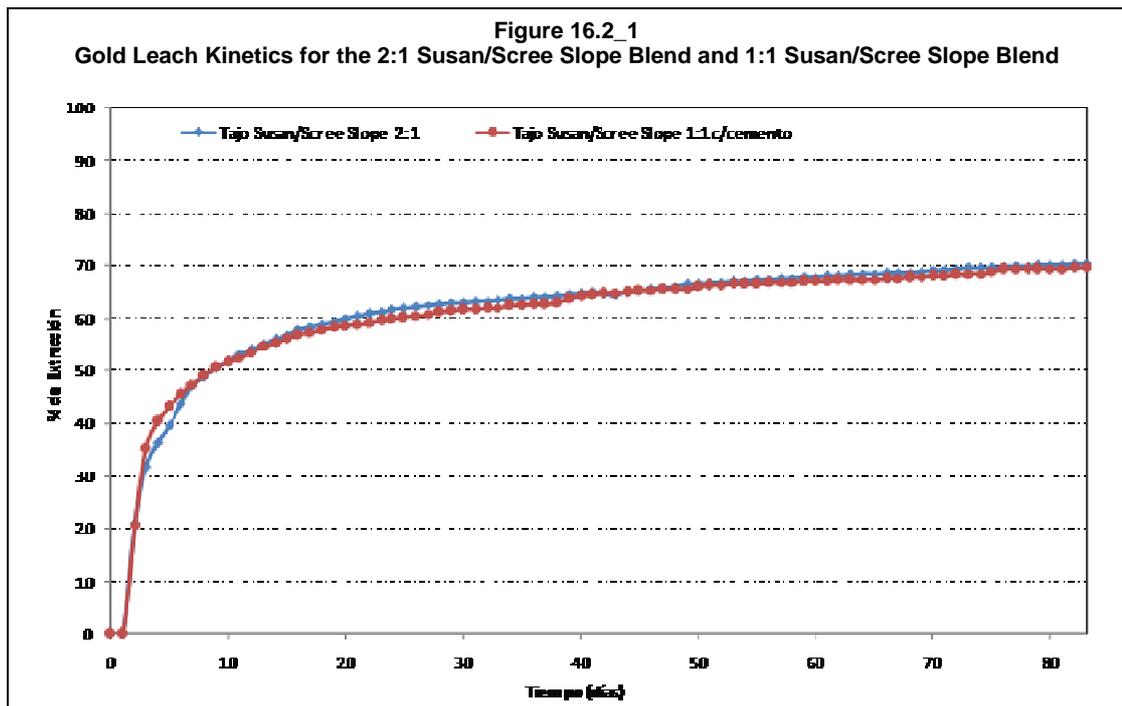
The tests were aimed to be carried out at a pH of between 10.6 and 11.5, a free cyanide concentration of 300ppm and at an irrigation rate of 10 l/h/m<sup>2</sup>. Each column contained 2.3t of feed material.

**Table 16.2\_1**  
**Corihuarmi Project**  
**Summary of Cyanidation Tests in Leach Columns**

Test	Days of Leaching	Calculated Head Grade		Extraction %		Adsorption Recovery		Reagent Consumption		Percolation Rate m/day
		Au g/t	Ag g/t	Au	Ag	Au	Ag	NaCN kg/t	CaO kg/t	
Susan/Scree Slope 2:1	83	1.15	1.07	70.36	41.28	92.11	82.82	0.635	0.314	1.7
Susan/Scree Slope 1:1 with 2kg/t cement	83	1.10	1.00	69.22	37.27	96.51	82.52	0.418	0.158	1.6
Average	83	1.13	1.04	69.79	39.28	94.31	82.67	0.53	0.24	1.65

Table 16.2\_1 shows that the recoveries of metal to be quite similar between each blend of feed materials; however, there appeared to be a significant reduction in cyanide usage when the feed is agglomerated in the presence of cement. The lime usage was also seen to be lower in the presence of cement, but this may be due to the alkaline nature of the cement itself. The percolation rate through the two columns was seen to be reasonable with no increase shown as a result of agglomeration techniques. No pooling was seen on the top of the columns throughout the test program.

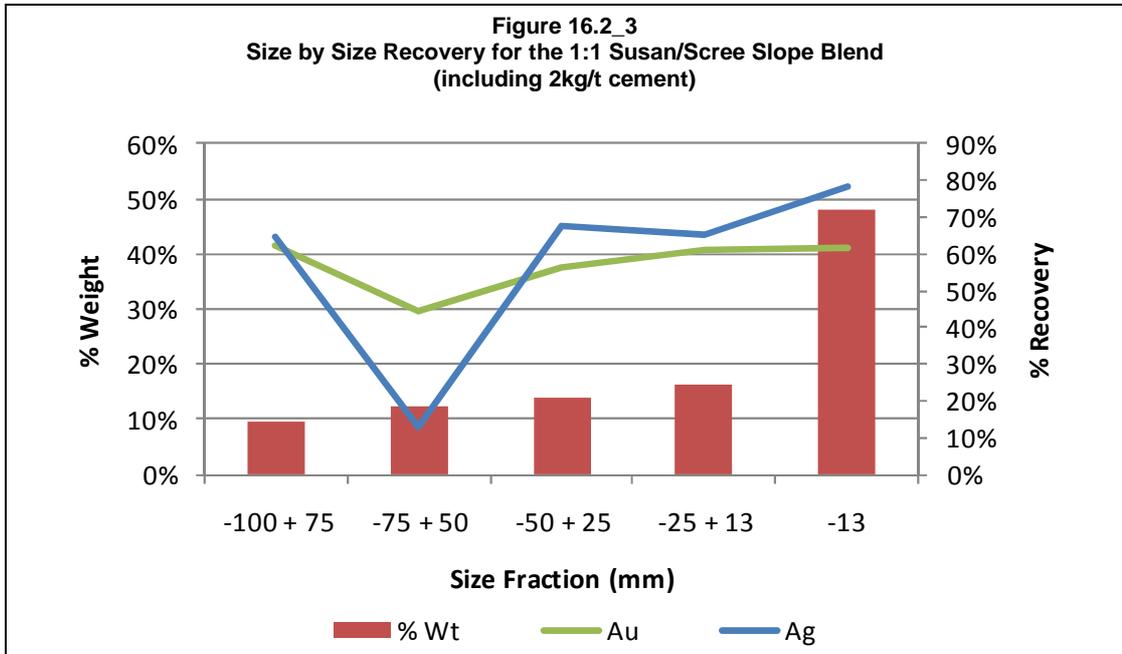
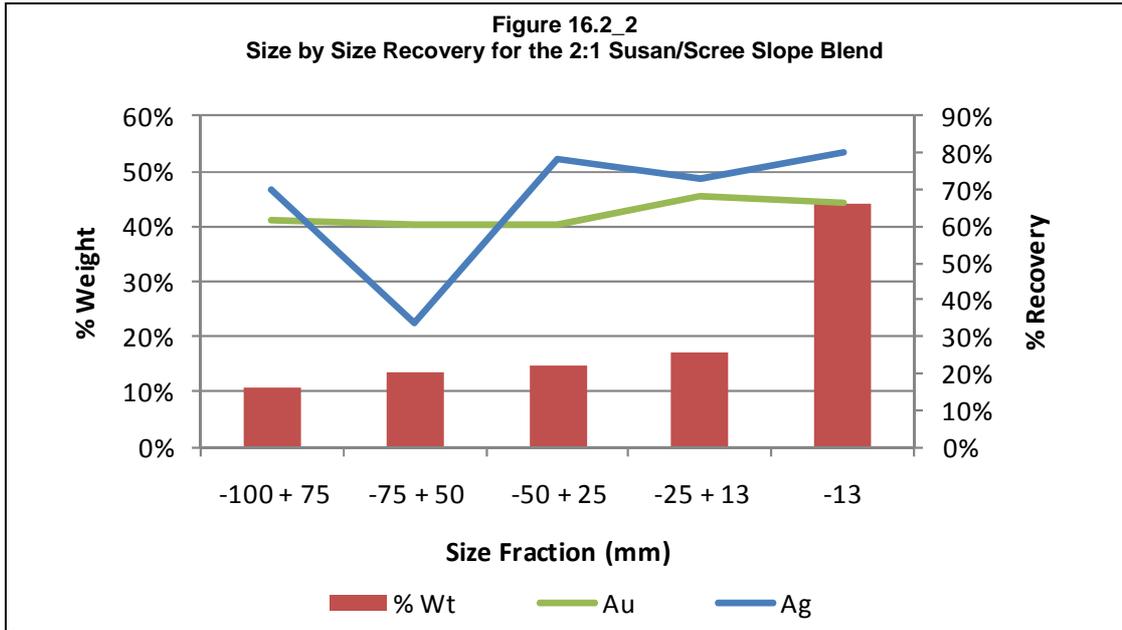
Figure 16.2\_1 shows the comparison of leach kinetics for gold in the two separate test columns.

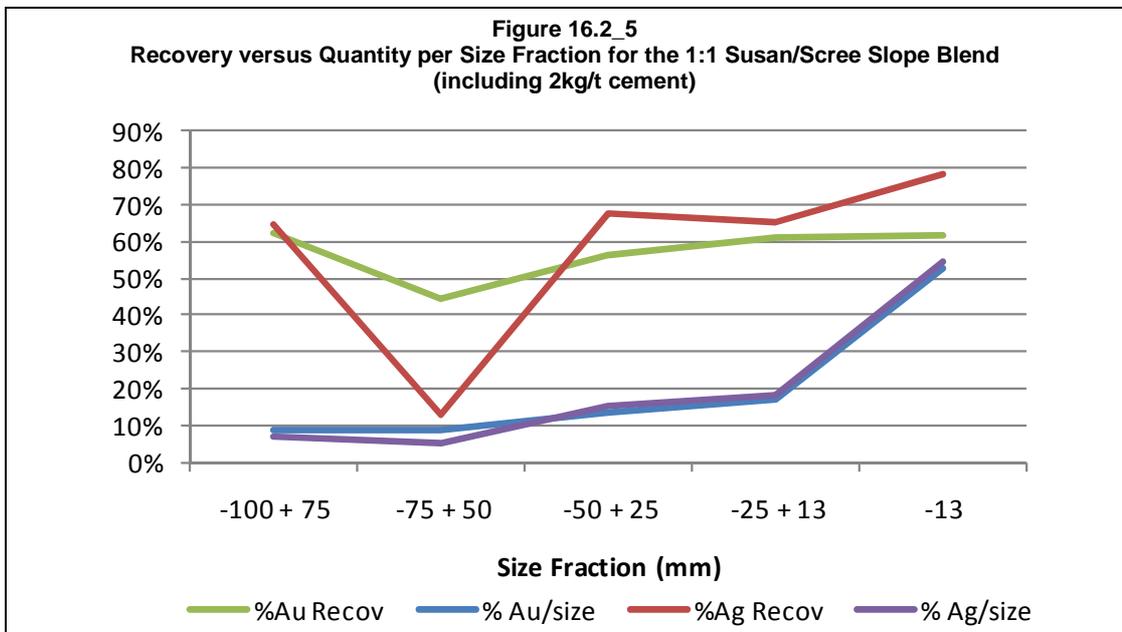
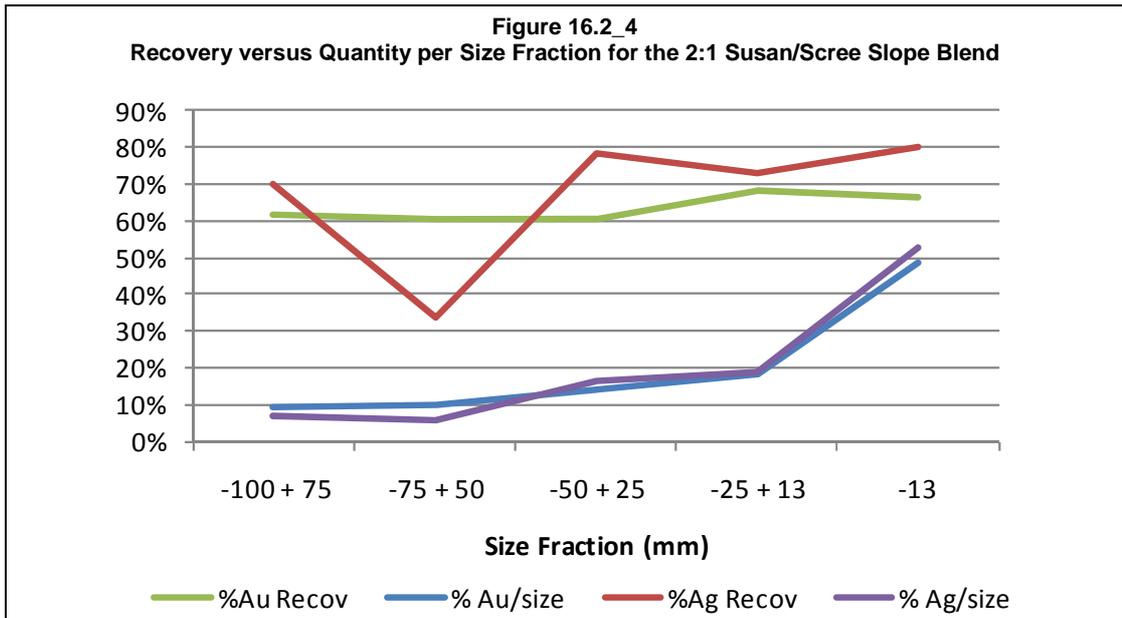


The leach kinetics is seen to be consistent between both blends and leaching still takes place at the completion of the test program. 50% of the gold was shown to have been recovered within 10 days for both blends.

Figure 16.2\_2 and Figure 16.2\_3 show the recovery by size fraction of the two column tests.

The size by size fraction of the material tested in each column is shown to be quite similar. This is also the case when comparing the recovery response per size fraction. Figure 16.2\_4 and Figure 16.2\_5 show the recovery of metal versus the quantity of metal per size fraction to be relatively independent of the size. A slight increase in recovery is shown to exist as the size fractions become smaller. There is also a similar trend in recovery between gold and silver.





It can be concluded that the blends of Susan and Scree Slope materials appear to be suitable for gold and silver extraction using conventional heap leach processing. The average gold recovery of 69.8% after 83 days can be compared to a recovery of 76% for the Susan ore after a similar period of testing and at a similar free cyanide concentration of 300ppm, as shown in Figure 16.1.3\_7. The Susan ore, as previously tested, was shown to have a slightly faster leach response, with 50% of the gold being extracted in approximately 6 days.

## **17 MINERAL RESOURCE AND MINERAL RESERVE ESTIMATES**

### **17.1 Introduction**

Coffey Mining has reviewed the Mineral Resource for the Susan and Diana Deposits (Section 17.2 and Section 17.3) as completed by Mr. Miguel Zulueta Torres in May 2009 (Senior Geologist with MZT Consulting (MZT) based in Peru). These Mineral Resource models were based on an undepleted volume below the December 31, 2008 mining surface. Coffey Mining has depleted the Mineral Resource as of 1<sup>st</sup> January 2010, using MIRL's preferred cutoffs (0.3g/t gold cutoff at Susan deposit and a 0.25g/t gold cutoff at Diana deposit). A total Measured and Indicated Resource of 5.3Mt at an average gold grade 0.6g/t Au for 103koz Au are reported from the combined deposits, remaining in-situ as of the 1<sup>st</sup> January 2010.

In addition, Coffey Mining has estimated the Mineral Resource for the Scree Deposit (Section 17.1.3) of the Corihuarmi Gold Project as at 28<sup>th</sup> of February 2010. The estimation of gold grades was completed using Ordinary Kriging (OK). A total Inferred Resource of 3.76Mt at an average gold grade 0.45g/t Au for 55k oz Au are reported.

### **17.2 MZT Resource Estimates**

The previous 2006 resource model completed by Coffey Mining was used to produce both the initial (FS) reserve model and the mine plan and design for mining to date. The 2006 resource model was based upon trench and DC data generated in 2005.

Initial reconciliation of the 2006 resource model against grade control drilling (5m x 5m spaced blasthole (BH) sampling), indicated the resource model was possibly under-estimating Au grade by up to 25%. While BH sample quality is poor and not definitive, this result was also supported by better than expected gold ounces being recovered from the heap leach up to December 31, 2008 (as advised by MIRL).

As a consequence, a total of 65 RC holes were drilled at the Diana and Susan Au deposits to test the perceived issues related to the DC data and the associated 2006 resource models.

The 2009 Mineral Resource estimate for the Susan and Diana Deposits was completed by Mr. Miguel Zulueta Torres who is not a Qualified Person under the NI 43-101 guidelines. Therefore, a review was carried out by Coffey Mining to compare the 2009 MZT model estimates with the drilling data used and to validate the methods and assumptions used to estimate the model for Au. The current 2009 MZT models were reconciled with 6 months of mining data from January 1, 2009 to June 30, 2009. The comparison was based on grade control BH assay data and recorded truck figures on a 5 metre bench-by-bench basis. Due to the stacked heap leaching method employed and uncertain recoveries, it is not possible to reconcile specific parcels of mined ore further to actual recovered Au.

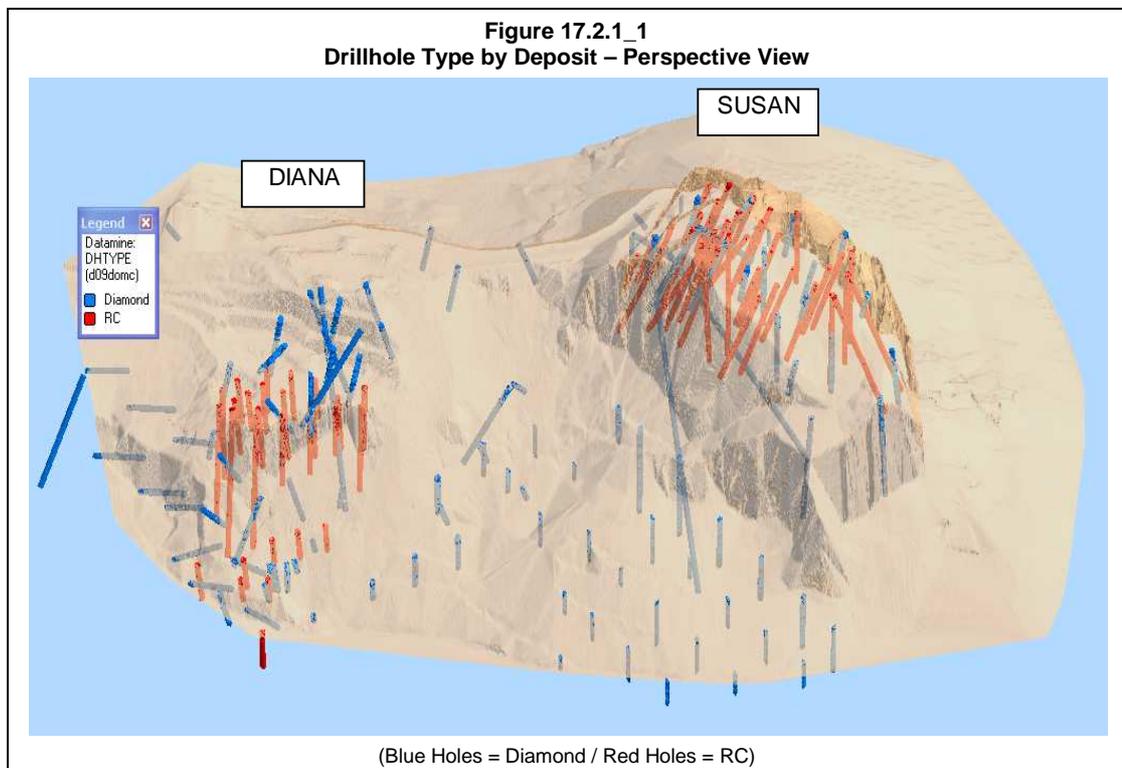
### 17.2.1 Data

The Susan and Diana resource estimates are based on a combination of DC and RC drilling. The Diana Deposit contains 49 DC holes totalling 2,952.75m and 29 RC holes totalling 1,955 metres. Susan Deposit contains 57 DC holes totalling 3,099.4m and 36 RC holes totalling 3,545m. The DC holes were drilled in 2005, while the RC holes were drilled from the end of 2008 to early 2009. A summary of the drilling as of May 1, 2009 is provided in Table 17.2.1\_1.

Table 17.2.1_1 Corihuarmi Project Summary of Minera IRL Drilling as of May 1, 2009 Grouped by Deposit				
Deposit	DC Drillholes		RC Drillholes	
	Holes	Metres	Holes	Metres
Diana	49	2952.75	29	1,955.00
Susan	57	3099.40	36	3,545.00
<b>Total</b>	<b>106</b>	<b>6052.15</b>	<b>65</b>	<b>5,500.00</b>

A perspective view of the two deposits, showing the density of RC and DC is shown in Figure 17.2.1\_1. The surface shown in Figure 17.2.1\_1 is the topographic surface as of December 31, 2008.

A total of 238 bulk density determinations were collected from the 2005 diamond drilling campaign and used as the basis for tonnage reporting. From the Diana deposit, a total of 157 samples were used to give an average in-situ dry bulk density of 2.35g/cm<sup>3</sup>, and from the Susan deposit, a total of 81 samples were used to give an average in-situ dry bulk density of 2.22g/cm<sup>3</sup>.



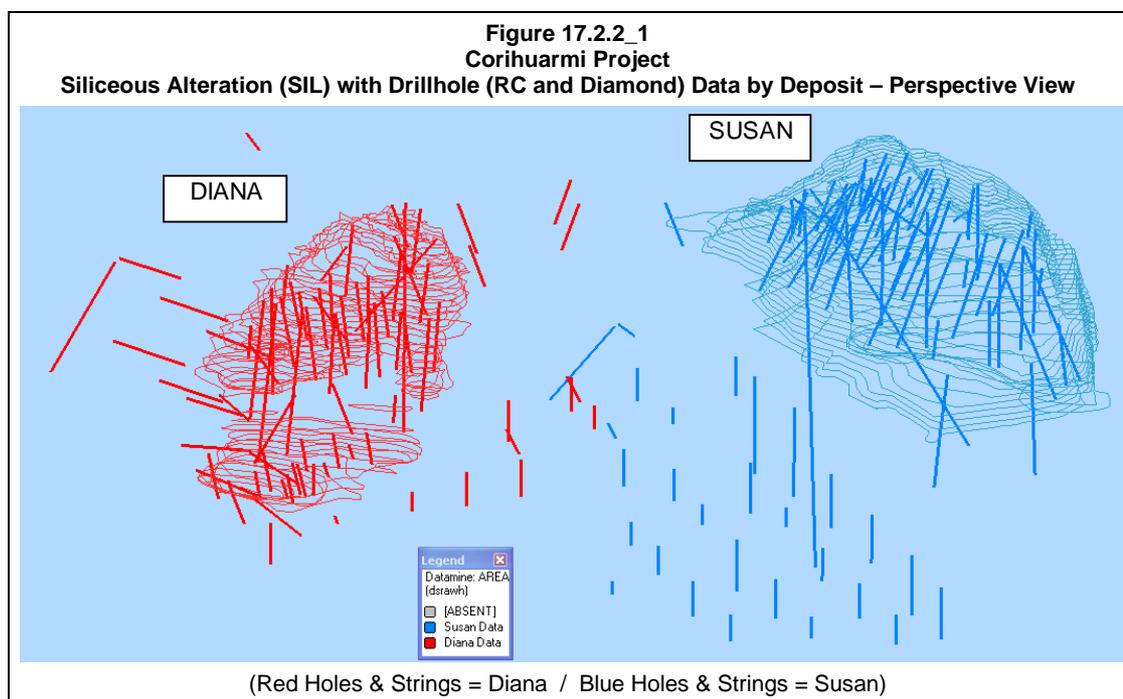
### 17.2.2 Geological Model

The geological information compiled from the drilling data defines two key styles of alteration:

- Siliceous alteration (SIL) which effectively contains all economic gold mineralisation.
- Advanced argillic alteration (AA) containing broad low grade gold mineralisation.

No structural geological information was provided for the technical review.

The 2009 MZT resource models were restricted to the material interpreted as SIL based on the drillhole logging. Figure 17.2.2\_1 shows the SIL interpretation as five metre spaced contour lines, represented at the mining mid-bench positions, including the DC and RC drilling data in and around each deposit.



### 17.2.3 Compositing, Basic Statistics and High Grade Cuts

A statistical analysis was completed by MZT on five metre downhole composites. The compositing was completed using the Datamine™ mining software package although no details are documented by MZT regarding the exact method used or treatment of residuals. Basic statistics were generated for the combined RC and DC data at both Diana and Susan deposits.

As a check, Coffey Mining generated a similar set of composites and comparisons were made between the two datasets, at both Diana and Susan deposits (Section 17.3).

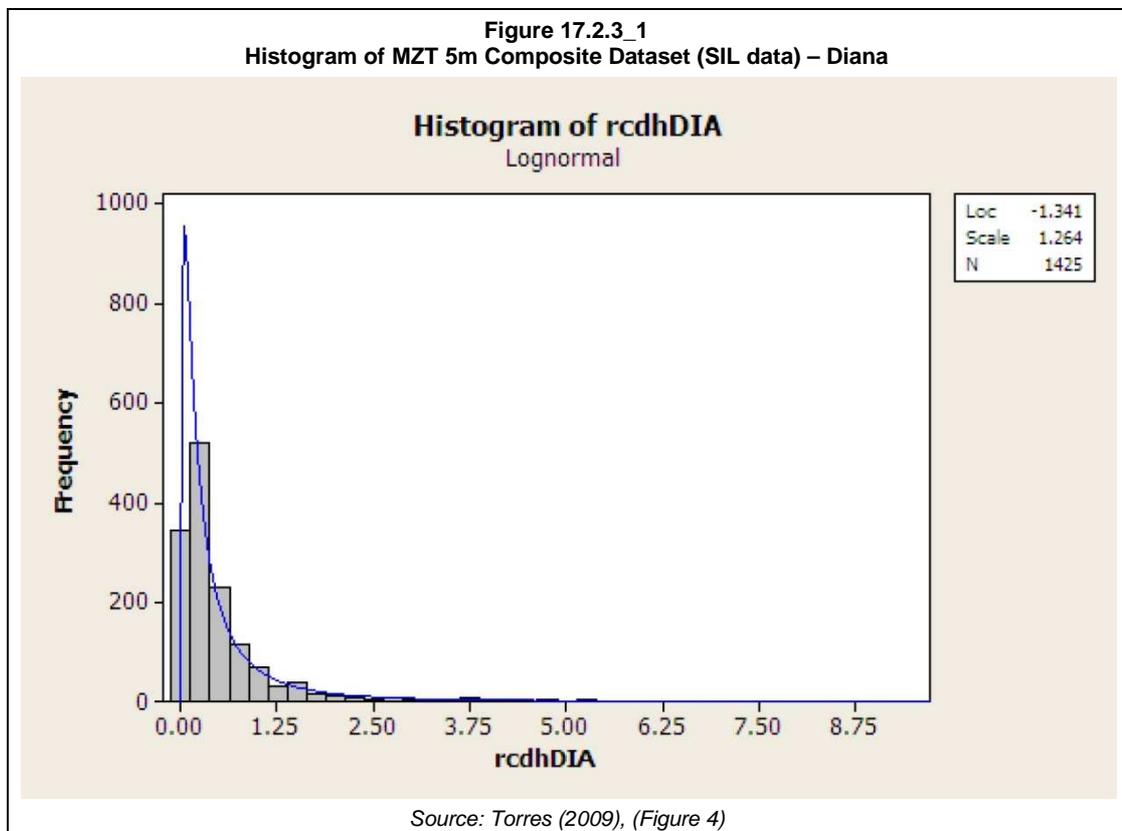
Table 17.2.3\_1 summarises the statistics reported by MZT.

