

# **TECHNICAL REPORT ON THE ROSIA MONTANA GOLD AND SILVER PROJECT, TRANSYLVANIA, ROMANIA.**

**REPORT PREPARED IN ACCORDANCE WITH THE GUIDELINES OF NATIONAL INSTRUMENT  
43-101 AND ACCOMPANYING DOCUMENTS 43-101.F1 AND 43-101.CP.**

**Prepared For  
Gabriel Resources Ltd.**

**Report Prepared by**



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**Effective Date: 1<sup>st</sup> October 2012**

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# Table of Contents

<b>1</b>	<b>SUMMARY .....</b>	<b>1</b>
1.1	Introduction .....	1
1.2	Mineral Resource Statement .....	3
1.3	Mineral Reserve Statement .....	5
1.4	Operational, Environmental and Permitting Considerations.....	5
1.5	Economic Analysis.....	7
<b>2</b>	<b>INTRODUCTION .....</b>	<b>8</b>
<b>3</b>	<b>RELIANCE ON OTHER EXPERTS .....</b>	<b>10</b>
<b>4</b>	<b>PROPERTY DESCRIPTION AND LOCATION .....</b>	<b>10</b>
<b>5</b>	<b>ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY .....</b>	<b>12</b>
<b>6</b>	<b>HISTORY .....</b>	<b>15</b>
6.1	Mining Activity .....	15
6.2	Exploration Activity .....	15
6.3	Previous Studies .....	16
<b>7</b>	<b>GEOLOGICAL SETTING AND MINERALISATION .....</b>	<b>17</b>
7.1	Regional Geology .....	17
7.2	Local Geology .....	18
7.3	Mineralisation.....	19
<b>8</b>	<b>DEPOSIT TYPE.....</b>	<b>20</b>
<b>9</b>	<b>EXPLORATION .....</b>	<b>21</b>
<b>10</b>	<b>DRILLING .....</b>	<b>22</b>
<b>11</b>	<b>SAMPLE PREPARATION, ANALYSES &amp; SECURITY .....</b>	<b>23</b>
<b>12</b>	<b>DATA VERIFICATION.....</b>	<b>24</b>
<b>13</b>	<b>MINERAL PROCESSING AND METALLURGICAL TESTING.....</b>	<b>25</b>
<b>14</b>	<b>MINERAL RESOURCE ESTIMATES.....</b>	<b>25</b>
14.1	Introduction .....	25
14.2	Geological Modelling .....	25
14.3	Statistical Analysis .....	28
14.3.1	Introduction .....	28
14.3.2	Gold .....	28
14.3.3	Silver.....	31
14.3.4	Sulphur .....	32
14.4	Geostatistical Analyses.....	33
14.5	Grade Interpolation .