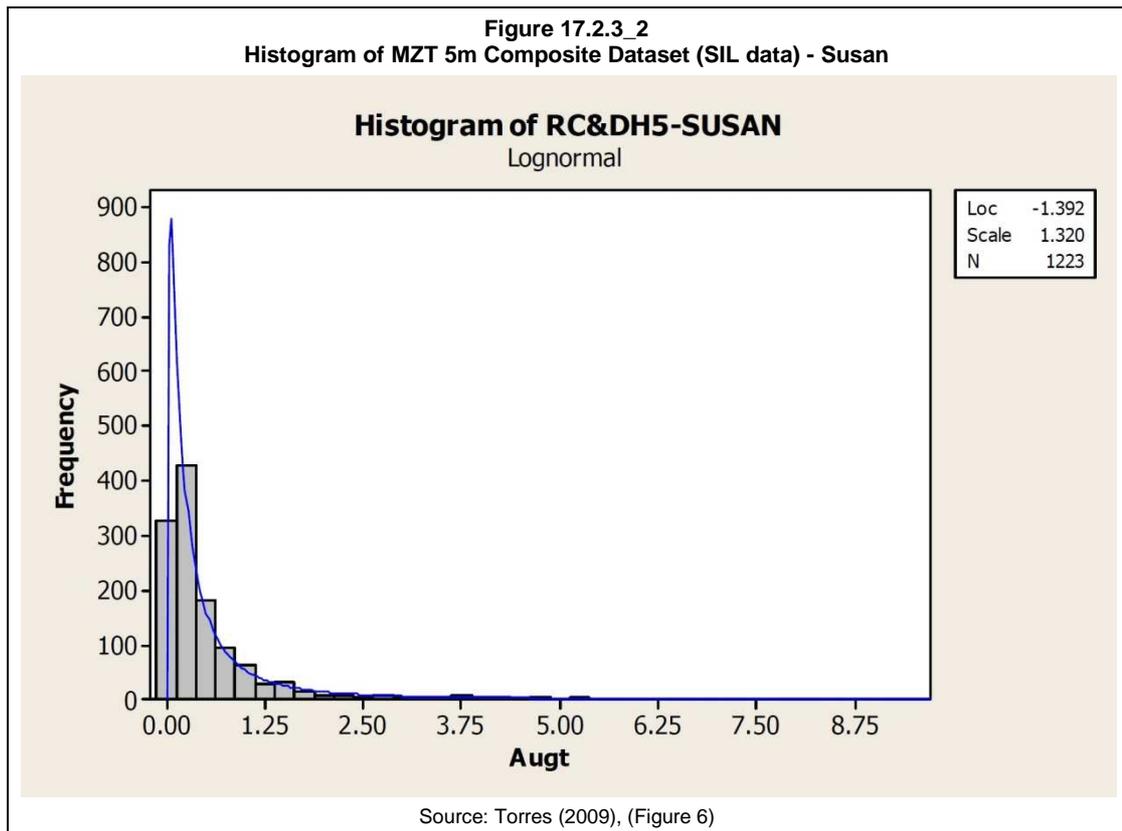
Table 17.2.3_1 Corihuarmi Project Summary Statistics as Reported by MZT (Appendix A)– Diana and Susan (SIL data) 5m Composites (no High Grade Cuts Applied)								
	Variable	Count	Min	Max	Mean	Std. Dev.	Variance	CV
Diana	Au (g/t)	1425	0.008	9.40	0.537	0.827	0.684	1.541
Susan	Au (g/t)	1223	0.008	9.40	0.543	0.863	0.745	1.589

Histograms of the combined RC and DC MZT composite data from Diana and Susan are shown in Figure 17.2.3\_1 and Figure 17.2.3\_2 respectively, both of which show positively skewed datasets.

MZT have applied high grade cuts to data from Susan and Diana primarily for use in variography. The general approach was based on high grade cuts derived from the mean plus two times the standard deviation (to approximate the 95<sup>th</sup> percentile of data in a normally distributed datasets). The actual high grade cut values used for Diana and Susan deposits were not stated in the report by MZT.

As calculated by Coffey Mining, the method described translates to high grade cuts of approximately 2.08g/t Au for Susan and 2.41g/t Au for Diana. Summary statistics for the Coffey Mining 5m composite data with high grade cuts applied are provided in Section 17.3.3.





## 17.2.4 Variography

### Introduction

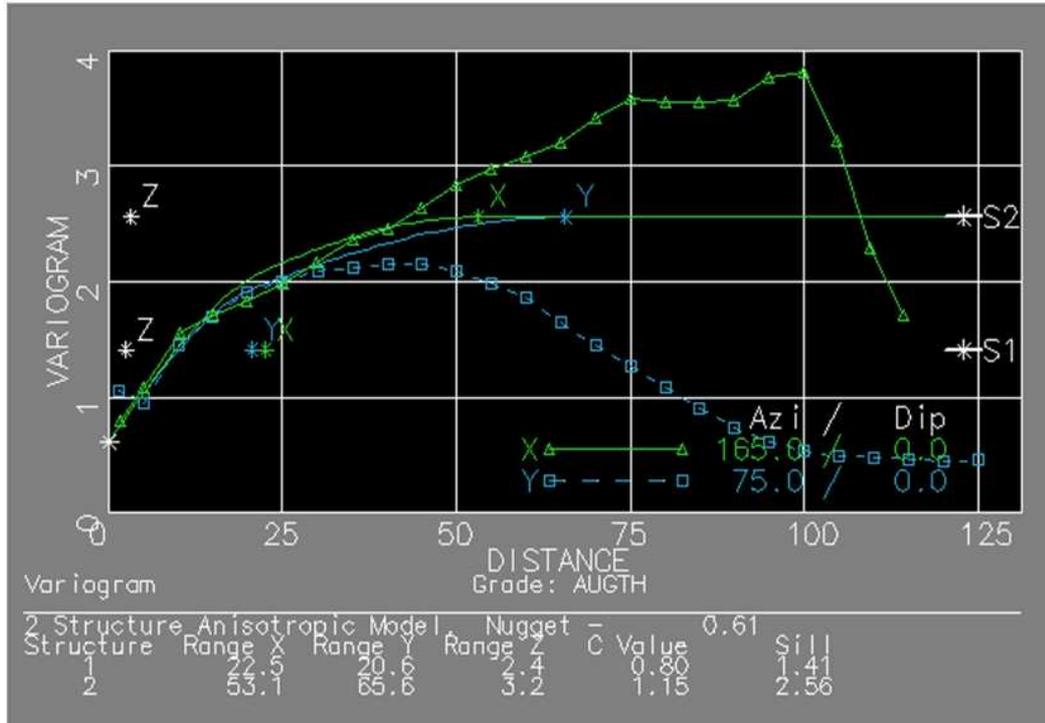
Variography is used to describe the spatial variability or correlation of an attribute (e.g. Au). The spatial variability is traditionally measured by means of a variogram, which is generated by determining the averaged squared difference of data points at a nominated distance (h), or lag. The averaged squared difference (variogram or  $\gamma(h)$ ) for each lag distance is plotted on a bivariate plot, where the X-axis is the lag distance and the Y-axis represents the average squared differences ( $\gamma(h)$ ) for the nominated lag distance. The term variogram will be used as a generic term to describe all spatial measures in this document.

### Variography

The variography was generated by MZT using Datamine mining software. The final variograms and variogram models used for nugget variance and major, semi-major and minor axis calculation, for Diana and Susan deposits are displayed in Figure 17.2.4\_1 to Figure 17.2.4\_4.

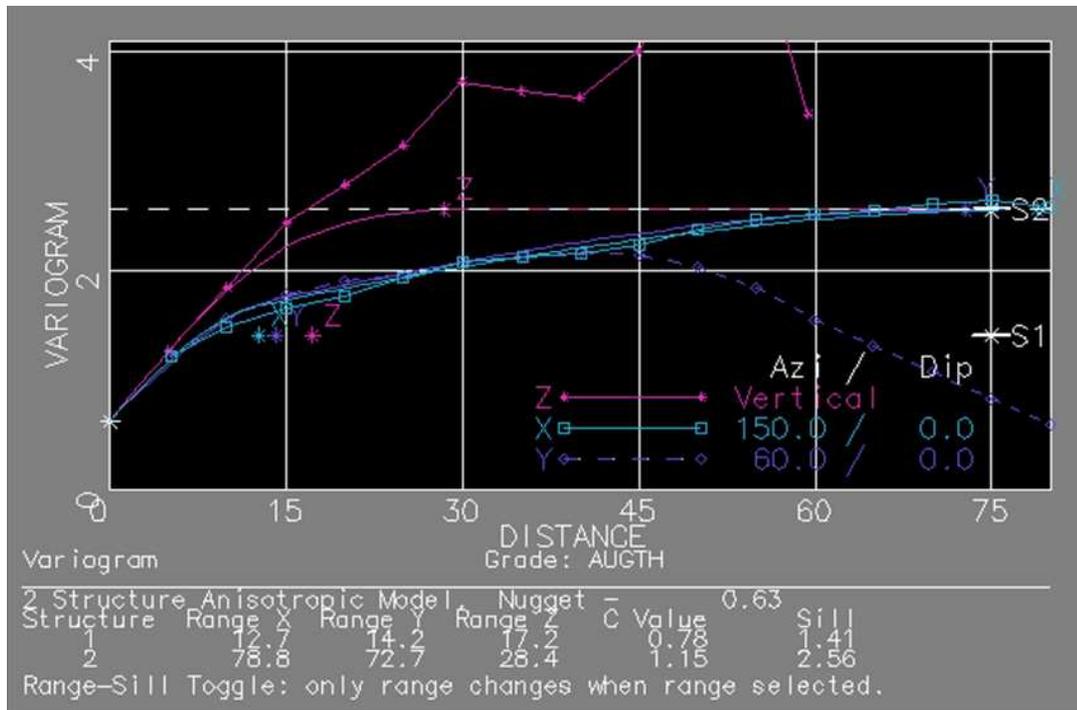
The high grade cut data was transformed into a log normal distribution to produce better variograms for Susan. Spherical models were applied.

**Figure 17.2.4\_1**  
**MZT Diana Variography**  
 (Used for Nugget calculation;SIL data)



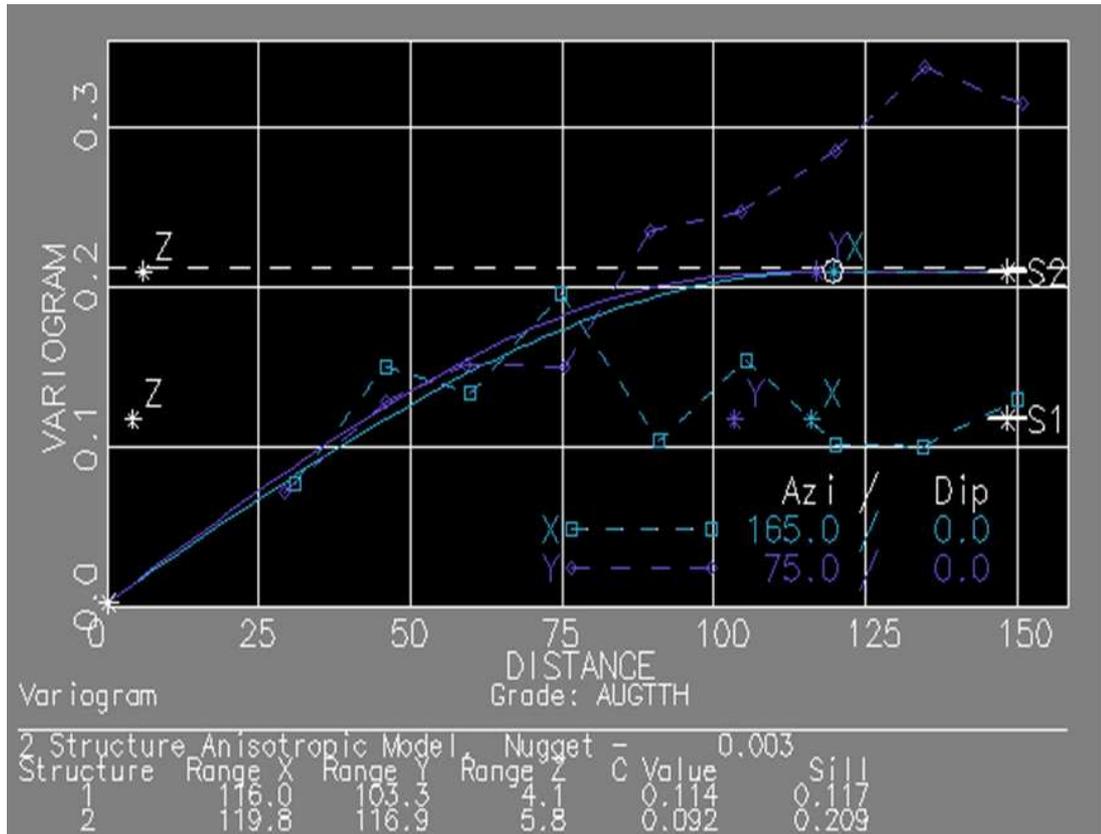
Source: Torres (2009), (Section 3.3.2)

**Figure 17.2.4\_2**  
**MZT Diana Variography**  
 (Used for Major, Semi-Major and Minor Axis Calculation;SIL data)



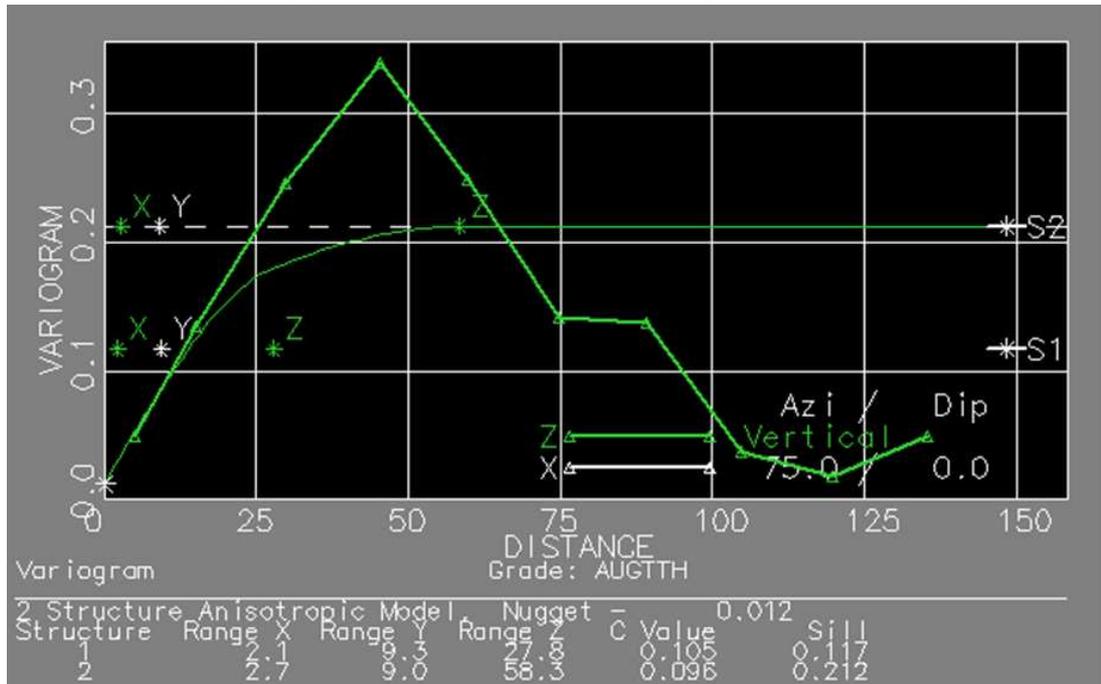
Source: Torres (2009), (Section 3.3.2)

**Figure 17.2.4\_3**  
**MZT Susan Variography (Used for Nugget, Major and Semi-Major axis calculation)**  
**Log Transformed Dataset (SIL data)**



Source: Torres (2009), (Section 3.3.1.3)

**Figure 17.2.4\_4**  
**MZT Susan Variography (Used for Minor Axis Calculation)**  
**Log Transformed Dataset (SIL data)**



Source: Torres (2009), (Section 3.3.1.3)

A summary of the findings by MZT are listed below; Table 17.2.4\_1 summarises the variogram parameters used for each deposit.

Table 17.2.4_1 Corihuarmi Project MZT Summary Variogram Parameters for Diana and Susan Deposits															
Area	Orientation						Co	C1	Range 1 (m)			C2	Range 2 (m)		
	Major		Semi-Major		Minor				Major	Semi-Major	Minor		Major	Semi-Major	Minor
	Dip (°)	Azi (°)	Dip (°)	Azi (°)	Dip (°)	Azi (°)									
Diana	00	150	00	060	90	360	0.61	0.80	12.7	14.2	17.2	1.15	78.8	72.7	28.4
Susan	00	165	00	075	90	360	0.003	0.114	116.0	103.3	27.8	0.092	119.8	106.9	58.3

For the Diana Deposit:

- Downhole variography showed a nugget of approximately 25% of the total sill.
- Major continuity was determined to be towards 150° with no dip or plunge component. (Major axis – 0° → 150°, Semi-Major Axis - 0° → 060° and Minor Axis – vertical).
- 2 spherical schemes were used to model the experimental directional variograms; overall range was 79m in the major direction, 73m in the semi-major direction and 28m in the minor direction.

For the Susan Deposit:

- Downhole variography showed a nugget of approximately 14% of the total sill.
- Major continuity was determined to be towards 165° with no dip or plunge component. (Major axis – 0° → 165°, Semi-Major Axis - 0° → 075° and Minor Axis – vertical).
- 2 spherical schemes were used to model the experimental directional variograms; overall range was 120m in the major direction, 107m in the semi-major direction and 58m in the minor direction.

### 17.2.5 Block Model Development and Estimation

Block models were generated using the Datamine mining software package. A parent block size of 5mE x 5mN x 5mRL was selected with sub-blocking to a 2.5mE x 2.5mN x 1mRL cell size to improve volume representation of the interpreted wireframe models. MZT's intent was to emulate the current selective mining unit (SMU). A separate block model was made for each the Diana and Susan Deposits and are defined in Table 17.2.5\_1 and Table 17.2.5\_2.

Bulk densities have been assigned as follows:

- An in-situ bulk density of 2.35g/cm<sup>3</sup> is assigned for all blocks in the Diana Deposit.
- An in-situ bulk density of 2.22g/cm<sup>3</sup> is assigned for all blocks in the Susan Deposit.

<b>Table 17.2.5_1</b>			
<b>Corihuarmi Project</b>			
<b>Block Model Parameters – Diana Deposit</b>			
	<b>East</b>	<b>North</b>	<b>Elevation</b>
Origin	439,200	8,610,100	4700
Extent (m)	400	400	190
Parent Block size (m)	5	5	5
Sub-Block Size (m)	2.5	2.5	1
Number of Blocks (parent)	80	80	38

<b>Table 17.2.5_2</b>			
<b>Corihuarmi Project</b>			
<b>Block Model Parameters – Susan Deposit</b>			
	<b>East</b>	<b>North</b>	<b>Elevation</b>
Origin	439,600	8,609,900	4800
Extent (m)	500	500	155
Parent Block size (m)	5	5	5
Sub-Block Size (m)	2.5	2.5	1
Number of Blocks (parent)	100	100	31

For the grade estimates, Au was interpolated using both Ordinary Kriging (OK) and Log Kriging (LK) techniques. For the purposes of this report, only the OK Au estimation is considered appropriate and suitable.

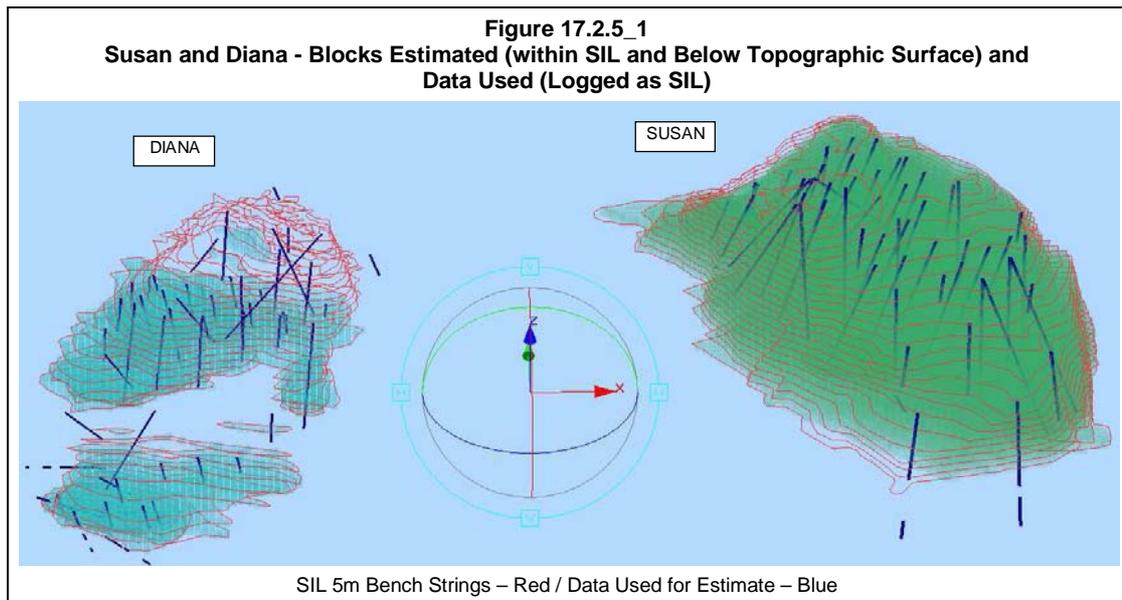
OK is one of the more common geostatistical methods for estimating the block grade. In this interpolation technique, contributing composites samples are identified using a search volume applied from the centre of each block. Weights are determined so as to minimise the error variance considering both the spatial location of the selected composites and the modelled variogram. Variography describes the correlation between the composite samples as a function of distance. The weighted composite sample grades are then combined to generate a block estimate and variance.

Based on a statistical review of the MZT models by Coffey Mining, the OK estimates used uncut Au grades.

The estimated blocks in both Diana and Susan were restricted to parent cells and sub-cells which were both below the topographic surface as of December 31, 2008, and within the siliceous alteration (SIL) wireframes (Figure 17.2.5\_1).

MZT states that blocks were estimated using the Datamine sub-cell estimation parameter (where grades are estimated and assigned to each sub-cell potentially resulting in different grades occurring for each sub-cell within a parent cell).

In Both Diana and Susan deposits, a minimum of two and a maximum of 16 composites were used to estimate block grades. No detail of search radii was reported by MZT.



### 17.2.6 Model Validation

The validation by MZT indicated that the resource model replicates the source input data well in regions of higher density drilling. For regions of lower data density, smoothing is evident. The validation process included:

- Review of the block estimates and the composite data in cross section, and plan views. A plan and section view of the block Au grade estimates of the Susan deposit are shown in Figure 17.2.6\_1.

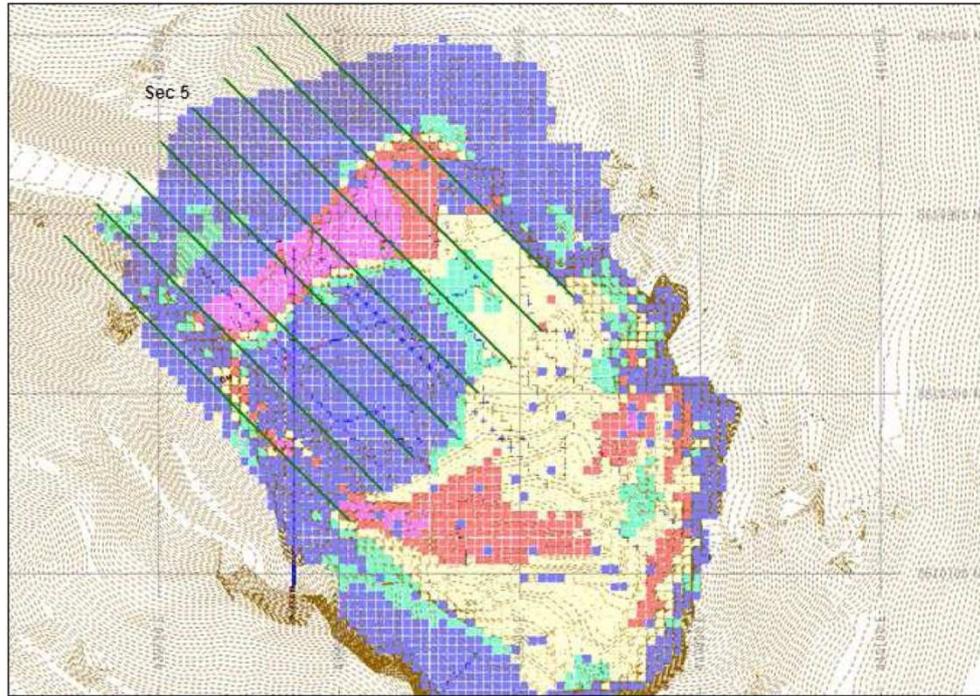
### 17.2.7 Resource Classification

The grade estimates for Diana and Susan Deposits have been classified as a combination of Measured and Indicated Mineral Resources in accordance with the criteria laid out in the Canadian National Instrument 43-101 (“NI 43-101”) guidelines. No material has been classified as Inferred.

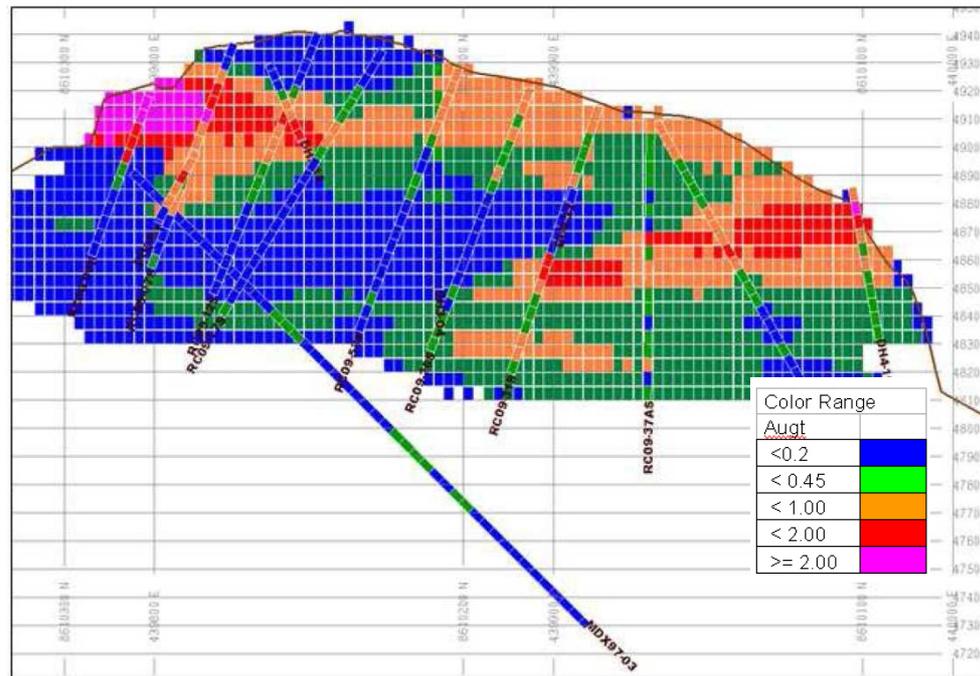
The Measured Mineral Resource classification on both the Susan and Diana deposits was based on having 12 or more composites used to estimate the block grades. The Indicated Mineral Resource classification on both deposits was based on having six to 11 composites used to estimate the block grades.

The reported resource for the Susan and Diana Au deposits is given in Section 17.4.

Figure 17.2.6\_1  
Susan Deposit – MZT Visual Validation, Plan and Section Views



Sección 5 Mirando al NE – Tajo Susan



Source: Torres (2009), (Section 3.6.1)

### 17.3 Review and Validation of the MZT Resource Estimates

#### 17.3.1 Data

Coffey Mining has checked the zonal statistics for the bulk density data. The bulk densities applied to the block model are considered to be consistent with the high sulphidation epithermal style of mineralisation and rock types encountered at the Corihuarmi deposits.

#### 17.3.2 Geological Model

Coffey Mining concurs with the use of the silica and advanced argillic alteration zones as appropriate domains for resource estimation.

#### 17.3.3 Compositing, Basic Statistics and High Grade Cuts

Coffey Mining regenerated the 5m downhole composite dataset. The effect of the compositing process on the data statistics is summarised by deposit in Table 17.3.3\_1, and shows negligible effect on the mean grades between raw and composite data.

Table 17.3.3_1 Corihuarmi Project Summary of Raw versus Composite Statistics (SIL data) for Au (g/t) by Area								
Area	Total Raw Data			Total Composite Data			% Length Difference	% Mean Difference
	Length (m)	Au (g/t) Mean	Au (g/t) Variance	Length (m)	Au (g/t) Mean	Au (g/t) Variance		
Diana	2228.50	0.612	1.626	2220.75	0.549	0.865	-0.35%	-11.44%
Susan	4712.29	0.534	0.604	4712.29	0.533	0.597	-0.00%	-0.13%

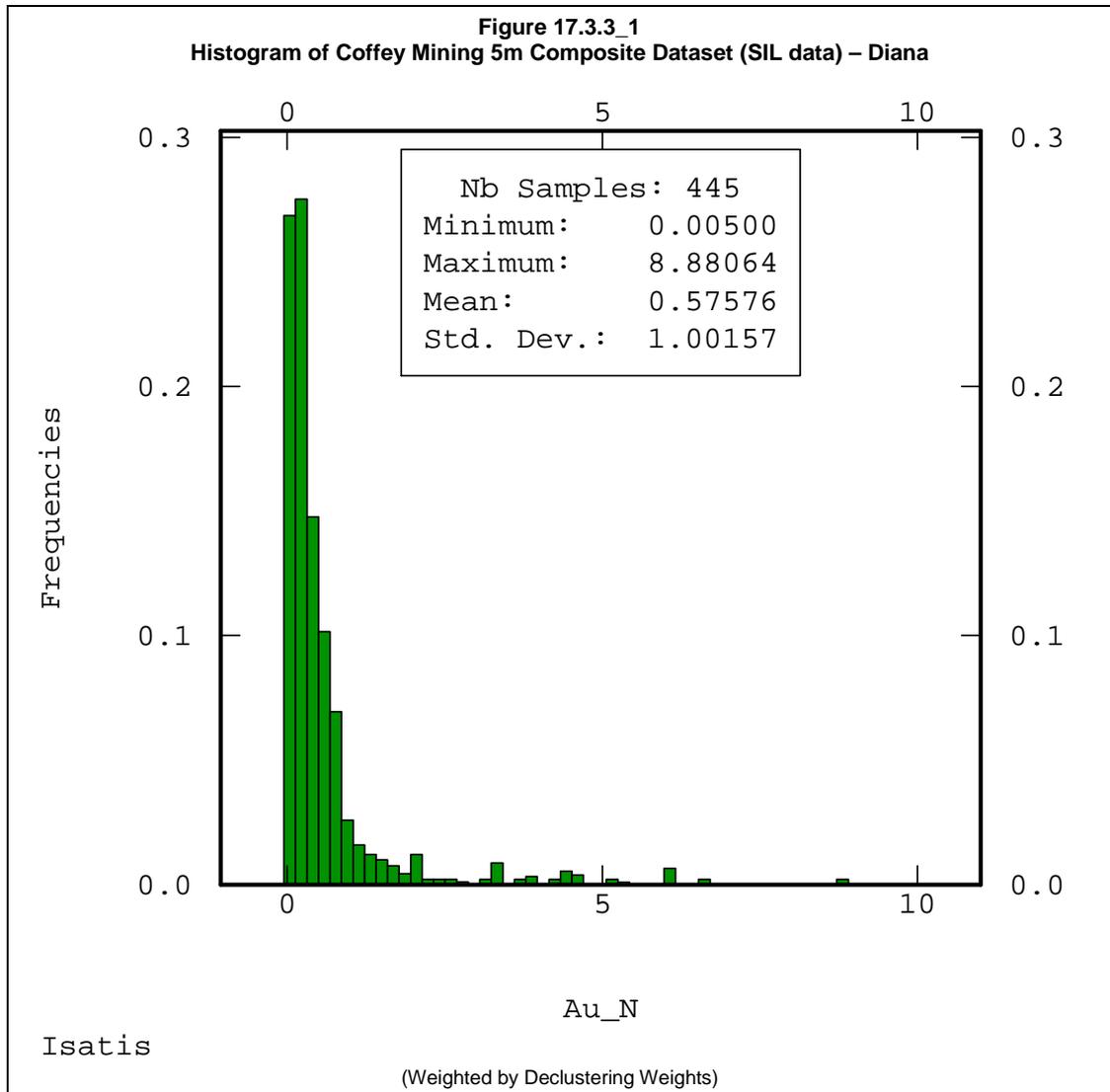
These Coffey Mining 5m composite statistics (from the SIL zones) were compared against the MZT statistical values (reported in Table 17.2.3\_1). No material differences were identified.

Table 17.3.3\_2 summarises the Coffey Mining 5m composite data, including an analysis on the declustered dataset based on a cell size of 25mE x 25mN x 10mRL.

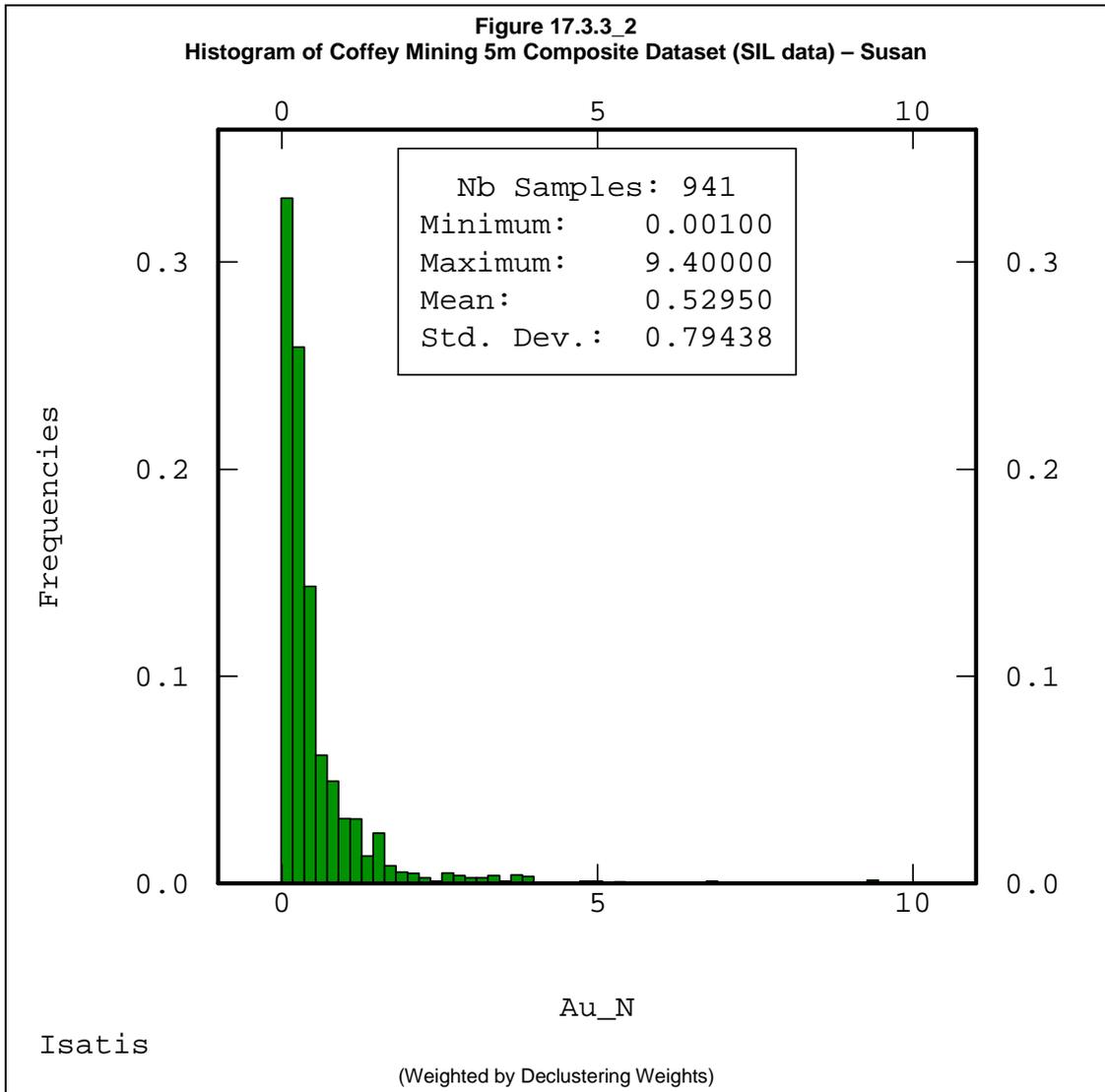
Table 17.3.3_2 Corihuarmi Project Summary Statistics – Diana and Susan (SIL data) Coffey Mining 5m Composites No High Grade Cuts Applied										
	Variable	Count	Min	Max	Mean	Std. Dev.	Variance	CV	Declustered Mean (25mx25mx10m)	Declustered Std Dev (25mx25mx10m)
Diana	Au (g/t)	445	0.005	8.88	0.549	0.930	0.865	1.693	0.576	1.002
Susan	Au (g/t)	941	0.001	9.40	0.533	0.773	0.597	1.450	0.530	0.794

The variations between the MZT and Coffey Mining composites are attributed to probable minor differences in compositing methods and treatment of residual intervals. However the statistical comparison indicates no material difference, and that the MZT composites used for resource estimation are valid.

Histograms of the combined RC and DC Coffey Mining 5m composite data from Diana and Susan are shown in Figure 17.3.3\_1 and Figure 17.3.3\_2 respectively, defining positively skewed datasets as identified by MZT.



MZT have applied high grade cuts to composite data from Susan and Diana used for the variography but not the resource estimates. Although the high grade cutting approach that MZT used is documented, the exact values of the high grade cuts applied are not recorded. Using the method documented, Coffey Mining has calculated that the high grade cuts used were approximately 2.08g/t Au for Susan and 2.41g/t Au for Diana. Summary statistics for the Coffey Mining cut 5m composite data are provided in Table 17.3.3\_3.

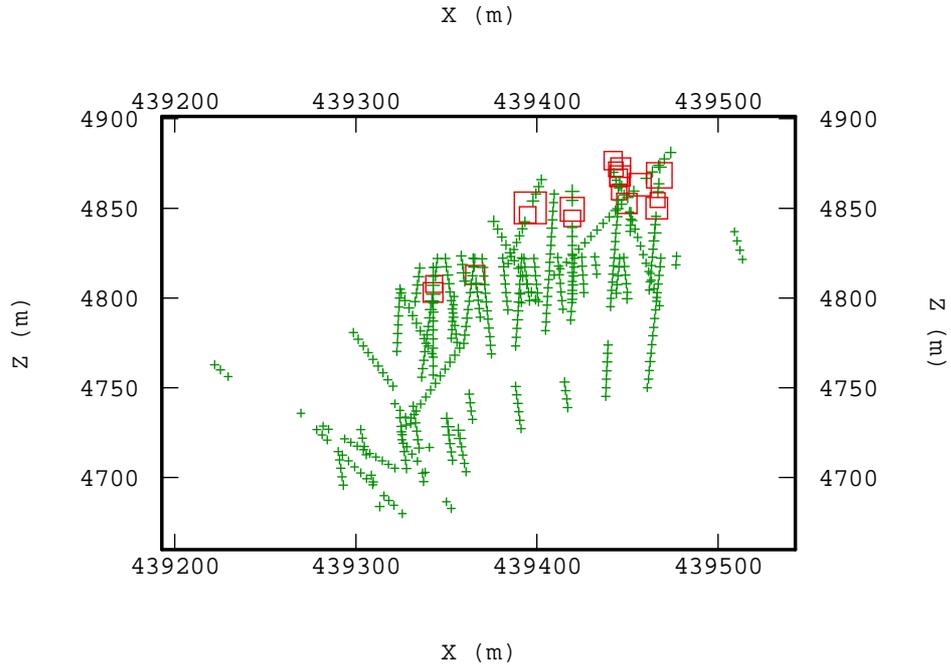


**Table 17.3.3\_3**  
**Corihuarmi Project**  
**Summary Statistics – Diana and Susan (SIL data)**  
**Coffey Mining 5m Composites**  
**High Grade Cuts Applied**

	Variable	Count	Min	Max	Mean	Std. Dev.	Variance	CV	Declustered Mean (25mx25mx10m)	Declustered Std Dev (25mx25mx10m)
Diana	Au (g/t)	445	0.005	2.41	0.469	0.549	0.302	1.171	0.480	0.586
Susan	Au (g/t)	941	0.001	2.08	0.477	0.519	0.270	1.088	0.471	0.514

Figure 17.3.3\_3 and Figure 17.3.3\_4 shows the effect of the high grade cuts on the Coffey Mining 5m composite datasets, depicted as a cross section of gold grade (easting verses RL), with red squares indicating data affected by the high grade cuts. Clustering of some of the high grade data is noted.

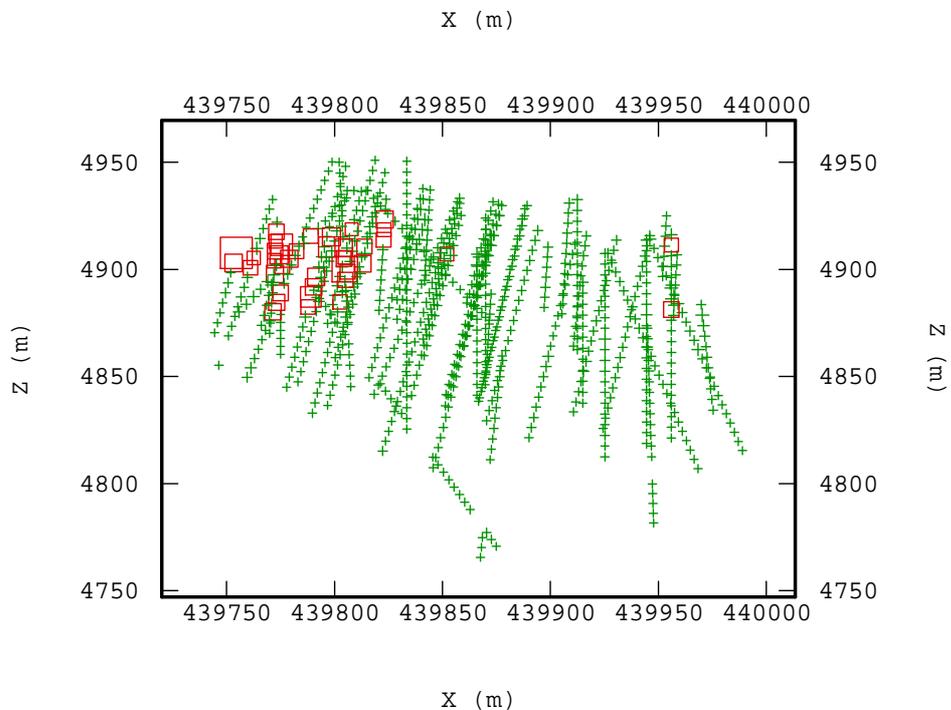
**Figure 17.3.3\_3**  
**Effect of High Grade Cut on Coffey Mining 5m Composite Dataset (SIL data) – Diana**  
**Cross Section of Gold Grade (Easting (x) vs RL (z))**



Isatis

Red Squares indicate data affected by High Grade Cut of 2.41g/t Au

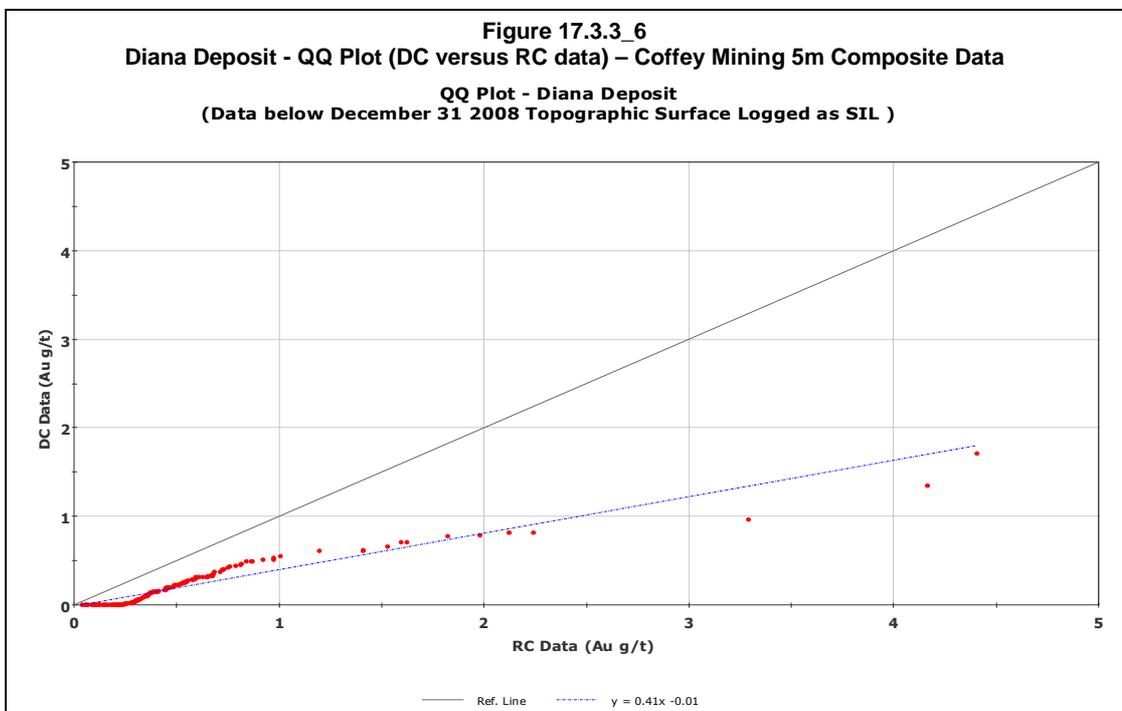
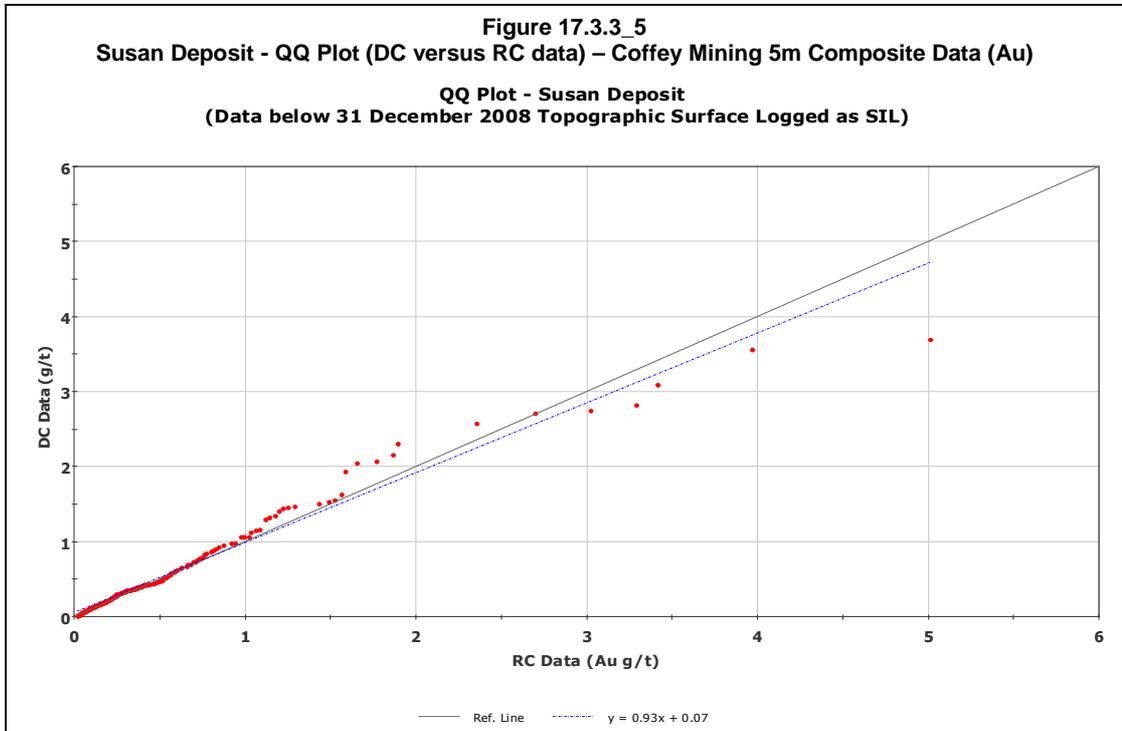
**Figure 17.3.3\_4**  
**Effect of High Grade Cut on Composited Dataset (SIL) – Susan**  
**Cross Section of Gold Grade (Easting (x) vs RL (z))**



Isatis

Red Squares indicate data affected by High Grade Cut of 2.08g/t Au

As two different data collection methods (RC and DC drilling) were used for the estimation, a comparison was made of both methods at Diana and Susan deposits. Figure 17.3.3\_5 and Figure 17.3.3\_6 provide Quantile-Quantile (QQ) probability plots (DC data versus RC data) of the Coffey Mining 5m composite data for gold in Susan and Diana respectively, only data below the 31 December 2008 topographic surface, logged as SIL was compared.



The QQ plots show a good correlation between the DC and RC data at Susan. However, for Diana, the QQ plot indicates a low bias of the DC data relative to the RC data. This is possibly explained by anecdotal evidence collected during the 2005 DC drilling campaign where all sludge sample returns (fines generated by the drill bit while cutting the core sample) were sampled and analysed. The Diana sludge samples returned Au grades that were consistently higher than those returned from the Susan deposit suggesting that there may have been some elevated proportion of high grade fines lost to drilling fluids during drilling at Diana. However, the comparison of the sludge data with the core samples is not conclusive due to both the high volumes of water added during drilling and the lag times for sludge to reach the surface. Considering the lack of directly twinned drillholes, Coffey Mining was not able to determine a definite and systematically quantifiable difference between the two drilling methods used, although there does appear to be a possible relative low bias issue for DC data at Diana.

#### 17.3.4 Variography

The Coffey Mining calculated 5m composite data was reviewed using Isatis geostatistical software, and it was concluded that the variogram model orientations and anisotropies are consistent with geological controls and trends for the Au mineralisation. While the transformation into a log normal distribution by MZT was not a preferred approach for OK estimates, the results are reasonably consistent with variogram models generated by Coffey Mining using other methods.

#### 17.3.5 Block Model Development and Estimation

A parent block size of 5mE x 5mN x 5mRL was selected with sub-blocking to a 2.5mE x 2.5mN x 1mRL cell size to improve volume representation of the interpreted wireframe models. While Coffey Mining would prefer block estimates to use larger panels to manage issues of conditional bias given the current drillhole spacing, MZT's intent was to emulate the current selective mining unit (SMU). On a global basis with lower cutoff grades applied, the block model outcomes would be reasonably similar.

The bulk densities applied to the model are consistent with the rock types and style of mineralisation encountered at Corihuarmi.

For the grade estimates, Au was interpolated using both OK and LK techniques. For the purposes of this report, only the OK Au estimation is considered appropriate and suitable.

Based on a statistical review of the MZT models by Coffey Mining, the OK estimates used uncut Au grades. Coffey Mining would prefer that the high grade cuts were applied for the OK estimates, but note that the potential outliers are clustered, moderated by the large amount of relatively close spaced data available and there is a history to-date of positive reconciliations between the 2006 resource model and production data.

Coffey Mining would prefer that grades were estimated for parent cell volumes and applied to subcells. However, the expected difference in outcomes for the grade estimates would be minimal.

A minimum of two and a maximum of 16 composites were used to generate block estimates. For a small blocked SMU model, the large maximum number of composites used has resulted in some over-smoothing of the block estimates locally. However, globally, it is not a significant issue. No documentation of the level of point discretisation used for block estimates is made by MZT.

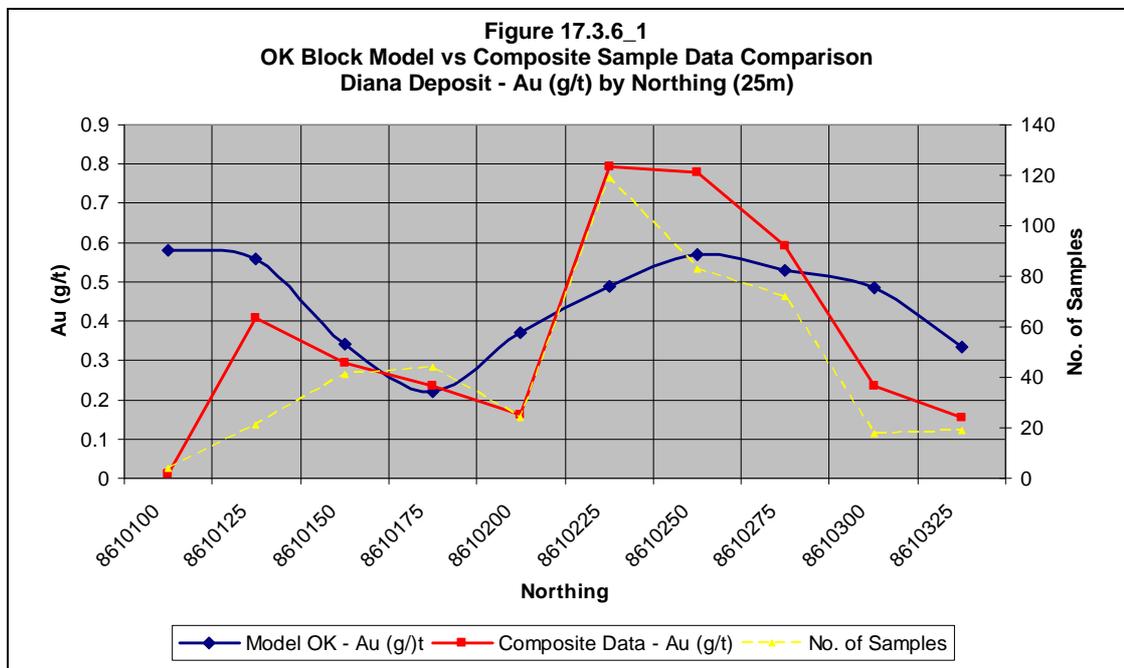
Coffey Mining considers that the OK Au grade estimates are satisfactory. Detailed validation of the models is discussed in Section 17.3.6.

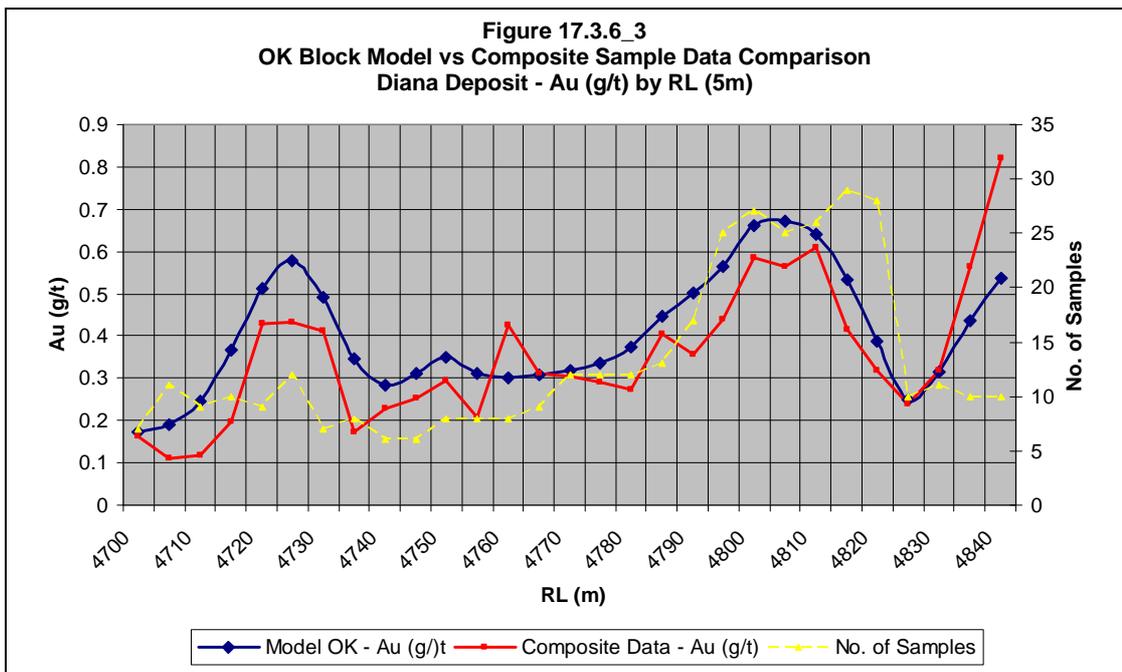
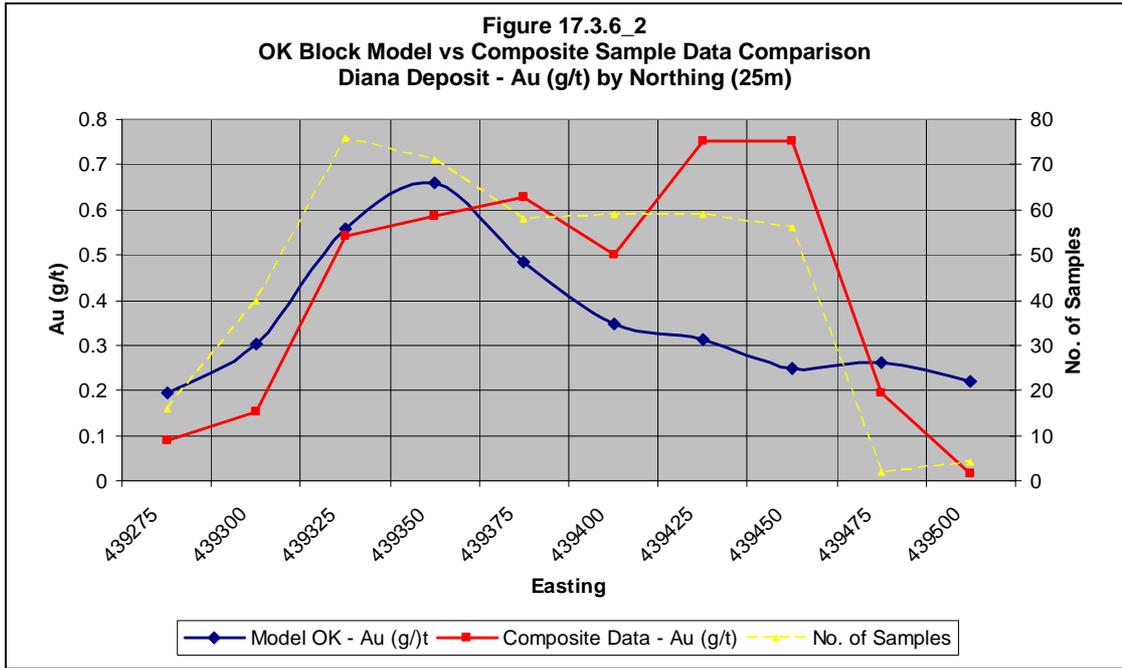
**17.3.6 Model Validation by Coffey Mining**

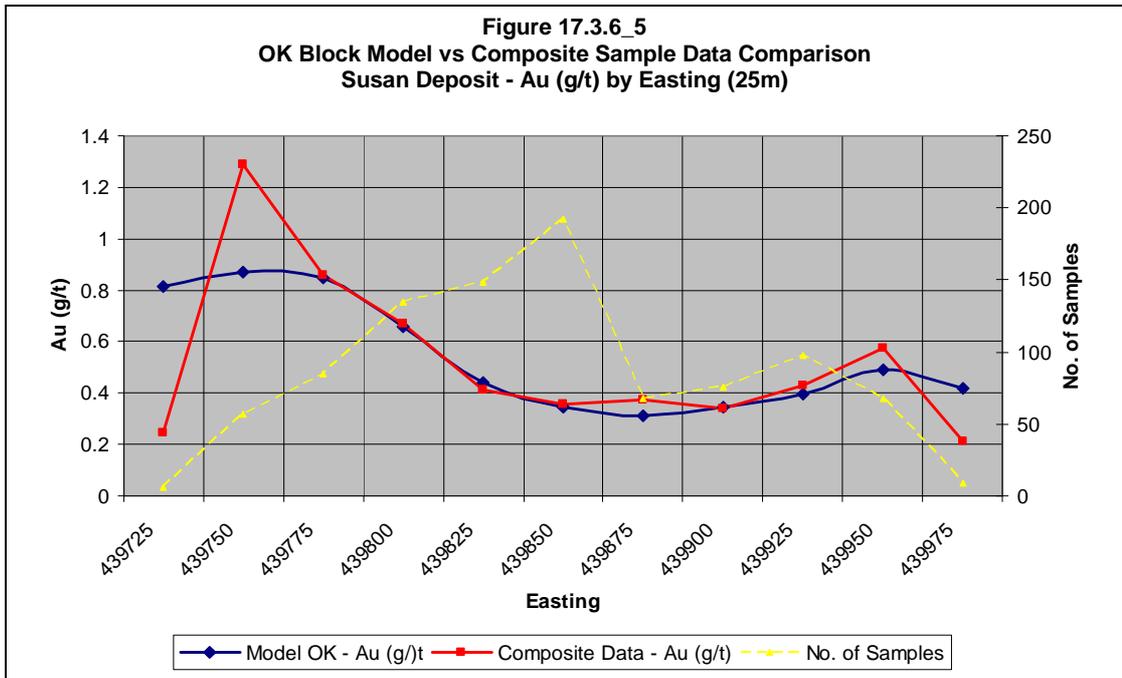
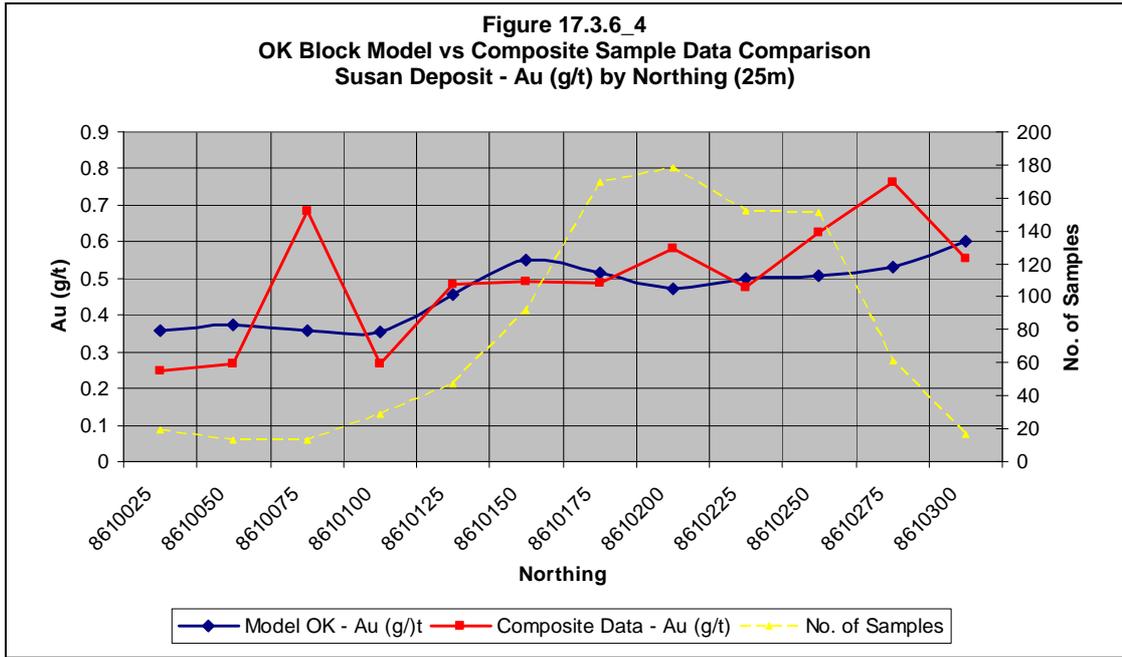
Extensive visual and statistical validation of the MZT grade estimates was completed using 5m composite data generated by Coffey Mining. This process included:

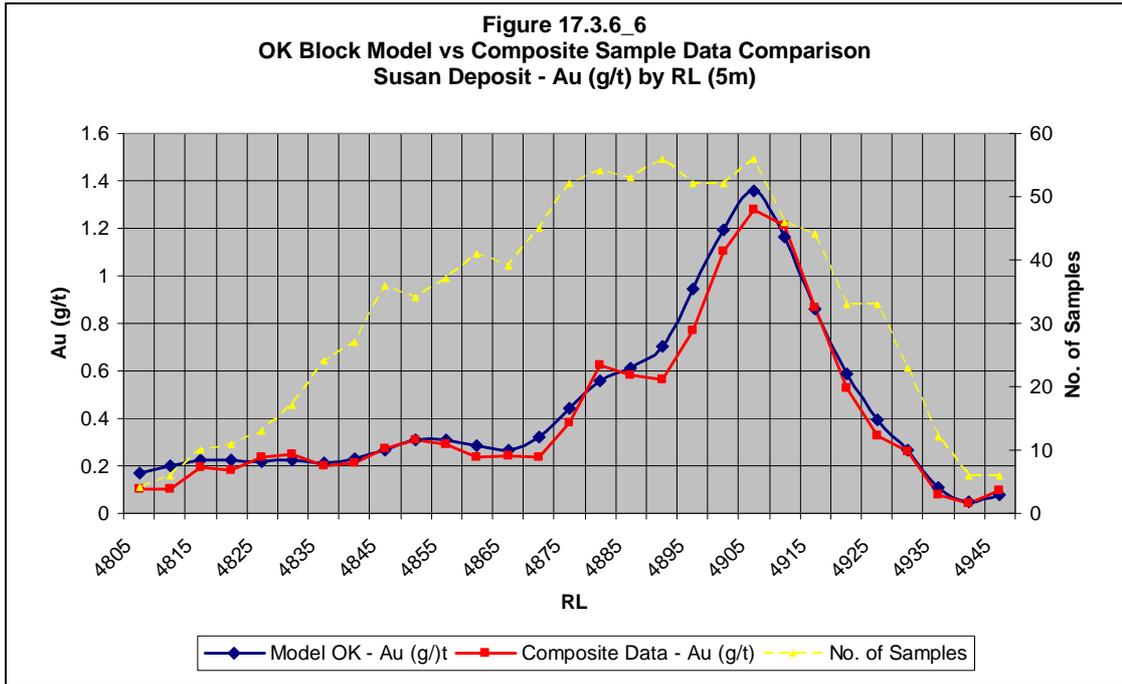
- Comparison of Diana and Susan of un-cut (re-calculated) composite grades and OK block model grades by Northing, Easting and RL zones (see Figure 17.3.6\_1 to Figure 17.3.6\_3 for Diana and Figure 17.3.6\_4 to Figure 17.3.6\_6 for Susan).
- Comparison of the mean grade of the high grade cut (re-calculated) and un-cut (re-calculated) composite data versus the mean grade of the model estimate, by deposit (see Table 17.3.6\_1 and Table 17.3.6\_2 respectively).

The validation indicates that the resource model replicates the source input data well in regions of higher density drilling. For regions of lower data density, smoothing is evident. The estimates are considered appropriate. No material errors were found during the model validation.









**Table 17.3.6\_1**  
**Corihuarmi Project**  
**Diana and Susan Deposits**  
**Comparison Statistics of High Grade Cut – 5m (SIL)**  
**Re-Calculated Composites versus OK Model Estimates**

Deposit	Variable	5m – High Grade Cut Composites (SIL Data)				Block Model	
		Mean	Standard Deviation	Declustered. Mean (25x25x10)	Declustered Std Dev (25x25x10)	Sub-Celled Datamine Model Volume	
						Weighted Mean	Weighted Std. Dev.
Diana	Au (g/t)	0.47	0.549	0.48	0.586	0.46	0.286
Susan	Au (g/t)	0.48	0.519	0.47	0.514	0.48	0.595

**Table 17.3.6\_2**  
**Corihuarmi Project**  
**Diana and Susan Deposits**  
**Comparison Statistics of Un-Cut – 5m (SIL)**  
**Re-Calculated Composites versus OK Model Estimates**

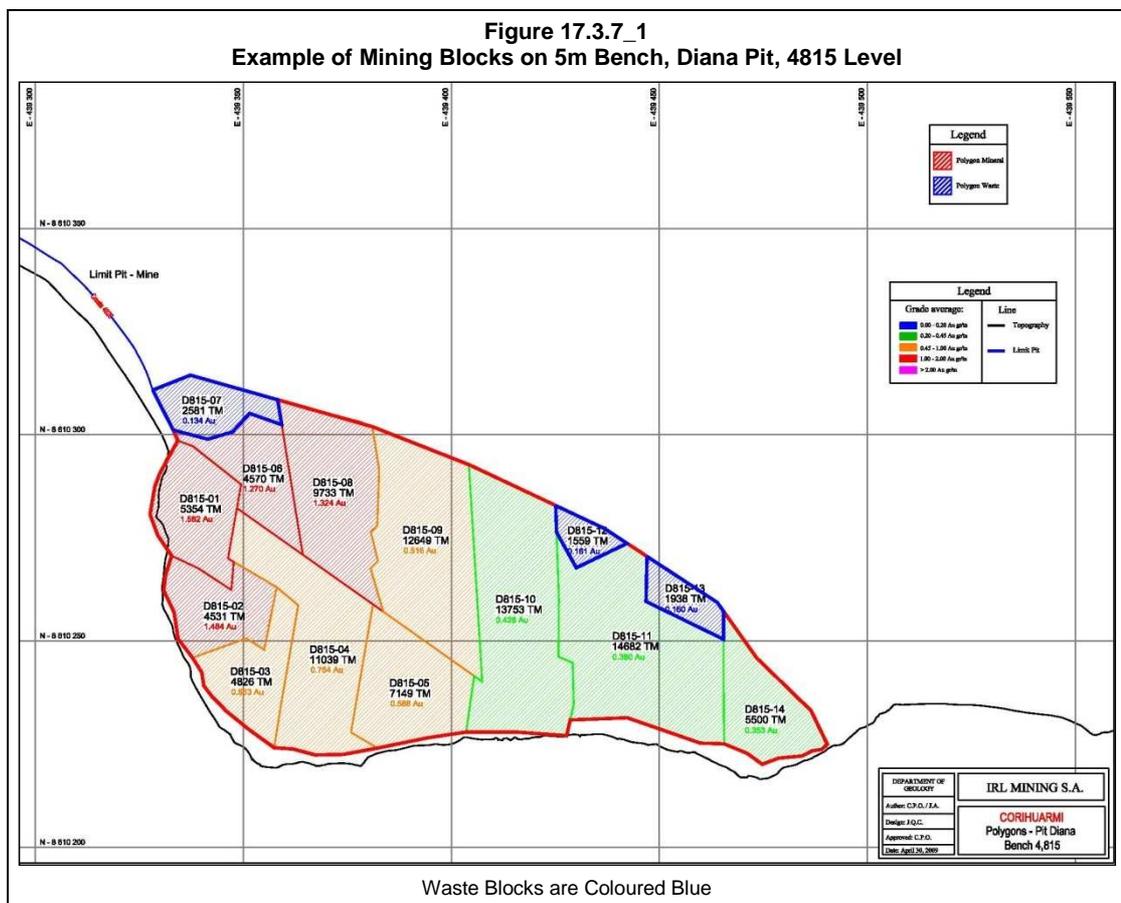
Deposit	Variable	5m – Composites (No-Cut Applied) (SIL Data)				Block Model	
		Mean	Standard Deviation	Declustered. Mean (25x25x10)	Declustered Std Dev (25x25x10)	Sub-Celled Datamine Model Volume	
						Weighted Mean	Weighted Std. Dev.
Diana	Au (g/t)	0.55	0.930	0.58	1.002	0.46	0.286
Susan	Au (g/t)	0.53	0.773	0.53	0.794	0.48	0.595

### 17.3.7 Reconciliation of Resource Model against Actual Mining Data

#### Introduction

In order to test the performance of the 2009 resource model at both Susan and Diana deposits, the resource models were compared to actual mining data on a 5 metre bench-by-bench basis, for the six month period from January 1, 2009 to June 30, 2009.

The mining data consists of grade control delineated ore and waste blocks, determined by close spaced (5m x 5m) blast hole (BH) sampling, based on a single 5m downhole sample. The mining block grade is determined by the arithmetic average of all BH data within the designed block shape. Figure 17.3.7\_1 shows an example of the mining blocks delineated for a 5 metre bench (Diana at 4815mRL).



Mining is effectively restricted to the SIL which contains the economic mineralisation. The mining cutoff grades are as follows:

- Susan deposit     0.25g/t Au.
- Diana deposit     0.30g/t Au.

Mined tonnages are determined by trucks counts from each block mined with an associated truck tonnage factor. A truck factor of 27.3 tonnes / truck is currently used based on the current truck fleet.

To date, no reconciliation or testing has been completed to validate the truck factor. Coffey Mining recommends testing of this truck factor against surveyed volumes for parcels of mined ore and / or periodic checks against truck scales. Coffey Mining understands that MIRL may also be installing a calibrated weightometer at the heap-leach stacker in the future to test the validity of the factor used.

### Study Data

In order to test the current resource models against mining figures, all delineated mining blocks (strings) by bench were compiled and evaluated using the BH data. Figure 17.3.7\_2 shows the location of the mining blocks relative to the topographic surface as of June 30, 2009.

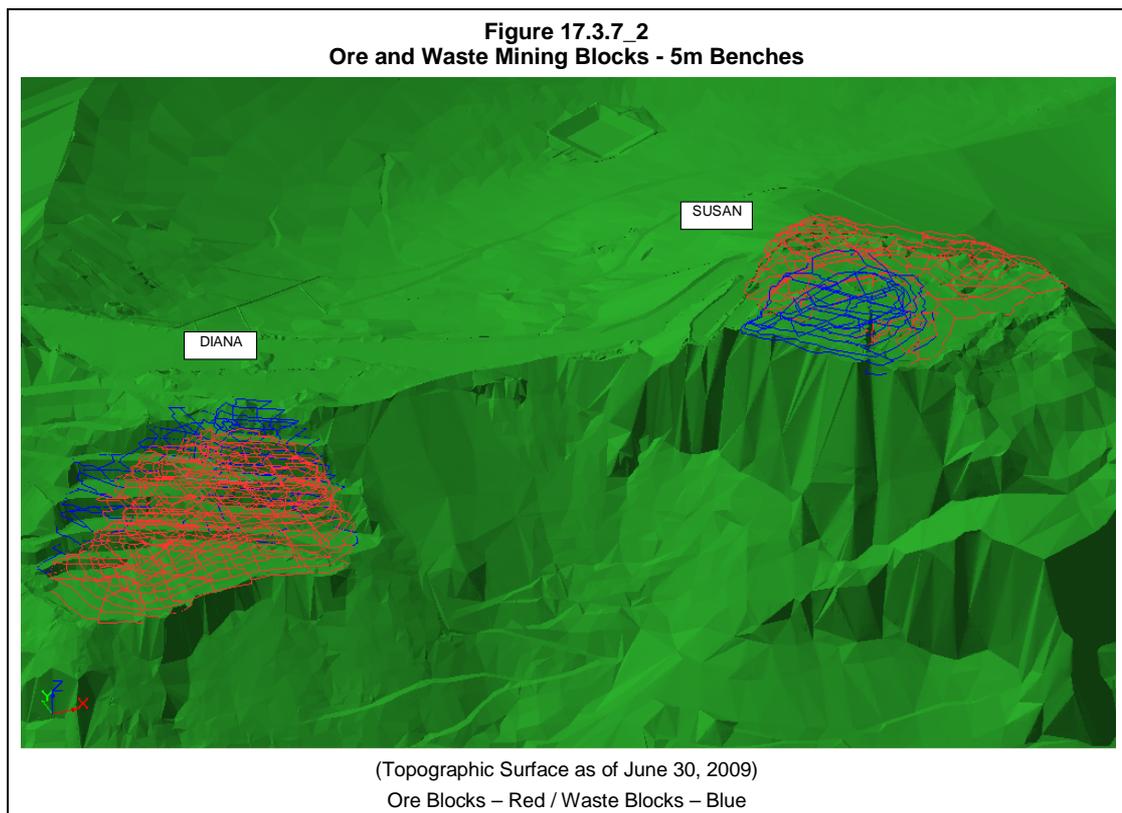
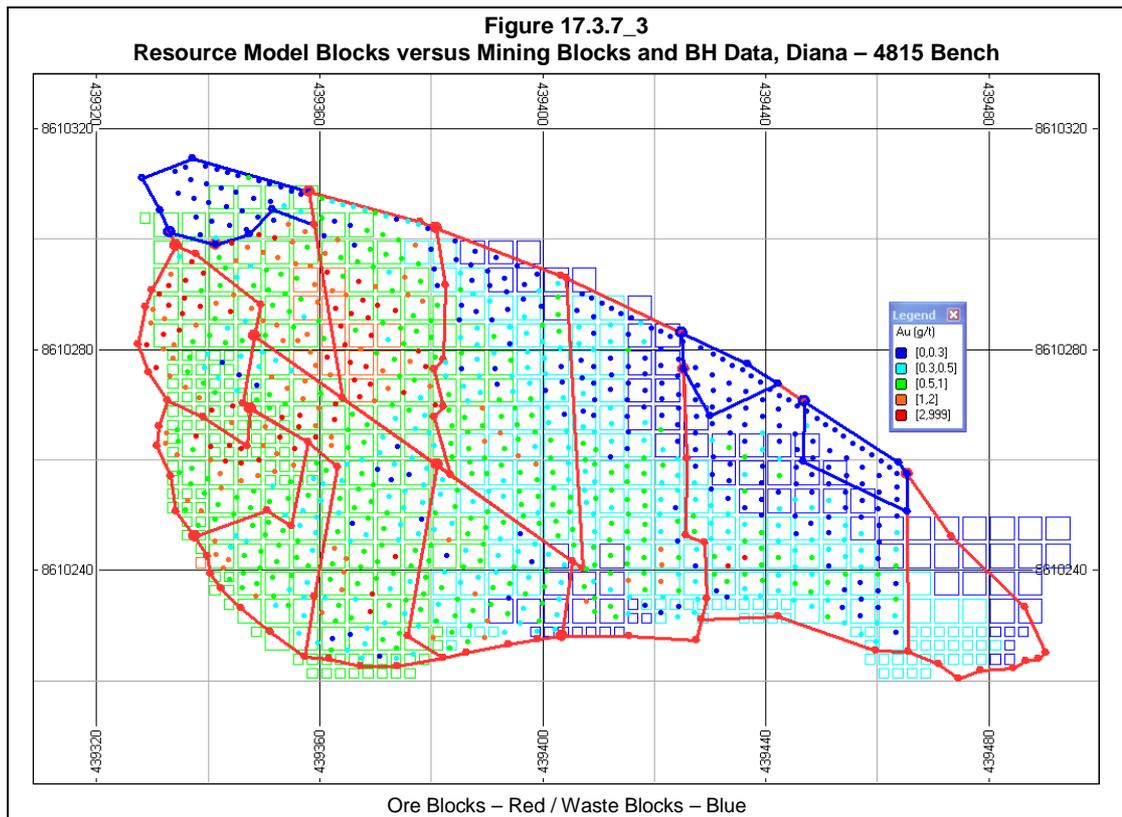


Figure 17.3.7\_3 and Figure 17.3.7\_4 show the comparison of the current resource model against mining blocks and raw BH data used to delineate the mining blocks. There is good correlation globally. At Diana, higher Au grades are noted in the BH data along the eastern side of the deposit relative to the resource model for the corresponding area. Local variations are the result of short scale variability in the gold grades revealed by the close spaced BH drilling. Apart from the difference in data density, the OK method employed in the resource modelling using the wider spaced drillhole data results in some smoothing of the estimated grades.

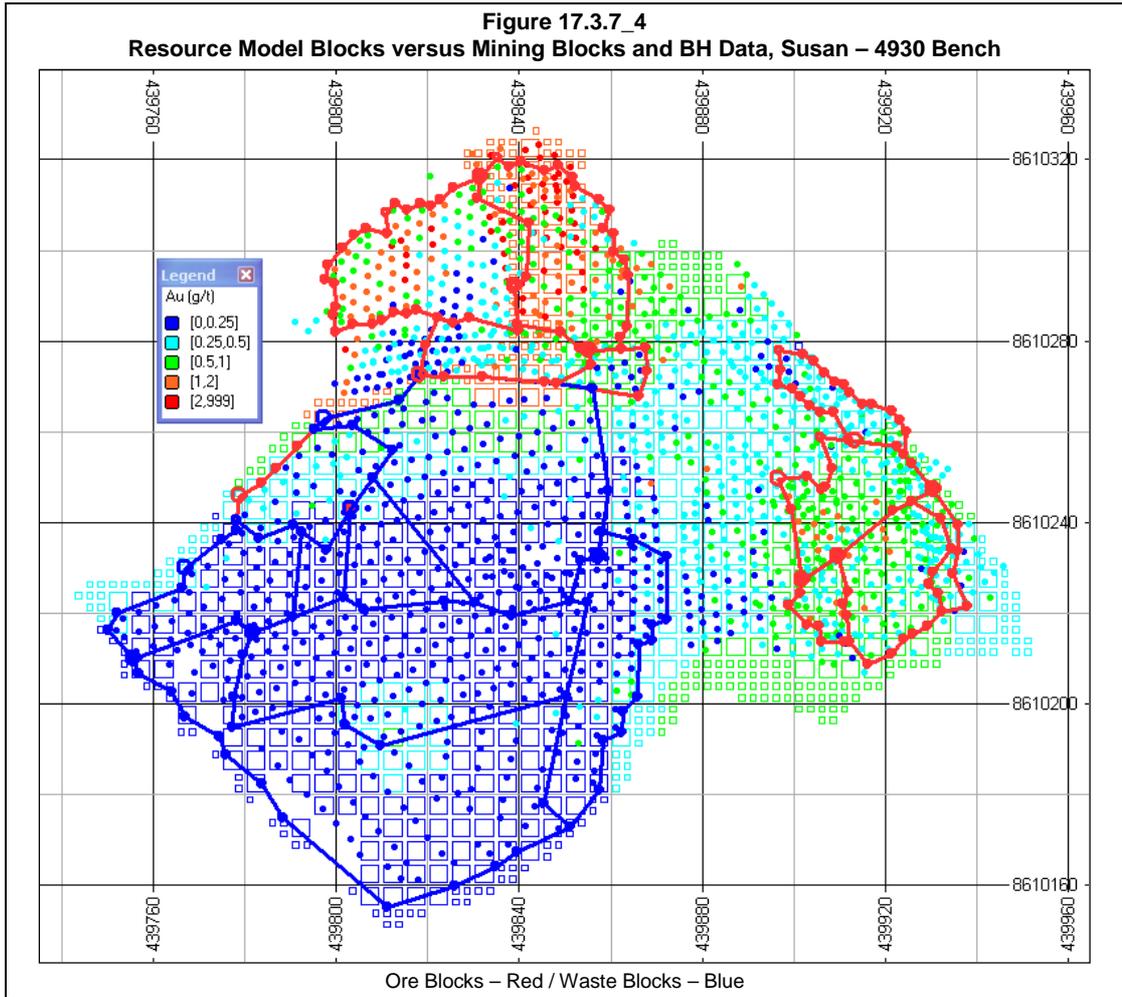


A comparison of the mining figures against the current resource model on a bench by bench basis, for the period January 1, 2009 to June 30, 2009 is given in Table 17.3.7\_1. The Diana deposit is consistently returning a higher grades and more contained metal from mining blocks than shown from the current resource model for the corresponding volumes. Globally, the current mining at Diana has reported 154% of the gold ounces, delineated by the resource model. However, from bench 4815, an improved correlation between mining block data and the resource model is noted with increased depth.

The Susan deposit is performing well on the comparison of current mining against resource model figures. Globally, the mining at Susan is reporting 106% of the gold ounces delineated by the resource model.

Figure 17.3.7\_5 to Figure 17.3.7\_8 are graphical representations of the data presented in Table 17.3.7\_1 for both Diana and Susan Deposits.

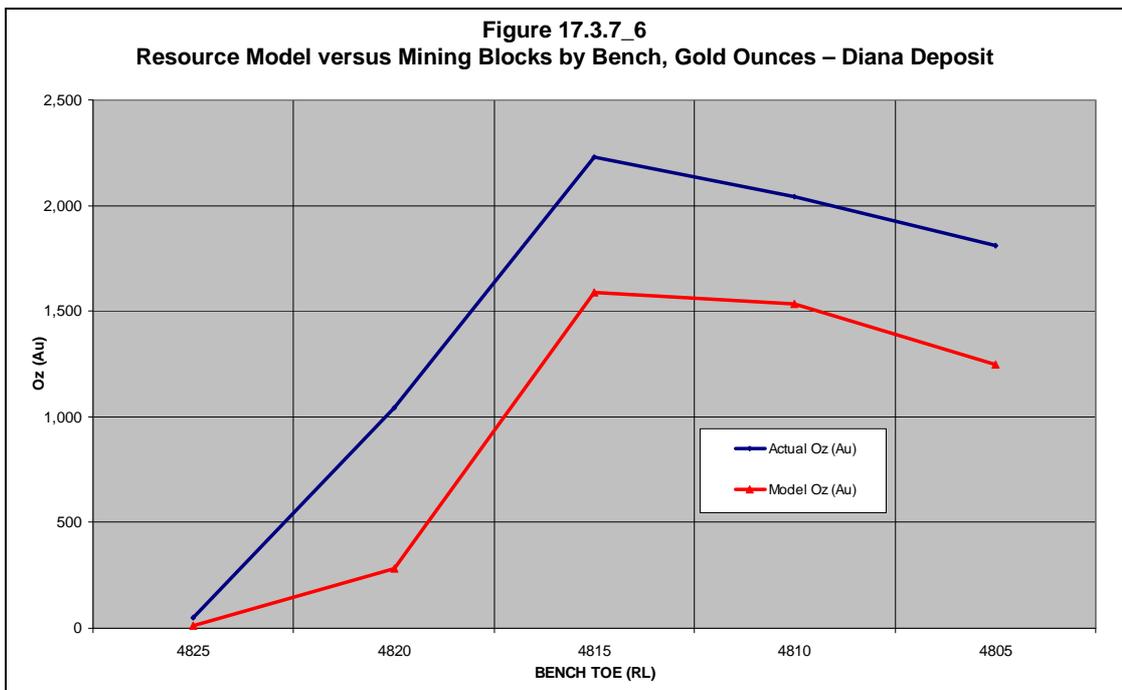
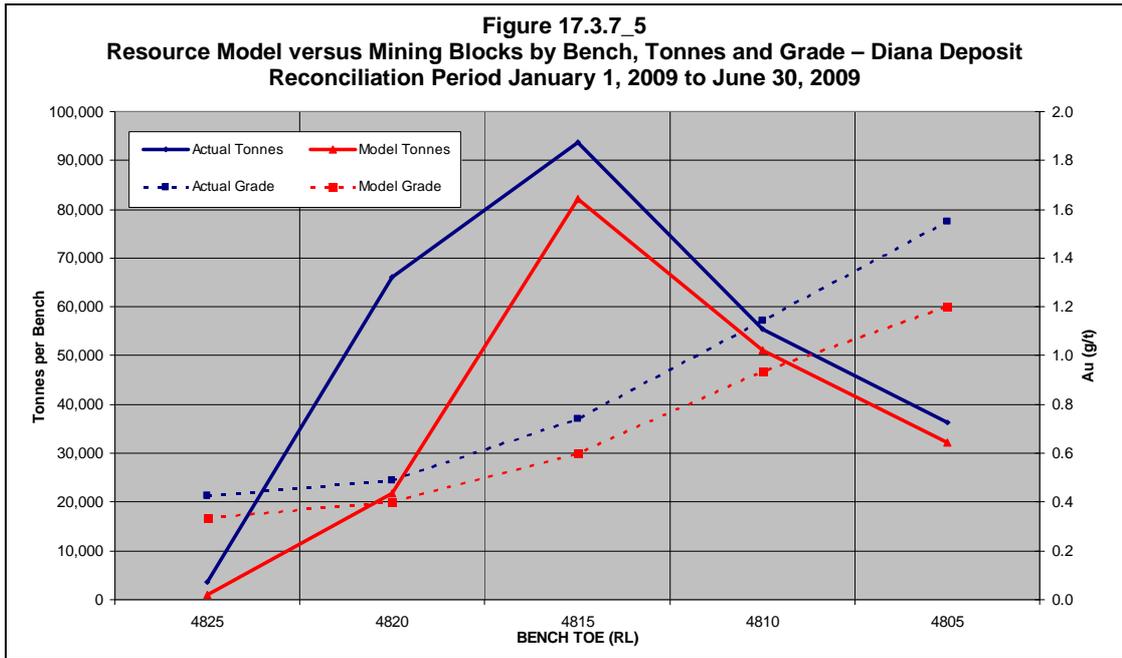
Figure 17.3.7\_5 shows an improved performance of the resource model tonnage relative to the mined tonnage with increasing depth at Diana, especially below the 4815 Bench. Grades are consistently underestimated. Metal shows a corresponding constant under-performance for the benches (Figure 17.3.7\_6).



**Table 17.3.7\_1**  
**Corihuarmi Project**  
**Susan and Diana Deposits**  
**Reconciliation of 2009 Resource Model versus as-Mined Figures – Bench by Bench**  
**For 6 month period from January 1, 2009 to June 30, 2009<sup>1</sup>**

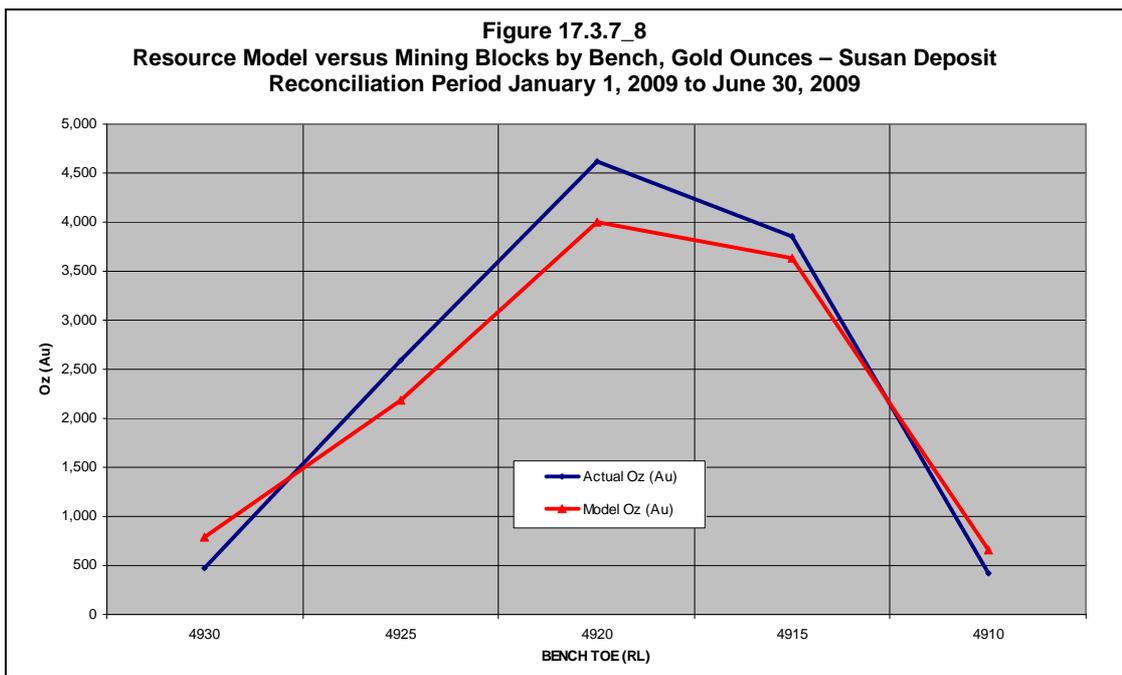
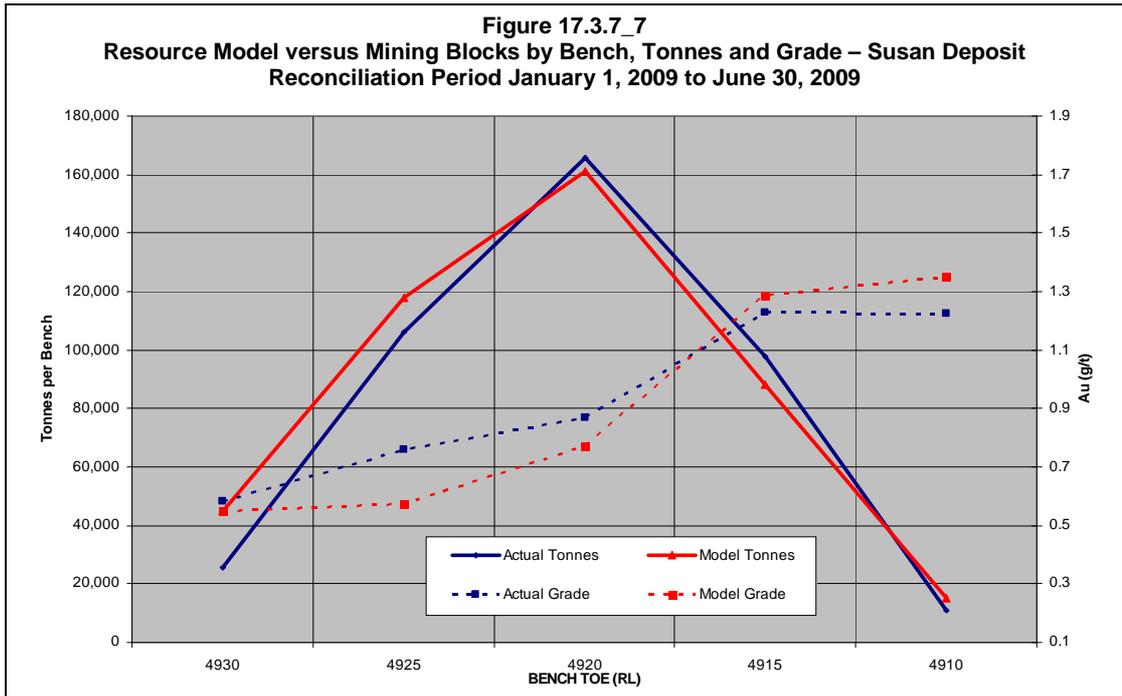
Bench	Resource Model (2009)			Mined Actual			% Difference Mined Actual to Resource		
	Tonnes* (t)	Au (g/t)	Metal (oz)	Tonnes# (t)	Au (g/t)	Metal (oz)	Tonnes (t)	Au (g/t)	Metal (oz)
<b>Diana Deposit (0.3g/t cutoff used for Resource model)</b>									
4825	940	0.33	10	3,713	0.43	51	395%	130%	510%
4820	21,813	0.40	281	66,203	0.49	1,045	304%	123%	372%
4815	82,111	0.60	1,591	93,776	0.74	2,229	114%	123%	140%
4810	51,106	0.93	1,533	55,556	1.14	2,043	109%	123%	133%
4805	32,262	1.20	1,245	36,309	1.55	1,810	113%	129%	145%
<b>Total</b>	<b>188,231</b>	<b>0.77</b>	<b>4,659</b>	<b>255,555</b>	<b>0.87</b>	<b>7,177</b>	<b>136%</b>	<b>113%</b>	<b>154%</b>
<b>Susan Deposit (0.25g/t cutoff used for Resource Model)</b>									
4930	44,813	0.55	789	25,535	0.58	477	57%	105%	60%
4925	118,036	0.57	2,178	105,982	0.76	2,587	90%	133%	119%
4920	161,101	0.77	4,004	165,783	0.87	4,618	103%	113%	115%
4915	87,951	1.29	3,635	97,649	1.23	3,857	111%	95%	106%
4910	15,252	1.35	663	10,702	1.22	421	70%	90%	63%
<b>Total</b>	<b>427,154</b>	<b>0.82</b>	<b>11,270</b>	<b>405,651</b>	<b>0.92</b>	<b>11,960</b>	<b>95%</b>	<b>112%</b>	<b>106%</b>

\* Mined Tonnes calculated on total trucks x Truck Factor (27.3 t) – for both Susan and Diana  
# Resource Tonnes calculated on total block volume x Density ( 2.22t/m<sup>3</sup> for Susan and 2.35t/m<sup>3</sup> for Diana)



The Susan deposit shows a good correlation between the model and as-mined figures with slightly negative reconciliation for tonnes, and slightly positive reconciliations for both grade and metal on a bench-by-bench basis for the 6 month period (Figures 17.3.7\_7 and 17.3.7\_8).

No reconciliation of the resource model or as-mined production figures against recovered gold was possible due to the heap leach treatment process, uncertain metal recoveries in the pile, and the lag time involved for the recovered metal. The truck tonnage factors remain untested.



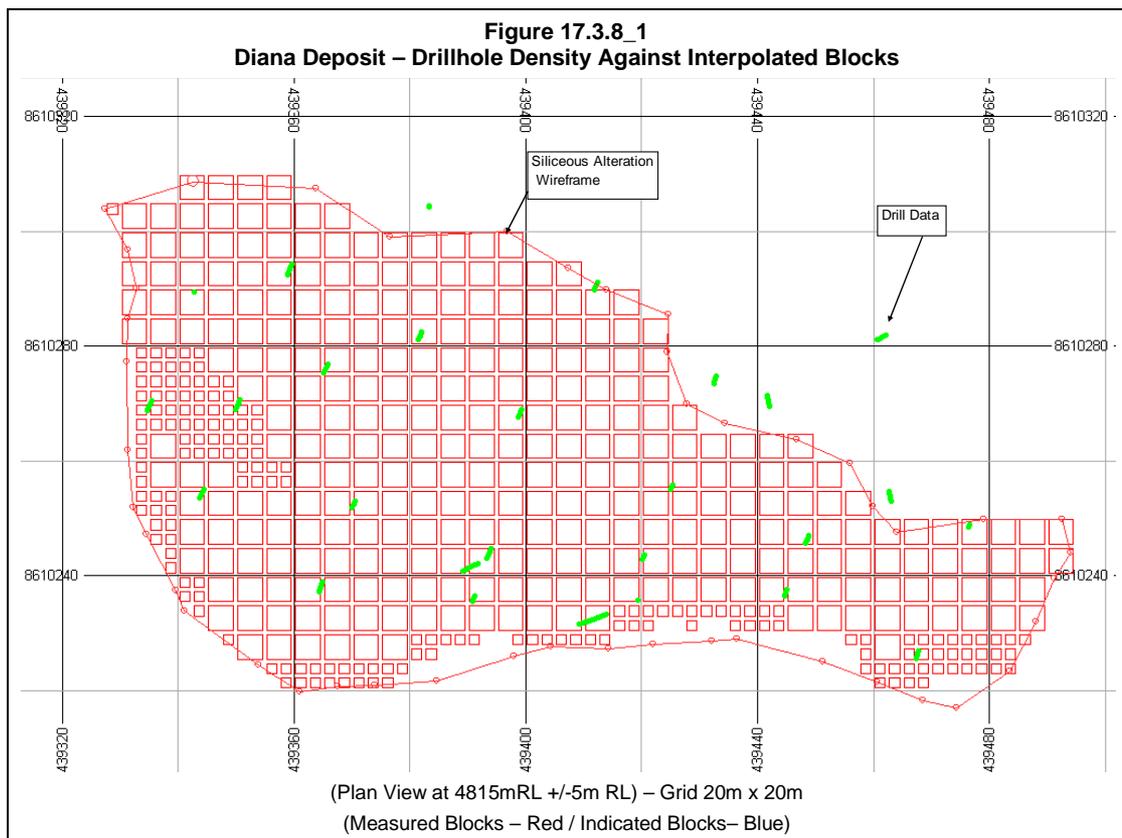
On that basis, the current conclusion is that:

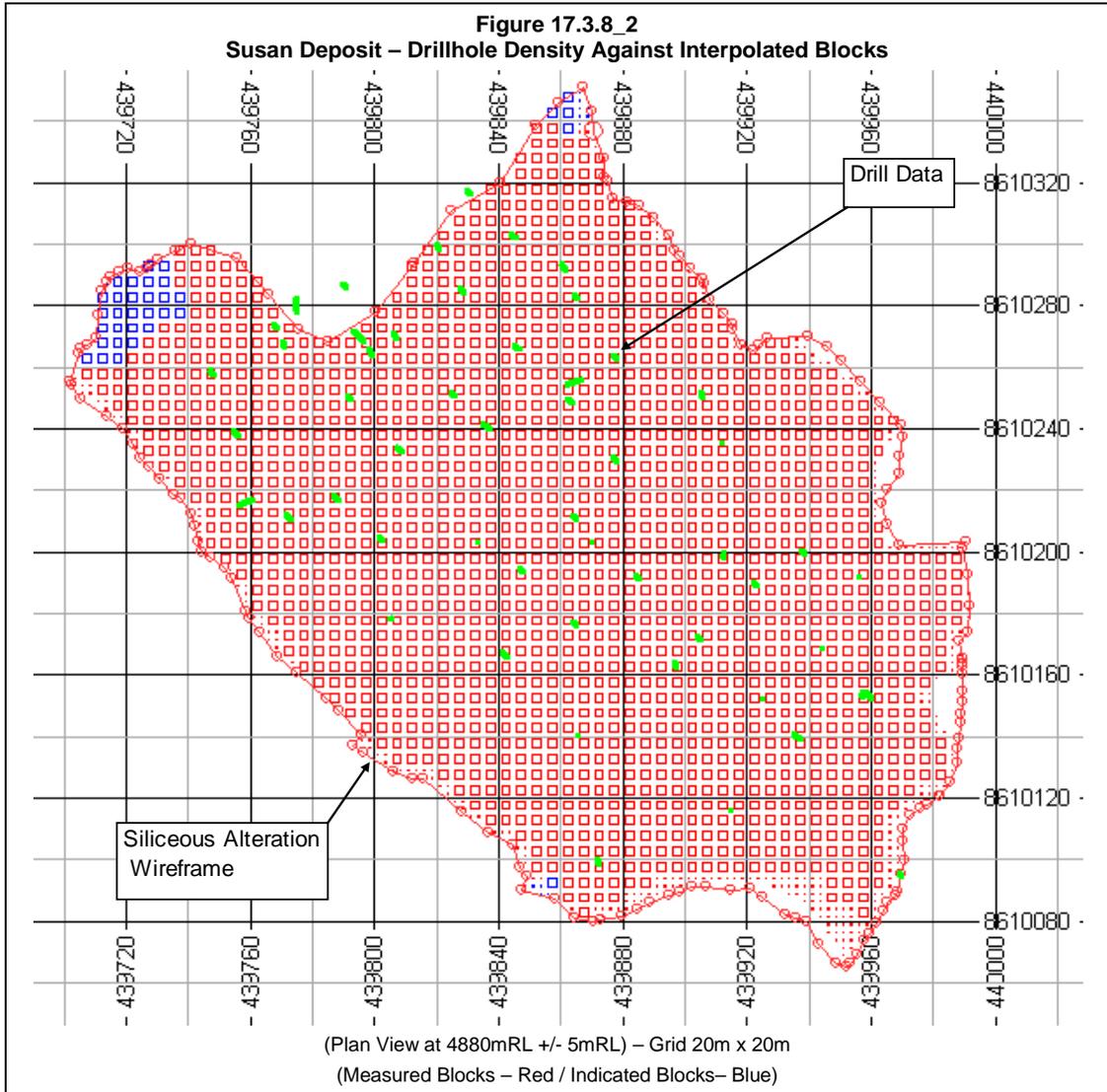
- The Diana resource model probably reconciles conservatively (low) relative to mining due to both general data density/location issues and sample quality issues related to the DC holes.
- The Susan resource model appears to reconcile well based on the short period of mining to-date.

### 17.3.8 Resource Classification

Considering that the estimate was confined to the siliceous alteration (SIL) and drillhole spacing was globally 20m x 20m (locally 10mx10m or better), and is well within the variography ranges discussed in Section 17.2.4 for each deposit, Coffey Mining considers the results of the classification criteria to be adequate. Figure 17.3.8\_1 and Figure 17.3.8\_2 shows the sample density around the estimated blocks.

The classification of the resource estimates has been reviewed through assessment of the input data, geological interpretation and grade estimate quality. The criteria assessed as part of the resource classification is set out in Table 17.3.8\_1.





**Table 17.3.8\_1**  
**Corihuarmi Project**  
**Susan and Diana Deposits**  
**Confidence of Key Criteria for Resource Classification**

Items	Discussion	Confidence
Drilling Techniques	Diamond / RC - Industry Standard approach	High
Logging	Standard nomenclature and apparent high quality.	High
Drill Sample Recovery	Recoveries were recorded during diamond drilling. Uncertainty regarding RC drilling sample recoveries.	Moderate
Sub-sampling Techniques and Sample Preparation	Industry standard for both Diamond and RC.	High
Quality of Assay Data	QAQC data since 2005 has been acceptable but prior to 2005 no QAQC program was in place	Moderate
Verification of Sampling and Assaying	Field duplicates for RC have not been executed to reflect the precision of the 5m samples. No true twin holes are available to compare the apparent negative bias of DC versus RC	Moderate
Location of Sampling Points	Consistent collar survey/pick-up procedures that have produced coordinates consistent with topographic survey. Diamond drilling has limited available downhole survey. No downhole surveys were completed for the RC drilling campaign.	Moderate
Data Density and Distribution	Globally, the mineralisation is defined using notional 20mE x 20mN drill spacing. Locally drill spacing can be 10m x10m or better.	High
Audits or Reviews	Coffey Mining (RSG Global) completed a resource model of Susan and Diana deposits in 2006, using both OK and Multiple Indicator Kriging (MIK) based on a 5mx5mx5m SMU estimation. Review of the current model by MZT has been completed by Coffey and is the subject of this report.	Moderate
Database Integrity	QAQC data had not been monitored by MIRL in any way until following the Coffey Mining site visit. No material issues had been identified.	Moderate
Geological Interpretation	Estimation was confined within the siliceous alteration zone which is considered appropriate for modelling of the gold mineralisation in this style of deposit.	Moderate
Estimation and Modelling Techniques	Ordinary Kriging for estimation of gold grades which is an industry standard method and appropriate for this style of mineralisation. Topcuts have not been used directly for grade estimation. Estimation has been directly into small SMU sized blocks with potential to refine estimation parameters for marginally more robust estimates.	Moderate
Cutoff Grades	Grade and tonnes have been reported at a range of cutoff grades. For mining purposes the economic cutoff grades used are 0.25g/t Au for the Susan deposit and 0.3g/t for the Diana deposit. The cutoffs are appropriate both for the style of mineralisation at Corihuarmi and the open pit mining method for treatment on heap leach pads.	High
Mining Factors or Assumptions	Reconciliation of 2009 resource model against grade control drilling and mining figures for the period 1 <sup>st</sup> January 2009 to 30 <sup>th</sup> June 2009 was completed by Coffey Mining, for both Susan and Diana Deposits. Grade control drilling has shown a positive reconciliation to the resource model to date at Diana; however with depth there appears to be a closer reconciliation developing. The reconciliation of the model against mining data at Susan to date is showing a much closer reconciliation with the data available. The OK model has SMU sized blocks which are smaller than ideal, however it is expected there will be minimal edge loss / dilution due to the style of mineralisation (broad zones above cutoff).	Moderate

## 17.4 Scree Resource Estimate

Coffey Mining has estimated the Mineral Resource for the Scree Deposit of the Corihuarmi Gold Project as at 28<sup>th</sup> of February 2010. The estimation of gold grades was completed using OK. This estimation approach was considered appropriate based on review of a number of factors, including the quantity and spacing of available data, the interpreted controls on mineralisation and the style of mineralisation. The grade estimation was constrained with geological and mineralisation interpretations.

### 17.4.1 Database Validation

The resource estimation was based on the available exploration drillhole data provided to Coffey Mining. This data was reviewed and validated by Coffey Mining prior to commencing the resource estimation study.

Data included samples from trenches / soil pits and reverse circulation (RC) drilling samples were included for use in the modelling process. The resource estimate was based on a total of 95 RC drillholes and 27 trenches. The RC drill samples were taken at 1m or 2m intervals while trench samples varied from 1m to 2.5m in length.

Validation of the database included checks of:

- Overlapping and missing intervals.
- Downhole survey.
- Consistency of depths between different data tables.

The database was loaded into Datamine.

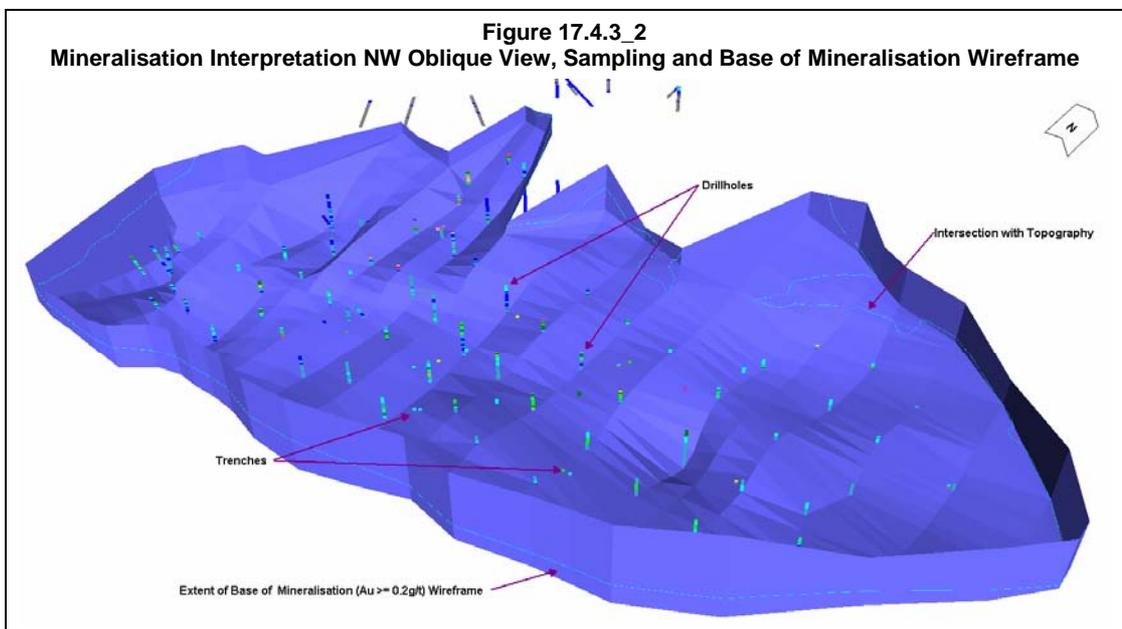
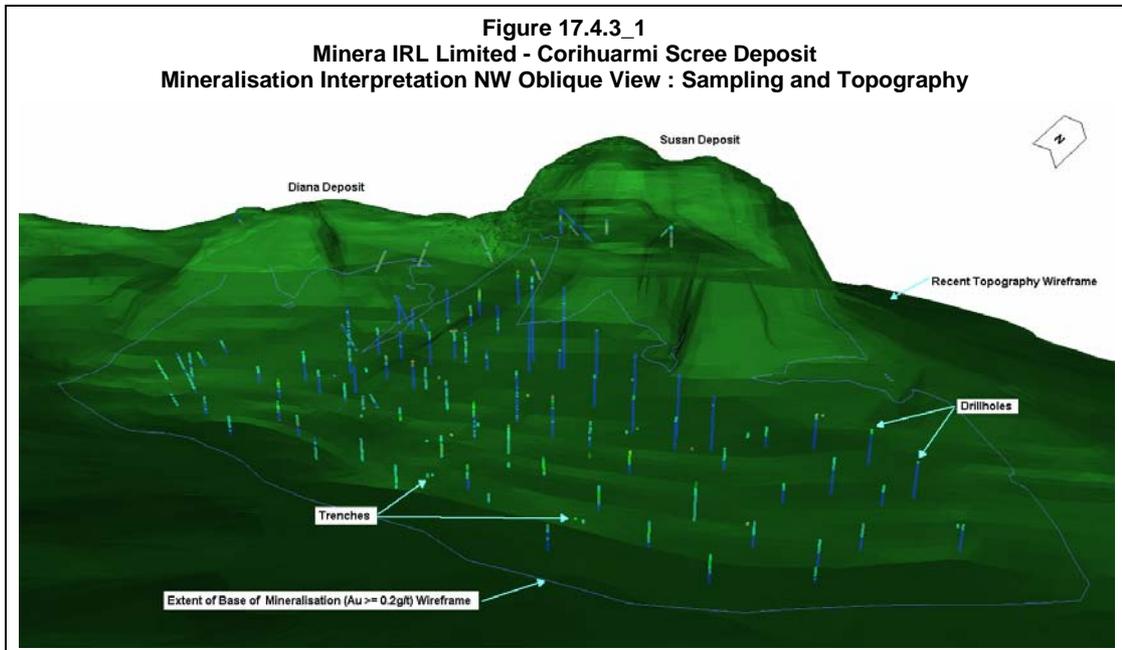
The samples were composited to 2m down-hole lengths with residual intervals of less than 1m length being combined with previous intervals to retain all the data. This resulted in composites lengths ranging from 1m to 2.5m and a total of 1,421 composites being created.

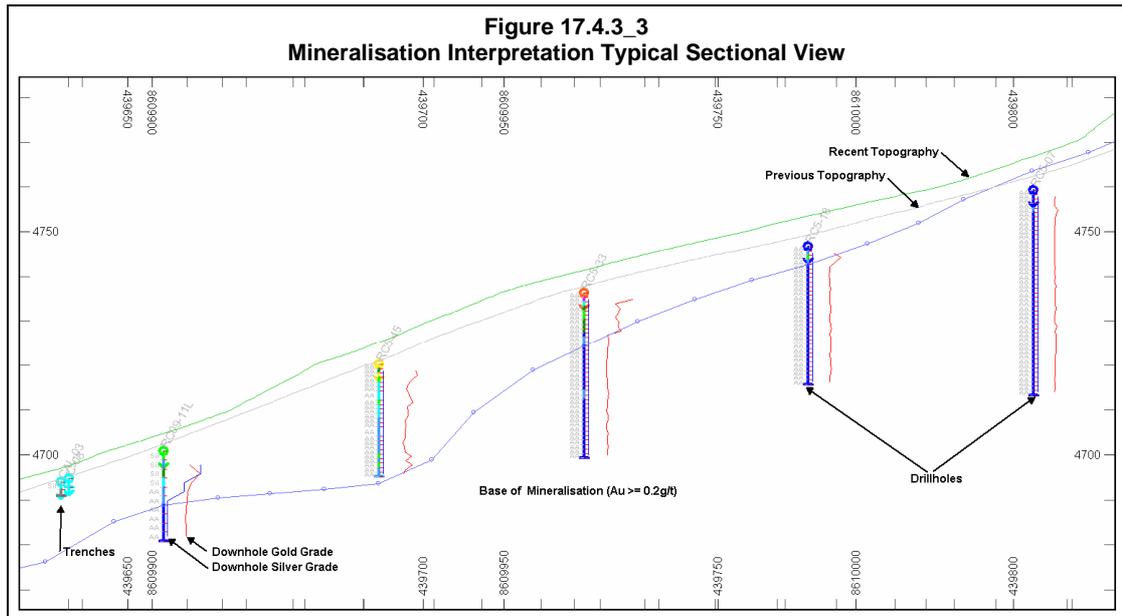
### 17.4.2 Geological Interpretation and Modelling

Based on grade information (nominal 0.2g/t Au lower grade cutoff) and geological observations, a lower bound to the mineralised domain has been interpreted and a wireframe developed to constrain resource estimation for the Scree deposit. Interpretation and digitising of this constraining bound has been undertaken on cross sections orientated at nominal 40° (drill line orientation). A wireframe surface has been built using the interpreted digitised boundaries. The interpretation and wireframe models have been developed using the Datamine mining software package.

### 17.4.3 Mineralisation Interpretation

For the purpose of resource estimation, a single mineralised domain was interpreted and modelled based on a lower cutoff grade of 0.2g/t Au. The mineralisation occurs on the southern slopes of the Diana and Susan deposits. It is contained within a sequence of detritals (alluvials, colluvials and scree) deposited there. Roughly, the domain dips shallowly towards to the southwest (Figure 17.4.3\_1, Figure 17. 4.3\_2 and Figure 17. 4.3\_3).





For composites above the base of mineralisation, a value of one was assigned to the domain field, *Minzon* otherwise a value of zero (background) was allocated. No surface depicting the scree and solid rock was not defined as there is insufficient information to establish this boundary.

#### 17.4.4 Compositing, Statistical Analysis and High Grade Cuts

A statistical analysis was undertaken to determine an appropriate composite length. The dominant sample lengths were 1m (85.3%) and 2m (11.7%) with the remainder predominantly being 2.5m, 4m and 5m in length.

A total of 1,421 composites based on a nominal 2m length were generated from the 122 RC holes and trenches. All composites were flagged to match the domain within which they occur. Statistical analysis was undertaken based on 2m composites of the gold assay data only (Table 17.4.4\_1).

<b>Table 17.4.4_1</b> <b>Minera IRL Limited</b> <b>Corihuarmi Scree Deposit</b> <b>2m Composite Descriptive Statistics</b>			
<b>Horizon</b>	<b>All</b>	<b>Mineralised (Minzon=1)</b>	<b>Background (Minzon=0)</b>
<b>Item</b>	<b>Gold (g/t)</b>		
Count	1,421	547	874
Minimum	0.005	0.005	0.005
Maximum	8.434	8.434	2.131
Mean	0.214	0.446	0.069
Median	0.100	0.335	0.055
Standard Deviation	0.375716	0.516688	0.087781
Variance	0.141163	0.266966	0.007705
CV	1.76	1.16	1.28

Further statistical analysis was completed on the different types and phases of sample collection and compared (Table 17.4.4\_2). The two phases of RC drilling are similar while the trenching is different due to its restricted extent and relatively shallow sampled depth (maximum 4.5m).

<b>Table 17.4.4_2</b>						
<b>Minera IRL Limited</b>						
<b>Corihuarmi Scree Deposit</b>						
<b>2m Composite Descriptive Statistics</b>						
<b>Types and Phases</b>						
<b>Horizon</b>	<b>Mineralisation (Minzon=1)</b>					
<b>Type</b>	All	RC Drilling			Trenches	
<b>Hole Prefix</b>		All	RC5	RC09	CAL	C
<b>Item</b>	<b>Gold (g/t)</b>					
Count	547	508	339	169	18	21
Minimum	0.005	0.005	0.005	0.110	0.005	0.046
Maximum	8.434	4.500	2.015	4.500	3.211	8.434
Mean	0.446	0.422	0.388	0.490	0.392	1.056
Median	0.335	0.330	0.315	0.360	0.131	0.569
Standard Deviation	0.516688	0.361579	0.265228	0.494945	0.732896	1.715365
Variance	0.266966	0.13074	0.070346	0.244971	0.537136	2.942475
CV	1.16	0.86	0.68	1.01	1.87	1.62
<b>Horizon</b>	<b>Background (Minzon=0)</b>					
Count	874	868	694	174	6	0
Minimum	0.005	0.005	0.005	0.020	0.005	
Maximum	2.131	0.420	0.420	0.300	2.131	
Mean	0.069	0.066	0.062	0.081	0.419	
Median	0.055	0.055	0.050	0.070	0.064	
Standard Deviation	0.087781	0.052907	0.05351	0.047442	0.770811	
Variance	0.007705	0.002799	0.002863	0.002251	0.59415	
CV	1.28	0.80	0.86	0.58	1.84	

Histograms, log histograms and probability plots of gold grades have been compiled for the domains (Figure 17.4.4\_1 to Figure 17.4.4\_2). Distributions of gold grades exhibit lognormality and are characterised by strong positive skewness for both domains as is typical of many gold deposits. The coefficient of variation ('CV') of Minzon 1 and 0 are relatively low.

An outlier analysis was also completed to determine if the application of high grade cuts was warranted. A small number of elevated grades were considered to be anomalous resulting in high grade cuts (topcuts) being applied to both domains. The approach used in assessing the outliers is summarised as follows:

- Detailed review of histograms and probability plots, with significant breaks in populations used to interpret possible outliers.
- Investigation of clustering of the higher-grade data. High grade data that are clustered are considered to be real while high grade composites that are not clustered are considered to be outliers, requiring further consideration either via cutting and/or search restriction.
- The ranking of the composite data and the investigation of the influence of individual composites on the mean and standard deviation (mean v std-dev plots).

Figure 17.4.4\_1  
 Minera IRL Limited : Corihuarmi Scree Deposit  
 Histogram and Probability Plot  
 Mineralisation (Minzon=1)

### Corihuarmi Scree Slope Deposit (Mineralised (Minzon=1))

	Unweighted	Weighted	Units
Samples:	547	N/A	
Minimum:	0.005000	N/A	g/t
Maximum:	8.434000	N/A	g/t
Mean:	0.445571	N/A	g/t
Median:	0.335000	N/A	g/t
Std. Deviation:	0.516688	N/A	g/t
Coefficient of Variation:	1.159607	N/A	

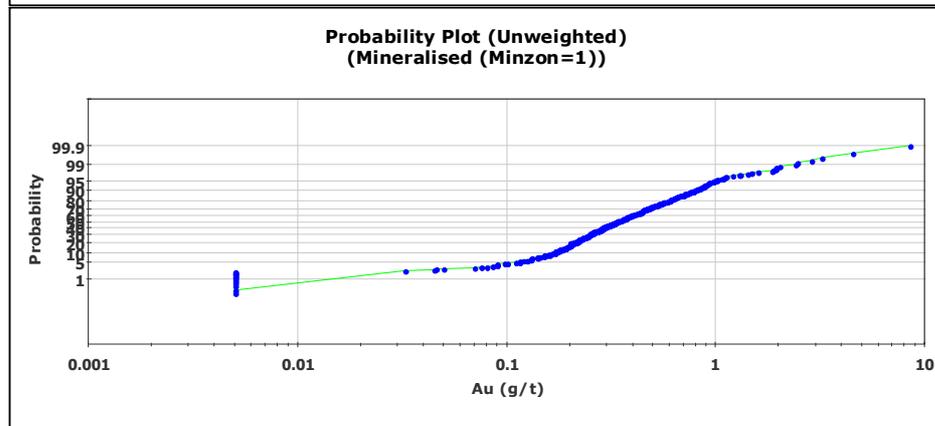
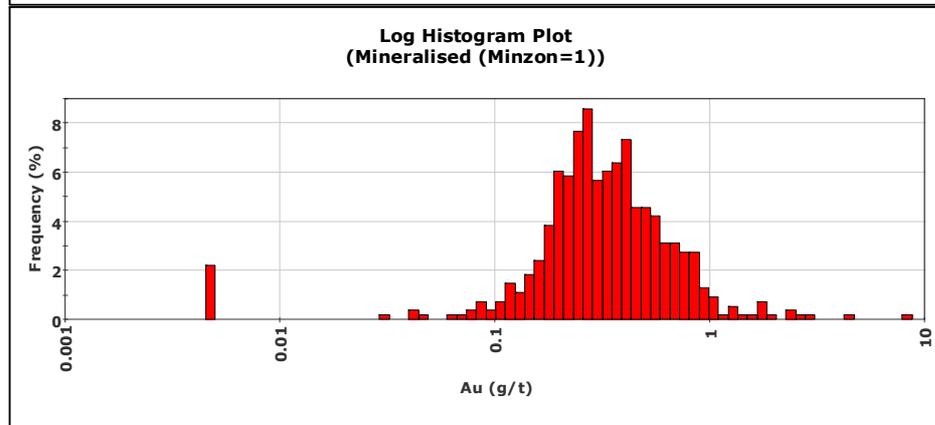
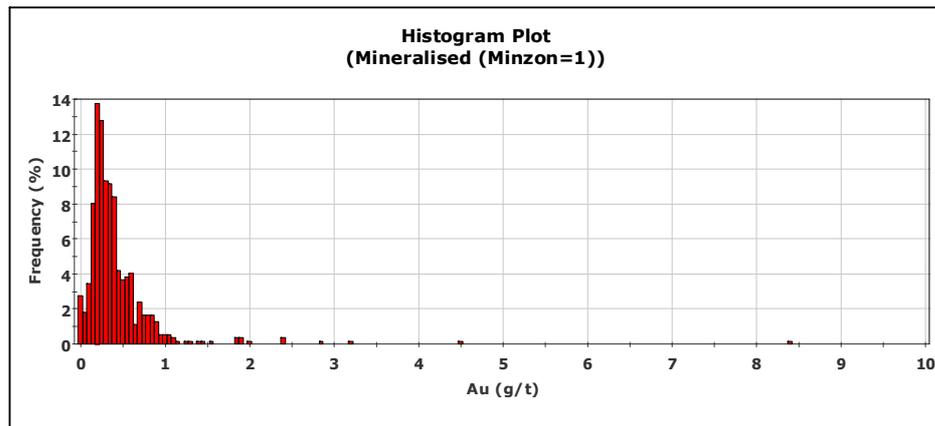
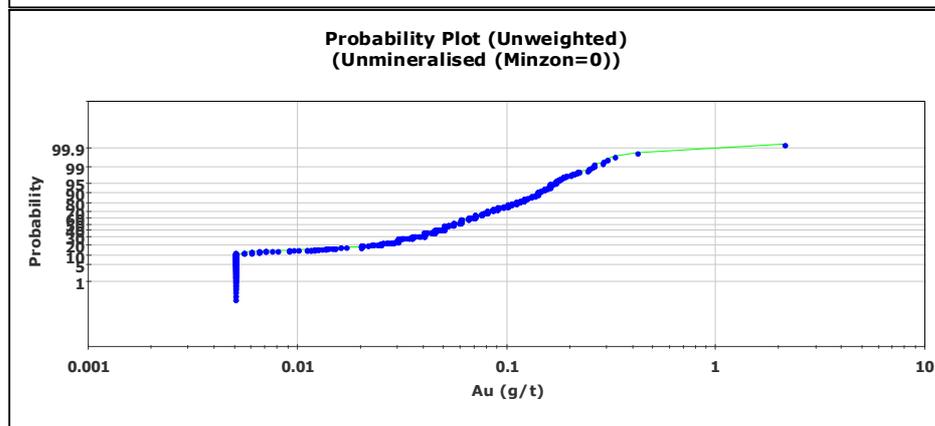
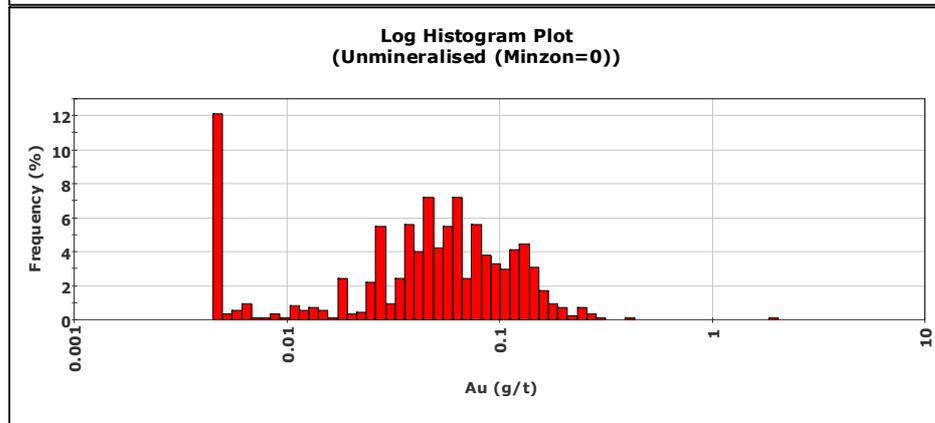
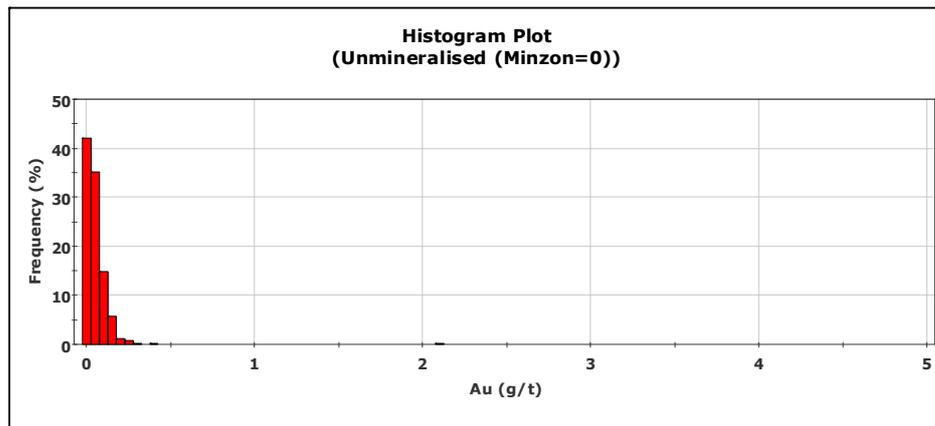


Figure 17.4.4 2  
 Minera IRL Limited : Corihuarmi Scree Deposit  
 Histogram and Probability Plot  
 Background (Minzon=0)

**Corihuarmi Scree Slope Deposit  
 (Unmineralised (Minzon=0))**

	Unweighted	Weighted	Units
Samples:	874	N/A	
Minimum:	0.005000	N/A	g/t
Maximum:	2.131250	N/A	g/t
Mean:	0.068533	N/A	g/t
Median:	0.055000	N/A	g/t
Std. Deviation:	0.087781	N/A	g/t
Coefficient of Variation:	1.280858	N/A	



The applied topcuts are listed below with only a relatively small number of composites being cut in each of the zones.

Table 17.4.4_3 Minera IRL Limited Corihuarmi Scree Deposit Outlier Statistics 2m Composites - Gold (g/t)										
Domain	Uncut				Cut					% Change in Mean
	Number Data	Mean	Std Dev	CV	Upper Cut	Number Data Cut	Mean	Std Dev	CV	
Mineralised (Minzon=1)	547	0.45	0.5167	1.16	2.90	3	0.43	0.0878	0.86	3.1
Background (Minzon=0)	874	0.07	0.0878	1.28	0.42	1	0.07	0.0545	0.82	2.9

## 17.4.5 Variography

### Introduction

Variography is used to describe the spatial variability or correlation of an attribute (gold, silver, sulphur, etc). The spatial variability is traditionally measured by means of a variogram, which is generated by determining the averaged squared difference of data points at a nominated distance (h), or lag (Srivastava and Isaacs, 1989). The averaged squared difference (variogram or  $\gamma(h)$ ) for each lag distance is plotted on a bivariate plot where the X-axis is the lag distance and the Y-axis represents the average squared differences ( $\gamma(h)$ ) for the nominated lag distance.

In this document, the term “variogram” is used as a generic word to designate the function characterising the variability of variables versus the distance between two samples. Both a traditional measure and a correlogram have been applied for the estimation studies completed for the Corihuarmi Scree Project.

Fitted to the determined experimental variography is a series of mathematical models which, when used in the kriging algorithm, will recreate the spatial continuity observed in the variography.

The geostatistical software, Isatis, has been employed to generate and model the variography. The rotations are reported as input for grade estimation, with X (rotation around Z axis), Y (rotation around Y`) and Z (rotation around X``) also being referred to as the major, semi-major and minor axes.

### Variographic Discussion

The mineralisation and background horizon of the scree deposit were evaluated separately. Initially, downhole experimental variograms were calculated to establish the nugget for modelling the directional variograms for both grade and indicators. To determine the major direction, variograms were calculated in various directions, maps constructed and contoured. The geology and geometry of mineralisation controls were also considered in selecting the orientation. Orthogonal directions were reviewed to establish the semi-major and minor orientations.

When the experimental variograms did not exhibit robust structures, general relative, pairwise relative and correlograms were examined. Correlograms were found to be relatively well structured and therefore provided the best description of the spatial variability.

Downhole variograms were examined and for the mineralisation horizon (Minzon=1) a nugget of 32% of the total sill was determined while for background (Minzon=0), it was 20%. Two structure spherical models were fitted to the variograms. For mineralisation, the range for first structure was 5m with an overall range of 25m. The ranges for background were 8m and 39m respectively.

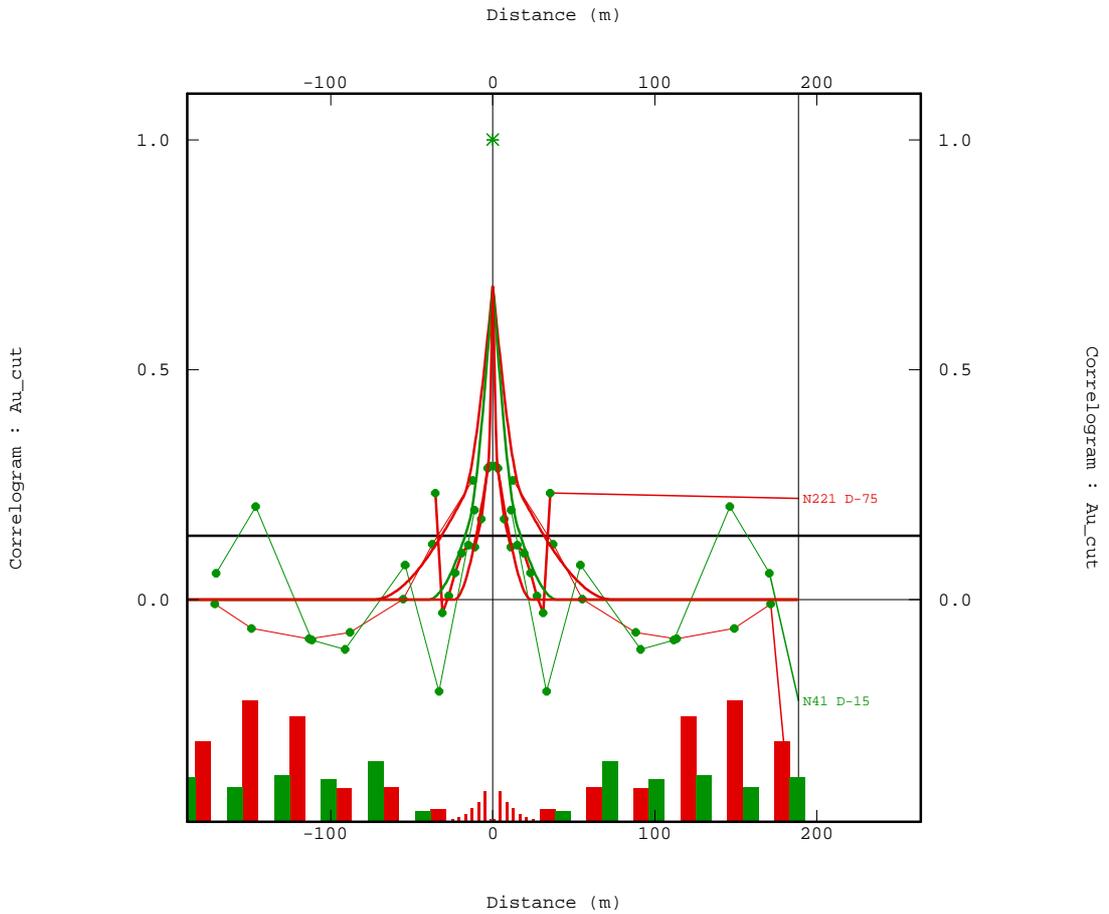
For gold grade directional variography, the interpreted major direction of continuity dips at 15° towards 221° and exhibits reasonably good structure and displays moderate anisotropy between the axes. Two spherical models have been fitted to the experimental variograms (Table 17.4.5\_1). For mineralisation, the short-range structure was modelled with ranges of 18m, 15m and 3m for the major, semi-major and minor axis respectively while the fitted overall ranges were 74m, 40m and 24m. The non-nugget variance is roughly evenly split between the two structures (Figure 17\_4.5\_1). In modelling the background experimental directional variogram, the first structure was modelled using ranges of 50m, 25m and 6m with second structure ranges of 90m, 80m and 23m for the major, semi-major, and minor axis respectively. Most of the non-nugget variance was assigned to the second structure (Figure 17\_4.5\_2).

<b>Table 17.4.5_1</b>									
<b>Minera IRL Limited</b>									
<b>Corihuarmi Scree Deposit</b>									
<b>Variogram Models – Gold (Aucut g/t)</b>									
Domain	Nugget (C <sub>0</sub> )	Sill 1 (C <sub>1</sub> )	Range 1 (m)			Sill 2 (C <sub>2</sub> )	Range 2 (m)		
			Major	Semi Major	Minor		Major	Semi Major	Minor
<b>(Rotation:- 3: 131, 2: 15, 3: 0)</b>									
Mineralisation (Minzon=1)	0.32	0.33	18	15	3.0	0.35	74	40	24
Background (Minzon=0)	0.20	0.33	50	25	6.0	0.50	90	80	23

Notes: 1) The rotations are reported as input into Datamine for grade estimation, with 3 (rotation around Z axis), 2 (rotation around Y) and 3 (rotation around Z) also being referred to as the major, semi-major and minor axis.

2) Spherical models were applied

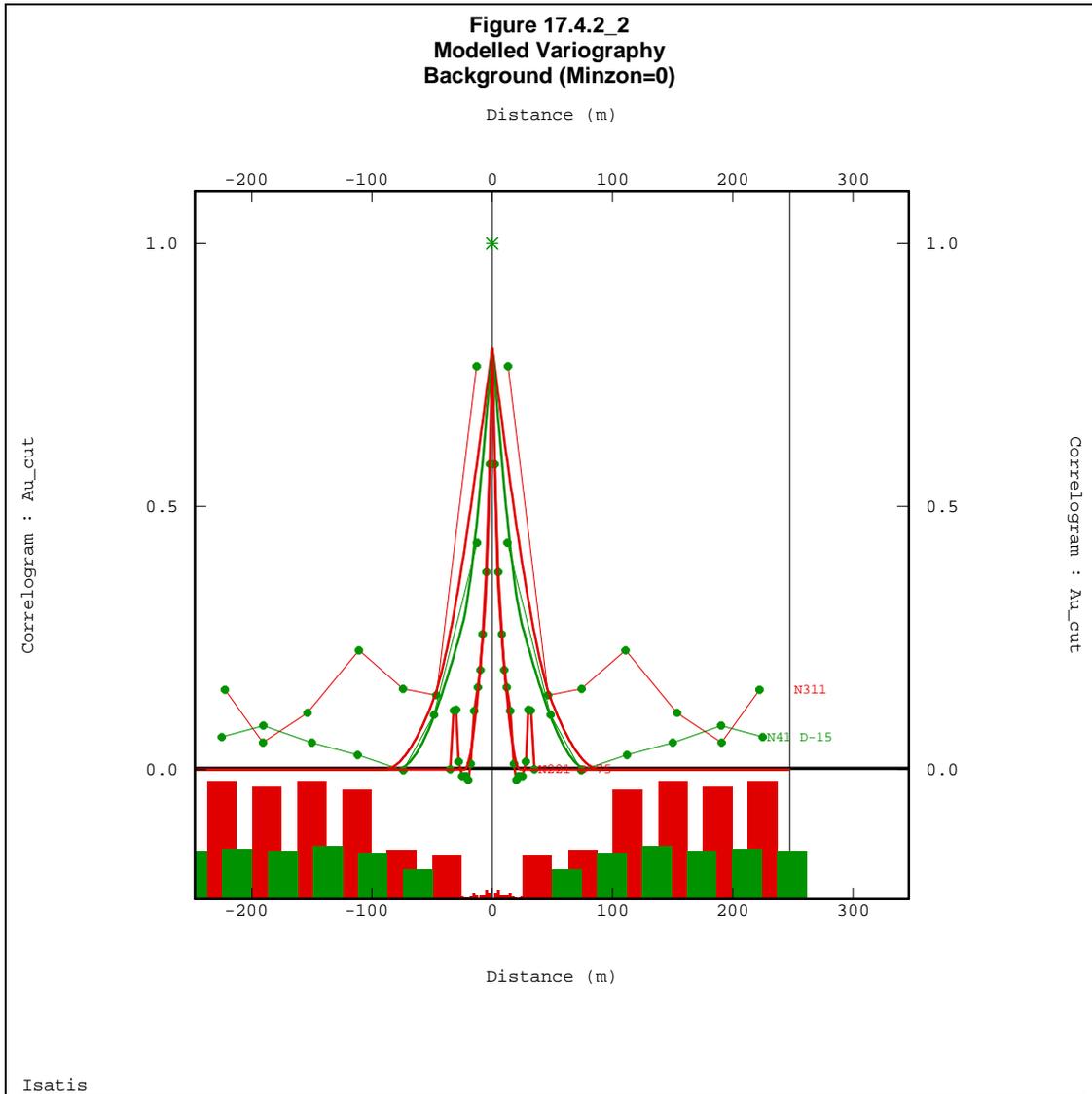
**Figure 17.4.5\_1  
Modelled Variography  
Mineralisation (Minzon=1)**



```

Isatis
-----
2m_cmps/all2(Minzon_1)
- Variable #1 : Au_cut
Experimental Variogram : in 3 direction(s)
D1 : N311
    Angular tolerance = 15.00
    Lag = 29.00m, Count = 15 lags, Tolerance = 50.00%
D2 : N41 D-15
    Angular tolerance = 15.00
    Lag = 29.00m, Count = 15 lags, Tolerance = 50.00%
D3 : N221 D-75
    Angular tolerance = 22.00
    Lag = 4.00m, Count = 21 lags, Tolerance = 50.00%
Model : 3 basic structure(s)
Global rotation = Azimuth=N131.00 Dip=15.00 Pitch=-180.00 (Geologist)
S1 - Nugget effect, Sill = 0.32
S2 - Spherical - Range = 3.00m, Sill = 0.33
    Directional Scales = ( 18.00m, 15.00m, 3.00m)
S3 - Spherical - Range = 24.00m, Sill = 0.35
    Directional Scales = ( 74.00m, 40.00m, 24.00m)
alex_virisheff
Mar 11 2010 14:56:58
MWP466AE_scslp
    
```

**Figure 17.4.2  
Modelled Variography  
Background (Minzon=0)**



Isatis

2m\_cmps/all2(Minzon\_0)  
- Variable #1 : Au\_cut

alex\_virisheff

Experimental Variogram : in 3 direction(s)

Mar 11 2010 15:24:56

D1 : N311

MWP466AE\_scslp

Angular tolerance = 30.00  
Lag = 37.50m, Count = 15 lags, Tolerance = 50.00%

D2 : N41 D-15

Angular tolerance = 30.00  
Lag = 37.50m, Count = 15 lags, Tolerance = 50.00%

D3 : N221 D-75

Angular tolerance = 20.00  
Lag = 2.50m, Count = 31 lags, Tolerance = 50.00%

Model : 3 basic structure(s)

Global rotation = Azimuth=N131.00 Dip=15.00 Pitch=-180.00 (Geologist)

S1 - Nugget effect, Sill = 0.2  
S2 - Spherical - Range = 6.00m, Sill = 0.3  
Directional Scales = ( 50.00m, 25.00m, 6.00m)  
S3 - Spherical - Range = 23.00m, Sill = 0.5  
Directional Scales = ( 90.00m, 80.00m, 23.00m)

**17.4.6 Block Modelling**

Introduction

For the purpose of resource estimation, a three-dimensional block model was constructed for the Corihuarmi Scree deposit, encompassing the interpreted mineralisation zone and surrounding background to allow for later mining studies.

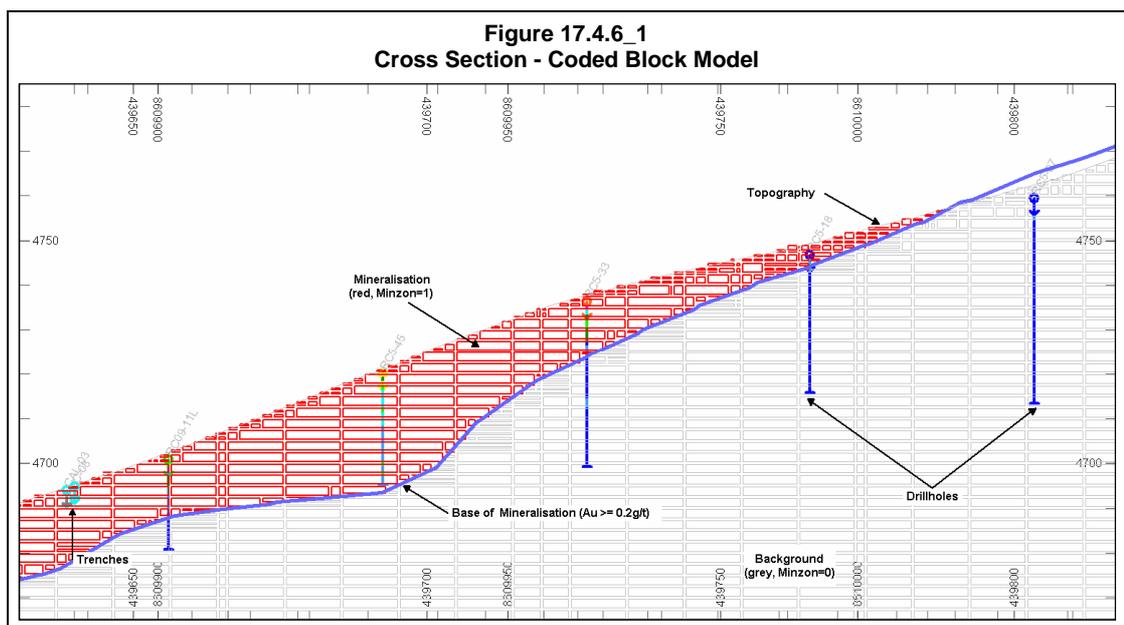
Block Construction Parameters

The block model was firstly rotated to 040° to adequately represent the overall strike direction of mineralisation. A parent block size 12.5mE x 12.5mN x 2.5mRL (relative north x east x RL) was considered to fit the style of deposit, available data, the data characteristics (variability as defined by variography) and the current mining in adjacent Diana and Susan deposits. Sub-blocking to a 2.5mE x 2.5mN x 0.5mRL cell size was undertaken to allow the effective volume representation of the interpretation and topography based wireframes. The block model extents were set to encompass the entire deposit and are defined in Table 17.4.6\_1 below.

<b>Table 17.4.6_1 Minera IRL Limited Corihuarmi Scree Deposit Block Model Extents</b>					
Coordinates	Extents			Number of Blocks	Block Size (m)
	Minimum	Maximum	Range		
Easting	439093.39556mE	440272.41428mE	1000m	80	12.5
Northing	8610064.27876mN	8610380.37188mN	700m	56	12.5
Elevation	4650mRL	4975mRL	325m	130	2.55

The model orientation has been rotated by 40° clockwise around the Z-axis.

The mineralisation attribute, Minzon was coded into the block model as for drillholes and trenches. A visual review of the wireframe surfaces and the block model indicates robust flagging of the block model (Figure 17.4.6\_1).



## 17.4.7 Grade Estimation

### Introduction

The OK method was applied in obtaining grade estimates for gold within the outlined domains. This method of grade interpolation is one of the more common geostatistical methods for estimating the block grade. In this interpolation technique, contributing composite samples are identified using a search volume applied from the centre of each block. Weights are determined so as to minimise the error variance considering both the spatial location of the selected composites and the modelled variogram. Variography describes the correlation between composite samples as a function of distance. The weighted composite sample grades are then combined to generate a block estimate and variance.

Grade estimates were obtained using the Datamine implementation of the ordinary kriging algorithm. Inverse Distance Squared and Nearest Neighbour grade estimates were also completed within these domains to allow comparison.

### Grade Estimate Approach

Grade estimates within the domains (hard boundary between mineralisation and background) were generated from 2m composites using the OK interpolation. Prior to estimation, high grade cuts were applied to the composites. Domain control was used for both composite and block selections implemented through the *Minzon* field. Grade estimates were interpolated into parent cells (all subcells were assigned the parent cell grades) within the mineralised envelope only. Parent blocks were discretised using four points in the east dimension, four points in the north dimension, and two points in the RL dimension, for a total of 32 discretisation points per block.

It was decided to constrain the influence of trench samples due to their shallow nature. Using a nearest neighbour approach, those blocks within a 25m by 14m by 3m search of a trench sample were firstly coded. Grade estimates were generated for the coded blocks using all composite data.

Subsequently, the remaining grade estimates were obtained using only the RC data. For a successful grade estimate in either case, the following search strategy was applied:-

- Pass 1 (PassAu=1), the minimum and maximum number of composites was set to 16 and 24 respectively. The number of composites from any one hole was restricted to five. This restriction is to ensure contribution from other drillholes, while acknowledging that the data density is insufficient to ensure all blocks receive estimates.
- Pass 2 (PassAu=2) was implemented by expanding the search by a factor of 1.5 only.
- Pass 3 (PassAu=3) was established by expanding the search by a factor of two and reducing the minimum sample number to 12. The aim of this third pass was to assign grade estimates into a majority of blocks.

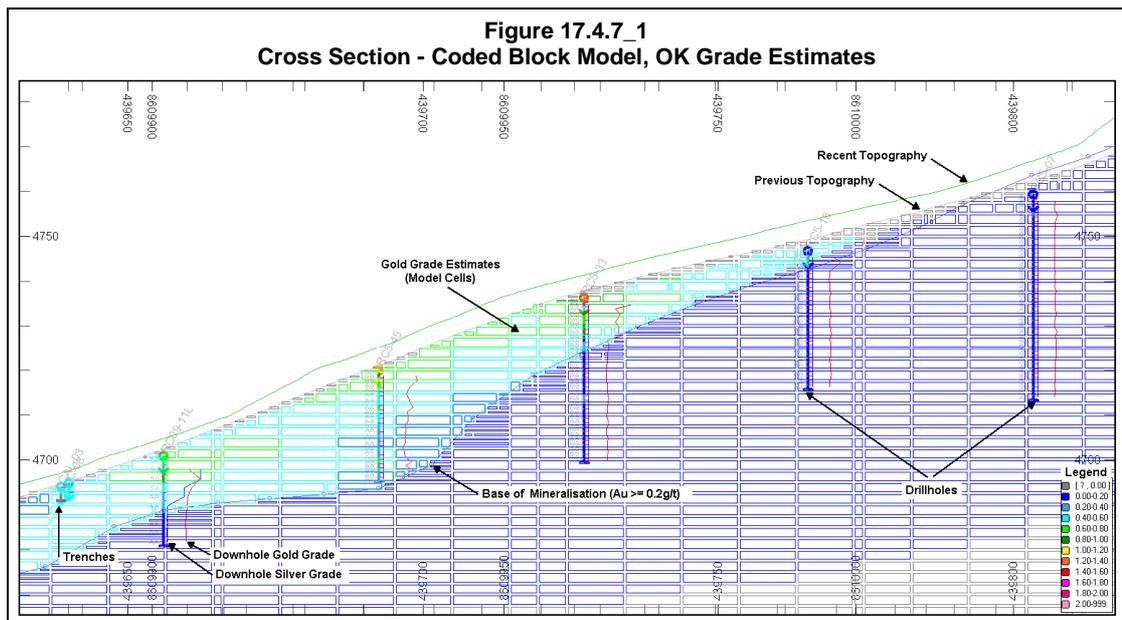
None of the applied search regimes involved octant methodology. The sample search parameters (Table 17.4.7\_1) were defined based on the variography as discussed in Section 17.4.5.

Table 17.4.7_1 Minera IRL Limited Corihuarmi Scree Deposit Sample Search Parameters Ordinary Kriging Estimates							
Domain	Pass	Major Axis (m)	Semi-Major Axis (m)	Minor Axis (m)	Minimum Samples	Maximum Samples	Maximum Per Holes
(Rotation:- 3: 131, 2: 15, 3: 0)							
Mineralisation (Minzon=1)	1	60	40	12	12	24	5
	2	90	60	18	12	24	5
	3	120	80	24	8	24	5
Background (Minzon=0)	1	55	35	12	12	24	5
	2	82.5	52.5	18	12	24	5
	3	110	70	24	8	24	5

Notes: The rotations are reported as input into Datamine for grade estimation, with 3 (rotation around Z axis), 2 (rotation around Y) and 3 (rotation around Z) also being referred to as the major, semi-major and minor axis.

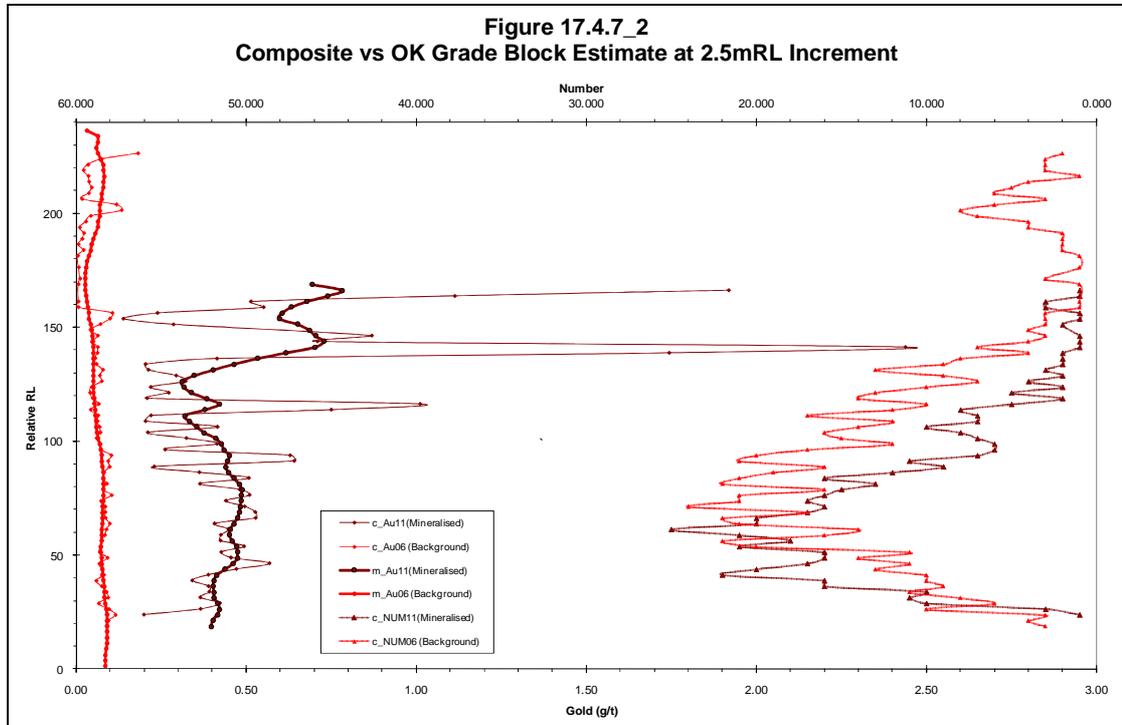
To monitor the interpolation process, variables were set up to record which search neighbourhood was used, how many composites were drawn on, the distance to the nearest composite and the variance. The slope of regression and kriging efficiency can be used to evaluate the quality of estimation within each block. These measures were derived from the Lagrange parameter and F-value generated for each block during the grade estimation.

A detailed visual and statistical review was undertaken on the estimated resource with the following activities completed:-Firstly, visual checks of cross sections (Figure 17.4.7\_1) and plans were completed.



A comparison of the kriging (whole grade estimate) versus the mean of the composite dataset was carried out in three directions aligned with the block model orientation.

An acceptable level of reproducibility was noted between the input composites and the block estimates during visual review and as such it is considered the resource estimate is appropriate and robust.



#### 17.4.8 Resource Classification

The grade estimates for mineralisation ( $Minz\text{on}=1$ ) have been classified as an Inferred Mineral Resource in accordance with NI 43-101 guidelines based on the confidence levels of the key criteria that were considered during the resource estimation. The key criteria that were considered for the resource classification are presented in Table 17.4.8\_1.

#### 17.5 Reported Resource for Corihuarmi Au Project

The grade estimates for Diana and Susan Deposits have been classified as a combination of Measured and Indicated Mineral Resources in accordance with the criteria laid out in the Canadian National Instrument 43-101 ("NI 43-101") guidelines and the classifications adopted by CIM Council in December 2005. The reportable resources for the mineralised zones of the Diana and Susan deposits have been calculated for a range of gold cutoffs by Coffey Mining (0, 0.2, 0.25, 0.3 and 0.5g/t gold), and are presented in Table 17.5\_1.

Using MIRL's preferred cutoffs (0.3g/t gold cutoff at Susan deposit and a 0.25g/t gold cutoff at Diana deposit), a total of 5.3Mt at an average gold grade 0.6g/t Au for 103.0koz Au are reported from the combined deposits, remaining in-situ as of January 1, 2010.

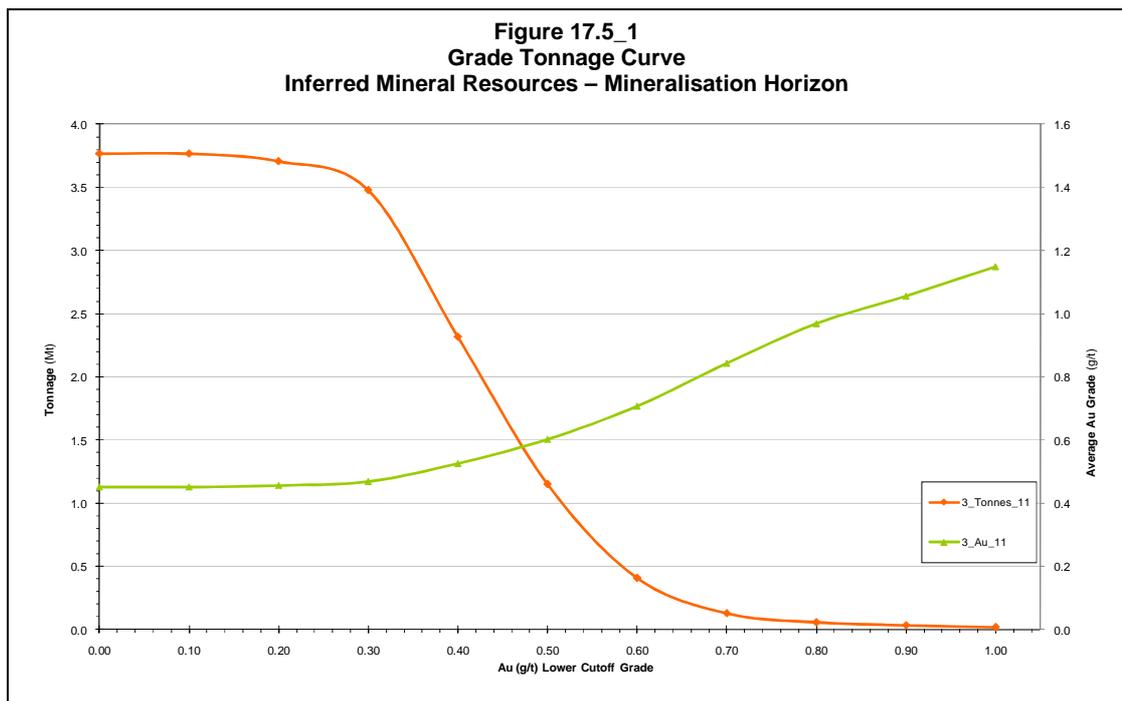
Table 17.4.8_1 Minera IRL Limited Corihuarmi Scree Deposit Confidence Levels of Key Criteria		
Items	Discussion	Confidence
Drilling Techniques	RC drilling in line with industry standard approach; trench sampling was completed using a defined procedure.	Moderate
Logging	Standard nomenclature and apparent high quality.	Moderate
Drill Sample Recovery	RC recovery adequate for 2009 drilling program.	High
Sub-sampling Techniques and Sample Preparation	Industry standard for both RC and trench.	Moderate
Quality of Assay Data	Available data shows minor anomalies related to data management.	Moderate
Verification of Sampling and Assaying	No channel sampling that twin original RC drill intercepts. Dedicated twin sampling is recommended.	High
Location of Sampling Points	Survey of all collars and hole setup orientation. No downhole survey although as holes shallow and generally vertical expected deviation should be minimal.	High
Data Density and Distribution	Mineralisation defined on a notional 50mE x 50mN sampled spacing. Further RC drilling is required to replace trenches. Infill drilling is required to raise the confidence in grade continuity and extent as well as geological detail.	Moderate
Audits or Reviews	Coffey Mining is unaware of external reviews.	N/A
Database Integrity	No errors were identified.	High
Geological Interpretation	The extent of alluvials, colluvials and scree components are unknown. Elevated grades ( $\geq 0.2\text{g/t Au}$ ) dominated as mineralisation occurs near surface with grades reducing with depth. Closer spaced drilling recommended to overcome the uncertainty in geological and grade continuity / complexity.	Low
Rock Dry Bulk Density	Dry bulk density measurements obtained primarily from near surface samples. The procedure is defined using laboratory input. Further determinations are required particularly vertically.	Low to Moderate
Estimation and Modelling Techniques	Ordinary Kriging.	High
Mining Factors or Assumptions	None	N/A

Table 17.5_1 Corihuarmi Project MZT 2009 Models for Susan and Diana Deposits Grade Tonnage as of January 1, 2010 Gold Grade Estimates obtained Using Ordinary Kriging (OK) Block Model (5m x 5m x 5m Parent Cell size)									
Lower Cutoff Grade	Measured			Indicated			Measured + Indicated		
	Tonnes (kt)	Au (g/t)	Metal (kcozs)	Tonnes (Kt)	Au (g/t)	Metal (kcozs)	Tonnes (Kt)	Au (g/t)	Metal (kcozs)
<b>Diana Deposit</b>									
0	1,345	0.42	18.3	1	0.27	0.008	1,346	0.42	18.3
0.2	1,173	0.46	17.4	1	0.27	0.008	1,174	0.46	17.4
0.25	1,028	0.50	16.4	1	0.28	0.006	1,029	0.49	16.4
<b>0.3</b>	<b>871</b>	<b>0.53</b>	<b>15.0</b>	-	-	-	<b>871</b>	<b>0.53</b>	<b>15.0</b>
0.5	371	0.73	8.7	-	-	-	371	0.73	8.7
<b>Susan Deposit</b>									
0	8,197	0.41	107.1	136	0.15	0.7	8,333	0.40	107.7
0.2	5,508	0.54	95.6	19	0.29	0.2	5,527	0.54	95.8
<b>0.25</b>	<b>4,448</b>	<b>0.62</b>	<b>88.0</b>	<b>11</b>	<b>0.33</b>	<b>0.1</b>	<b>4,459</b>	<b>0.61</b>	<b>88.1</b>
0.3	3,509	0.71	79.7	6	0.37	0.07	3,515	0.71	79.8
0.5	1,817	1.01	59.0	0.2	0.63	0.004	1,817	1.01	59.0
<b>Susan and Diana Combined (Susan @ 0.25 g/t cutoff &amp; Diana @ 0.3 g/t cutoff)</b>									
	5,318	0.60	102.9	11	0.33	0.1	5,329	0.60	103.0

A summary grade tonnage of the estimated resources for the Corihuarmi Scree deposit is provided in Table 17.5\_2 below. The in situ dry bulk density applied to all blocks was 2.08t/m<sup>3</sup>. A total Inferred Mineral Resource of 3.765Mt @ 0.45g/t Au has been identified with no lower grade cutoff applied.

Table 17.5_2 Minera IRL Limited Corihuarmi Scree Deposit Grade Tonnage- 28 <sup>th</sup> February 2010 Gold Grade Estimates obtained Using Ordinary Kriging (OK) Block Model (12.5m x 12.5m x 2.5m – Parent Cell size) No Lower Grade Cutoff Applied									
Lower Cutoff Grade	Measured			Indicated			Inferred		
	Tonnes (Mt)	Au (g/t)	Metal (kcozs)	Tonnes (Mt)	Au (g/t)	Metal (kcozs)	Tonnes (Mt)	Au (g/t)	Metal (kcozs)
<b>Corihuarmi Scree Deposit</b>									
0	-	-	-	-	-	-	3.765	0.45	54.6

A grade tonnage curve was also compiled for the Scree that demonstrates as the lower grade cutoff is increased the tonnage reduces significantly reflecting the grade distribution observed in the sample data.



The reported resources have been compiled by Mr Beau Nicholls, Mr Doug Corley and Mr Alex Virisheff. Mr Nicholls, Mr Corley and Mr Virisheff are Members of the Australasian Institute of Geoscientists and an employee of Coffey Mining. They have sufficient experience, relevant to the style of mineralisation and type of deposit under consideration and to the activity they have undertaken, to qualify as a Qualified Person as defined in the NI 43-101.

## 17.6 Reported Reserve for Corihuarmi Au Deposits

The Mineral Reserve estimates are based on the input parameters described in Section 18 of this report. Table 17.6\_1 provides a summary of the Mineral Reserves that were determined for the Susan and Diana gold deposits. All stated reserves are completely included within the quoted resources.

Table 17.6_1 Corihuarmi Project Minable Reserve Summary As of 31 December 2009										
Cutoff (g/t)	Deposit	Mineral Reserves								
		Proven			Probable			Total		
		Tonnes [Mt]	Grade [g/t Au]	In-Situ Au [Koz]	Tonnes [Mt]	Grade [g/t Au]	In-Situ Au [Koz]	Tonnes [Mt]	Grade [g/t Au]	In-Situ Au [Koz]
0.30	Diana	0.7	0.54	11.9				0.7	0.54	11.9
0.25	Susan	4.4	0.67	93.9				4.4	0.67	93.9
<b>Total</b>		<b>5.1</b>	<b>0.65</b>	<b>105.9</b>				<b>5.1</b>	<b>0.65</b>	<b>105.9</b>

The scree deposit is of inferred category and therefore it cannot be included in the reserve. It is Coffey's understanding that MIRL will evaluate the options available to develop this deposit in the near future as it offers a good potential to increase the current mine life. Mineral resources that are not mineral reserves do not have demonstrated economic viability.

This reserve estimate has been determined and reported in accordance with Canadian National Instrument 43-101, 'Standards of Disclosure for Mineral Projects' of December 2005 (the Instrument) and the classifications adopted by CIM Council in December 2005. Furthermore, the reserve classifications are also consistent with the 'Australasian Code for Reporting of Mineral Resources and Ore Reserves' of December 2004 ("JORC Code") as prepared by the Joint Ore Reserves Committee of the Australasian Institute of Mining and Metallurgy, Australian Institute of Geoscientists and Mineral Council of Australia (JORC).

The reserve classifications for both reporting systems are essentially the same, with only minor semantic differences in the naming conventions. Reserves are called "Ore Reserves" under the JORC Code and "Mineral Reserves" under the CIM standards. "Proved Reserves" under the JORC code are called "Proven Reserves" under the CIM Standards. The reserve naming convention for both systems is summarised in Table 17.6\_2 below for the sake of completeness.

Table 17.6_2 Reserve Classification Comparison		
Resource Classification	Reserve Classification	
	JORC Code	National Instrument 43-101
Measured	Proved	Proven
Indicated	Probable	Probable

The reported reserves have been compiled by Mr Jean-Francois St-Onge eng. Mr St-Onge is a non-resident Member of the Ordre des Ingénieurs du Québec and a Member of the Australasian Institute of Mining and Metallurgy and an employee of Coffey Mining. He has sufficient experience, relevant to the style of mineralisation and type of deposit under consideration and to the activity he has undertaken, to qualify as a Qualified Person as defined in the NI 43-101.

## 18 OTHER RELEVANT DATA AND INFORMATION

### 18.1 Geotechnical Input and Conditions

The geotechnical evaluation was completed by Vector (2005). The evaluation was based on existing geological data, field structural and geotechnical mapping and drillhole core logging. In summary, the evaluation resulted in the recommendation of 70° batters and 8.5m berms for every 20m in vertical wall height. If softer rock is encountered in localised areas Vector suggested reducing the batter slopes to 60°.

Further geotechnical drilling was recommended by Vector in 2005 and subsequently completed. It included some oriented diamond holes for the detailed mine design phase, the results of which were used to finalise the design of waste dumps, leach pads and access roads in the Bankable Feasibility Study, Rev. 1 (Vector 2006).

The final wall, located to the north of the Diana pit was exposed during the first year of mining. The wall condition is good and the recommended wall parameters appear to be adequate. No bench scale failures were identified during the Coffey site visit. An example of Diana Pit final wall is presented in Figure 18.1\_1. Berms are kept clean and will therefore properly serve as a catchment for rock.

**Figure 18.1\_1  
Diana Pit Final Wall**



## 18.2 Hydrogeology Input

A hydrogeology study was conducted by Vector (2006).

Outside the mineralized areas, groundwater levels are very close to surface (average depth to water of 5.8m) although the depth to groundwater is generally greater at higher elevations (ranging up to 17.7m below surface). The highest measured groundwater levels are 4,800masl, while the lowest measured groundwater elevations at the site were about 4,668masl. It was estimated by Vector that the maximum water elevation at Susan is below 4,870 masl and the maximum water elevation at Diana is below 4,830 masl. The depth to groundwater within the actual ore deposits at Susan and Diana is considerably greater due to the presence of extensive permeable vuggy silica at these locations. It has purportedly been reported that groundwater was not encountered during exploration drilling at these locations.

Given the elevated nature of the mineralized outcrops above the surrounding plateau, no material adverse affects due to groundwater are expected to interfere with the mining operation.

## 18.3 Mine Design

The life of mine (LOM) open pit design was completed by AMC Consultants (AMC) to conventional industry standards during the feasibility study.

The mine design respects the geotechnical slope angle proposed. No issues were detected either from the pits or the waste dump designs.

The current LOM plan uses this same design but a lower cutoff grade of 0.25g/t Au for the Susan Pit and 0.30g/t Au for the Diana Pit was applied. The pit inventory comprises 5.1Mt of ore at 0.65g/t Au with 1.2Mt of waste for a waste to ore strip ratio of 0.2:1 as presented in Table 18.3\_1.

<b>Pit</b>	<b>Tonnes Ore</b>	<b>Grade Au (g/t)</b>	<b>Ounces</b>	<b>Tonnes Waste</b>	<b>Ratio (SR)</b>	<b>Rec Au Ounces</b>
Diana	0.7Mt	0.5g/t	11.9koz	32.9kt	0.1	10.2koz
Susan	4.4Mt	0.7g/t	93.9koz	1144.4kt	0.3	65.7koz
<b>Total</b>	<b>5.1Mt</b>	<b>0.6g/t</b>	<b>105.8koz</b>	<b>1177.3kt</b>	<b>0.2</b>	<b>75.9koz</b>

## 18.4 Mining Schedule

The LOM plan as prepared by MIRL in 2009 was developed using the MineSight software, utilising bench by bench ore and waste scheduling units. The schedule was prepared on a yearly basis with the objective of maintaining a Diana to Susan pit blend of 1 to 6.4 until the depletion of the Diana pit and minimise variation in the average grade. Table 18.4\_1 summarises the production plan for the LOM plan.

**Table 18.4\_1**  
**Corihuarmi Project**  
**Life of Mine Plan Summary**

Year	Tonnes Ore	Grade Au (g/t)	Ounces	Tonnes Waste	Ratio (SR)	Rec Au Ounces
2010	1.45Mt	0.8	39.5koz	125.0kt	0.09	28.1
2011	1.45Mt	0.8	35.0koz	336.7kt	0.23	25.0
2012	1.45Mt	0.5	22.3koz	460.8kt	0.32	16.1
2013	0.73Mt	0.4	9.0koz	254.7kt	0.35	6.7
<b>Total</b>	<b>5.08Mt</b>	<b>0.6</b>	<b>105.8koz</b>	<b>1,177.2kt</b>	<b>0.23</b>	<b>75.9</b>

### 18.5 Drill and Blast

Both Diana and Susan pits require blasting prior to loading. The drilling is performed with a Sandvik DX-700 Ranger, the holes diameter is 127mm (4½in). The drill pattern generally varies from 3m x 3m to 5m x 5m depending on rock hardness. The blast are loaded with emulsion based explosives and initiated with NONEL type detonators.

### 18.6 Grade Control

For grade control purposes a representative sample of the drill cuttings produced from blast holes is used for grade determination (Blast hole sampling). In light of the apparent underestimation of the diamond core drilling reverse circulation drilling has also been adopted in Diana pit for grade control purposes. The samples is analysed in the on-site laboratory.

### 18.7 Load and Haul

Loading is performed using either a Caterpillar 320C (20t) excavator or a Hyundai R360LC (36t) excavator. Both of these machines are considered suitable for the Project.

The Truck fleet comprises 14 Volvo FM12 carrying on average 27t per load.

The truck loads were measured at an earlier stage of the mining operation, however, the truck scale broke down in early 2008 and the average truck weight as measured previously was assumed from then onwards. The truck loads are not currently measured and the tonnes hauled are based on the truck count and the assumed average truck weight (truck factor).

### 18.8 Infrastructure

A camp to accommodate approximately 140 employees was constructed to the east of the plant facilities. Existing buildings includes the offices, warehouse, messing facilities and other buildings.

The principal mining related infrastructure comprise the waste dump, haul roads, mining contractor workshop and related infrastructure, fuel farm and explosives storage facility.

## 18.9 Mine Operation

At the commencement of the mining operation MIRL opted contract mining to establish the Project. The Contractor, CyM Contratistas Generales SAC (CyM), supplies and operates all the mining equipment under MIRL staff supervision. Table 18.9\_1 provides the current list of the equipment used for the mining operation and leach pad construction.

<b>Table 18.9_1 Corihuarmi Project CyM Equipment List</b>			
<b>Equipment Types</b>	<b>Manufacturer</b>	<b>Model</b>	<b>Fleet Size</b>
Excavator	Caterpillar	320C	1
	Hyundai	360 LC	1
Trucks	Volvo	FM12	14
Loader	Caterpillar	966H	1
Grader	Caterpillar	140H	1
Track dozer	Caterpillar	D8R	1
		D6D	
Vibratory compactor	Caterpillar	CS533	1
Drill	Sandvik	DX-700 Ranger	1

Under the contract terms MIRL has the right to terminate this contract after thirty-six (36) months, at their sole discretion.

During 2009 MIRL employed around 132 employees, with CyM employing another 91 employees and all other contractor combined employing approximately 98 people for a total of over 321 personnel on site.

## 18.10 Mining Capital Costs

CyM is employed to carry out the mining activities and, as such, the capital depreciation of the mining equipment is incorporated into the mine operating unit rates.

The sustaining capital expenditure that MIRL has planned is related to mining computer hardware and software, light vehicles, office requirements and other miscellaneous items and is expected to be \$250k per year from 2010 to 2013.

## 18.11 Mining Operating Costs

The 2010 projected mining operating costs are based on the historical data and contract information. For the following three years MIRL is looking into the possibility of changing its mining contractor in order to reduce the current mining contract cost. The anticipated cost saving in the mining cost is about 15% and 18% when including the administration fees. On the overall budget cost this represent an average cost reduction of about 16.8% per year.

The cost reduction is based on MIRL's current knowledge of the cost structure from other contractors doing other work on site. MIRL plans to use these other contractors with similar equipment as those already in use by CyM to realise the reduction in the mining cost. As the contract with CyM was negotiated at the peak of the mining industry's boom period, these potential cost savings are considered realistic.

In the event that MIRL is not able to reduce the mining cost and the mining costs remain similar to the current CyM contract costs, it would require in 2013 a gold price of more than US\$880 to maintain a positive cash flow. Table 18.11\_1 shows the annual cost per ounces for the LOM Plan using the current mining costs and the cost per ounces including the reduction in mining cost.

<b>Table 18.11_1</b>				
<b>Corihuarmi Project</b>				
<b>2010 LOM Operational Cost Per Ounce Summary with Current Mining Cost versus Reduced Mining Cost</b>				
<b>Scenario</b>	<b>Cost per ounce (US\$/oz)</b>			
	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>
LOM Plan using original Mining costs	400	453	721	882
2010 LOM Plan with reduced Mining costs	400	388	615	758

## **18.12 Economical Considerations**

### **18.12.1 Gold Supply and Demand**

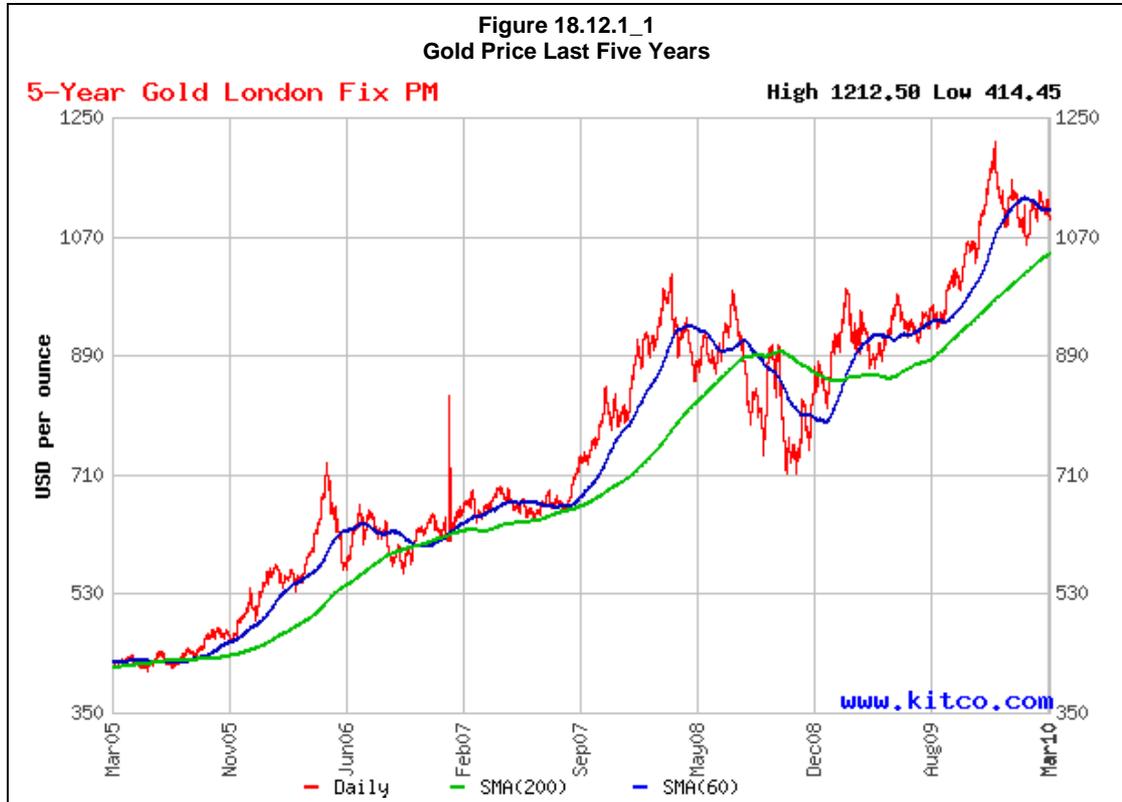
Information on the demand and supply of gold is extensive. The following is from the World Gold Council's web site:

*The gold price finished 2009 25% higher than where it started. After recovering from a first quarter correction, the middle part of the year was broadly characterised by a period of range trading in a \$US900-\$1,000/oz band. Finally, the sustained break above the key \$1,000/oz level came in early September, with record highs being repeatedly tested during the remainder of the year.*

*Identifiable demand in 2009 was down 11% on 2008 levels, but if we add inferred investment (which represents the less visible investment flows as well as some residual error), there was a rise in total demand of 11%. Weaker jewellery and industrial demand were offset by significantly higher levels of investment. However, as with the supply side, the annual figures disguise several significant changes that occurred within the sectors during the course of the year.*

*We expect investor support for gold in 2010 to remain solid. The search by investors and asset managers for portfolio diversification is expected to continue and on a more tactical note, the high levels of economic, inflation and exchange rate uncertainty are unlikely to disappear anytime soon. Furthermore, as global economic conditions improve, jewellery and industrial demand are likely to continue to recover.*

The price of gold has been volatile in recent times and this is expected to continue during the mining of Corihuarmi. MIRC have undertaken research into what gold price is appropriate and have chosen US\$850/oz as the Project base case. This is supported by prices and the trend over the last five years as shown in Figure 18.12.1\_1.



### 18.12.2 Tax and Royalties

The Peru Government Royalty is based on the following:

- Companies with sales of up to US\$60 million per year – 1% of sales;
- Companies with sales of above US\$60 million and up to US\$120 million per year – 2% of sales; and
- Companies with sales over US\$120 million per year – 3% of sales.

The vendor royalty is based on the following rates:

- Gold price less than US\$300/oz, a sales royalty of 1.5%;
- Gold price from US\$300/oz to US\$350/oz, a sales royalty rate of 2.0%
- Gold price over US\$350/oz, a sales royalty rate of 3.0%.

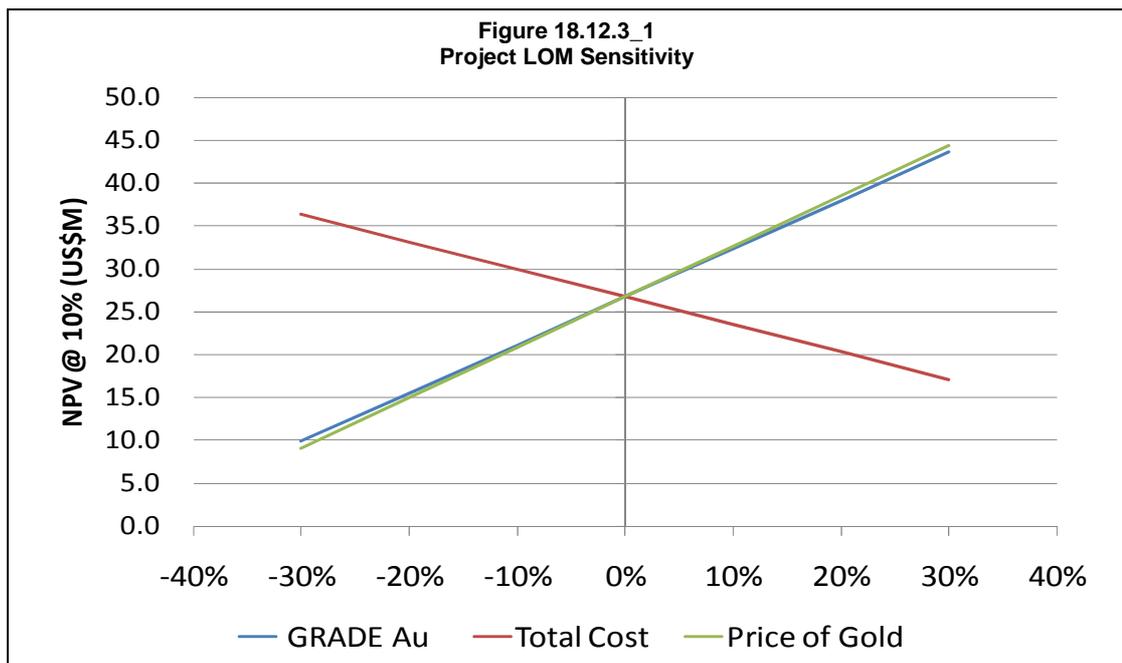
In addition to these the Peruvian corporate income tax is levied at a flat rate of 30%.

### 18.12.3 Cash Flow and Sensitivity

Using the Proven Reserve reported in Section 17.6, a net gold price of US\$850/oz, the net present value (NPV) of the LOM plan discounted at 10% is US\$30.2M as shown in Table 18.12.3\_1.

Table 18.12.3_1 Corihuarmi Project Cash Flow and NPV @ 10%					
Values Reported in US\$M	2010	2011	2012	2013	Total
Revenue	25.3	22.5	14.5	6.0	68.3
Cost	11.3	9.7	9.9	5.1	35.9
Cash Flow	14.1	12.8	4.6	0.9	32.4
NPV @ 10%	14.1	11.6	3.8	0.7	30.2

The Project is robust and cash positive. As presented in Figure 18.12.3\_1 a positive or negative variation of up to 30% in gold price, ore grade or total cost is not sufficient to jeopardise the economics of the project. The price of gold can go as low as US\$460 before the NPV @ 10% reaches a negative value.



## 19 INTERPRETATION AND CONCLUSIONS

The pertinent observations and interpretations which have been developed in producing this report are detailed in the sections above.

From the work completed to date Coffey Mining believes the Project to be reasonably robust.

## 20 RECOMMENDATIONS

The following recommendations are made:

### 20.1 Exploration

Coffey Mining recommends that the current MIRL exploration targets within the Corihuarmi region should be re-assessed in further detail to compile all historical data into a useable format and to potentially look at testing additional targets. Minimal drilling has been undertaken outside of the Diana and Susan deposits. An initial follow up exploration program would require a budget of approximately \$240k.

### 20.2 Resource

Coffey Mining recommends the following:

- That no grade call factor be applied to the resource model for the Diana deposit. Grade control drilling has shown a positive reconciliation to the resource model to date; however with depth there appears to be a closer reconciliation developing.
- Susan deposit is performing well against the mining data collected to date.
- That mined ore tonnes are reconciled against a weightometer, to check whether the truck factor assumptions are correct. Ore volumes should also be reconciled against weightometer values to check if bulk density assumptions for each deposit are also correct.
- Continue to monitor QA/QC for BH sampling, including field duplicates, inclusion of certified standards and blanks and umpire laboratory testing.
- Although additional close spaced drilling is required to increase the resource confidence of the Scree deposit, MIRL should weight the associated risks of this additional drilling investment as opposed to direct mining.

## 21 REFERENCES

- Corihuarmi Minesite Personnel- 2007 to 2009 - Monthly Corporate Reports March 2007 to February 2009*
- Minera IRL Metallurgical Research Department - Contreras, C, 2010, "Final Report of Research, Metallurgical No. 5 – Tests on Columns Cyanidation Screen Material with High Slope"*
- Coffey Mining (RSG Global) - Virisheff, A., 2006, Corihuarmi Gold Project – Resource Estimation, Project Number PCOR03, , 1162 Hay Street, West Perth 6005 Australia.*
- Coffey Mining (RSG Global) - Yeates, R. et al., 2007, Competent Persons Report – April 2007, Project Number PINV01, 1162 Hay Street, West Perth 6005 Australia.*
- Kappes, Cassiday & Associates, 2006-" Corihuarmi Feasibility Study 1,000,000 Tonne per Year Heap Leach Project" Technical report prepared for Minera IRL S.A.*
- MTZ Consultant (Peru)- Torres, M.Z., 2009, "Mineral Resources Estimation for Susan and Diana Pits, Corihuarmi Mine ; Apr-May 2009; , for Minera IRL S.A. Internal Report*
- Vector Peru S.A.C. 2006- "Bankable Feasibility Study Leach Pad, Waste Rock Disposal and Mine Access Road Facilities Design" Technical report prepared for Minera IRL S.A.*
- Vector Peru S.A.C. 2005- "Geotechnical Evaluation of Final Slopes" Technical report prepared for Minera IRL S.A.*

## 22 DATE AND SIGNATURE PAGE

The effective date of this Report is 6<sup>th</sup> April 2010.

[signed]

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B Nicholls B.Sc Geol. MAIG  
Geology Consultant - Brazil  
Coffey Mining Pty Ltd

6<sup>th</sup> April 2010

[signed]

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Jean-François St-Onge, eng. B.Sc.A. (Mining), MAusIMM  
Specialist Mining Engineer  
Coffey Mining Pty Ltd

6<sup>th</sup> April 2010

[signed]

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D A Corley BAppSc (Geol) BSc (Hons), MAIG  
Associate Resource Geologist  
Coffey Mining Pty Ltd

6<sup>th</sup> April 2010

[signed]

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Barry Cloutt BAppSc (Eng Met) MAusIMM  
Chief Metallurgist  
Coffey Mining Pty Ltd

6<sup>th</sup> April 2010

[signed]

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Alex Virisheff BAppSc (Eng Met) MAusIMM  
Principal Resource Geologist  
Coffey Mining Pty Ltd

6<sup>th</sup> April 2010

## 23 CERTIFICATES OF AUTHORS

### Certificate of Qualified Person

As the primary author of the report entitled "Corihuarmi Gold Project, Technical Report" (the Report), dated 6 April 2010, I hereby state:

1. I, Beau Nicholls, Consulting Geologist of Coffey Mining Pty Ltd, 1162 Hay Street, West Perth, Western Australia, Australia, do hereby certify that:
2. I am a practising geologist with 15 years of Mining and Exploration geological experience. I have worked in Australia, Eastern Europe, West Africa and currently Brazil. I am a member of the Australian Institute of Geoscientists ("MAIG").
3. I am a graduate of Western Australian School of Mines – Kalgoorlie and hold a Bachelor of Science Degree in Mineral Exploration and Mining Geology (1994). I have practiced my profession continuously since 1995.
4. I am a "qualified person" as that term is defined in National Instrument 43-101 (Standards of Disclosure for Mineral Projects) (the "Instrument").
5. I visited the property that is the subject of this Report between the 12<sup>th</sup> and 14<sup>th</sup> of May 2009.
6. I am responsible or co responsible for all sections of this report (excluding Sections 16, 17 and 18).
7. I hereby consent to the use of this Report and my name in the preparation of documents for a public filing including a prospectus, an annual information filing,, brokered or non-brokered financing(s), or for the submission to any Provincial or Federal regulatory authority.
8. I am not aware of any material fact or material change with respect to the subject matter of the Report that is not reflected in the Report, or the omission to disclose which makes the Report misleading and that as of the date of this certificate, to the best of my knowledge, information and belief, the Report contains all scientific and technical information that is required to be disclosed to make the Report not misleading.
9. I have read and understand the National Instrument 43-101 and am independent of the issuer as defined in Section 1.4 and prior to visiting Corihuarmi I had no involvement in or knowledge of the property that is the subject of this Report.
10. I have read the National Instrument and Form 43-101F1 (the "Form") and the Report has been prepared in compliance with the Instrument and the Form.
11. I have not received, nor do I expect to receive, any interest, directly or indirectly, in the Property that is the subject of this report and do not hold nor expect to receive securities of Minera IRL Limited.

Dated at Perth, Western Australia, Australia, on the 6<sup>th</sup> of April 2010.

[signed]

Beau Nicholls  
Geology Manager - Brazil  
Coffey Mining Pty Ltd

B.Sc Geol MAIG

## Certificate of Qualified Person

As the co-author of the report entitled "Corihuarmi Gold Project, Technical Report" (the Report), dated 6 April 2010, I hereby state:

1. I, Jean-Francois St-Onge, eng., Employee and Specialist Mining Engineer of Coffey Mining Pty Ltd, 1162 Hay Street, West Perth, Western Australia, Australia, do hereby certify that:
2. I am a non-resident member of the OIQ (Ordre des Ingénieurs du Québec - 111717) as well as a member of the AusIMM (Australasian Institute of Mining and Metallurgy), and a 'Qualified Person' in relation to the subject matter of this report. .
3. I graduated from the University Laval, Québec, Qc, Canada with a B.Sc.A. (Mining) Degree in 1992. I have practiced my profession continuously since then.
4. I am a "qualified person" as that term is defined in National Instrument 43-101 (Standards of Disclosure for Mineral Projects) (the "Instrument").
5. I visited the property that is the subject of this report between the 12<sup>th</sup> and 14<sup>th</sup> May 2009.
6. I am responsible for Sections 17.6 and 18 of this report.
7. I am co responsible for Sections 1 of this report.
8. I hereby consent to the use of my name in the preparation of documents for a prospectus, annual information filing, initial public offering, brokered or non-brokered financing(s), for the submission to any Provincial or Federal regulatory authority.
9. I am not aware of any material fact or material change with respect to the subject matter of the Report that is not reflected in the Report, or the omission to disclose which makes the Report misleading and that as of the date of this certificate, to the best of my knowledge, information and belief, the Report contains all scientific and technical information that is required to be disclosed to make the Report not misleading.
10. I have read and understand National Instrument 43-101 and am considered independent of the issuer as defined in Section 1.4.
11. I have read the National Instrument and Form 43-101F1 (the "Form") and the Report has been prepared in compliance with the Instrument and the Form.
12. I have not received, nor do I expect to receive, any interest, directly or indirectly, in the Property that is the subject of this report and do not hold nor expect to receive securities of Minera IRL Limited.

Dated at Perth, Western Australia, Australia, on the 6<sup>th</sup> of April 2010.

[signed]

\_\_\_\_\_  
Jean-François St-Onge eng. B.Sc.A. (Mining), MAusIMM  
Specialist Mining Engineer  
Coffey Mining Pty Ltd

## Certificate of Qualified Person

As co-author of the report entitled "Corihuarmi Gold Project, Technical Report" (the Report), dated 6 April 2010, I hereby state:

1. I, Barry Cloutt, am the Chief Metallurgist with the firm Coffey Mining Pty Ltd, 1162 Hay Street, West Perth, Western Australia, Australia, do hereby certify that:
2. I am a practising metallurgist and I am a Member of AusIMM (Australasian Institute of Mining and Metallurgy).
3. I am a graduate of the Western Australian Institute of Technology (Curtin University) and hold a Bachelor of Applied Science (Engineering Metallurgy) degree 1981. I have practiced my profession continuously since 1982.
4. I am a "qualified person" as that term is defined in National Instrument 43-101 (Standards of Disclosure for Mineral Projects) (the "Instrument").
5. I have not visited the property that is the subject of this report.
6. I am responsible for Section 16 of this report.
7. I am not aware of any material fact or material change with respect to the subject matter of the Report that is not reflected in the Report, or the omission to disclose which makes the Report misleading and that as of the date of this certificate, to the best of my knowledge, information and belief, the Report contains all scientific and technical information that is required to be disclosed to make the Report not misleading.
8. I have read and understand the National Instrument 43-101 and am considered independent of the issuer as defined in Section 1.4.
9. I have read the National Instrument and Form 43-101F1 (the "Form") and the Report has been prepared in compliance with the Instrument and the Form.
10. I have not received, nor do I expect to receive, any interest, directly or indirectly, in the Properties that are the subject of this report and do not hold nor expect to receive securities of Minera IRL Limited.

Dated at Perth, Western Australia, Australia, on 6<sup>th</sup> April 2010.

[signed]

Barry Cloutt  
Chief Metallurgist  
Coffey Mining Pty Ltd

BAppSc (Eng Met) MAusIMM

## **Certificate of Qualified Person**

As co-author of the report entitled "Corihuarmi Gold Project, Technical Report" (the Report), dated 6 April 2010, I hereby state:

1. I, Doug Corley, am an Associate Resource Geologist with the firm Coffey Mining Pty Ltd, 1162 Hay Street, West Perth, Western Australia, Australia, do hereby certify that:
2. I am a practising resource geologist and I am a Member of the AIG (Australasian Institute of Geoscientists).
3. I am a graduate of Queensland University Technology and James Cook University and hold a Bachelor of Applied Science (Geology) degree 1989 and Bachelor of Science (Honours) 1991. I have practiced my profession continuously since 1991.
4. I am a "qualified person" as that term is defined in National Instrument 43-101 (Standards of Disclosure for Mineral Projects) (the "Instrument").
5. I have not visited the property that is the subject of this report.
6. I prepared Sections 17.1-17.3 of this report.
7. I am co responsible for Sections 1, 17.5 and 19-21 of this report.
8. I am not aware of any material fact or material change with respect to the subject matter of the Report that is not reflected in the Report, or the omission to disclose which makes the Report misleading and that as of the date of this certificate, to the best of my knowledge, information and belief, the Report contains all scientific and technical information that is required to be disclosed to make the Report not misleading.
9. I have read and understand the National Instrument 43-101 and am considered independent of the issuer as defined in Section 1.4.
10. I have read the National Instrument and Form 43-101F1 (the "Form") and the Report has been prepared in compliance with the Instrument and the Form.
11. I have not received, nor do I expect to receive, any interest, directly or indirectly, in the Properties that are the subject of this report and do not hold nor expect to receive securities of Minera IRL Limited.

Dated at Perth, Western Australia, Australia, on 6<sup>th</sup> April 2010.

[signed]

---

Doug Corley BSc (Hons) Geology MAIG  
Associate Resource Geologist  
Coffey Mining Pty Ltd

## **Certificate of Qualified Person**

As co-author of the report entitled "Corihuarmi Gold Project, Technical Report" (the Report), dated 6 April 2010, I hereby state:

1. I, Alex Virisheff, am a Principal Resource Geologist with the firm Coffey Mining Pty Ltd, 47 Doggett Street, Newstead, Queensland, Australia, do hereby certify that:
2. I am a practising resource geologist and I am a Member of the Australasian Institute of Mining and Metallurgy (AusIMM).
3. I am a graduate of University of Queensland and hold a Bachelor of Science (Honours Geology) degree 1974. I have practiced my profession continuously since 1974.
4. I am a "qualified person" as that term is defined in National Instrument 43-101 (Standards of Disclosure for Mineral Projects) (the "Instrument").
5. I have not visited the property that is the subject of this report.
6. I prepared Sections 17.4 of the Report.
7. I am co responsible for Sections 1, 17.5 and 19-21 of this report.
8. I am not aware of any material fact or material change with respect to the subject matter of the Report that is not reflected in the Report, or the omission to disclose which makes the Report misleading and that as of the date of this certificate, to the best of my knowledge, information and belief, the Report contains all scientific and technical information that is required to be disclosed to make the Report not misleading.
9. I have read and understand the National Instrument 43-101 and am considered independent of the issuer as defined in Section 1.4.
10. I have read the National Instrument and Form 43-101F1 (the "Form") and the Report has been prepared in compliance with the Instrument and the Form.
11. I have not received, nor do I expect to receive, any interest, directly or indirectly, in the Properties that are the subject of this report and do not hold nor expect to receive securities of Minera IRL Limited.

Dated at Perth, Western Australia, Australia, on 6<sup>th</sup> April 2010.

[signed]

Alex Virisheff

BSc (Hons) (Geo) MAusIMM

Principal Resource Geologist

Coffey Mining Pty Ltd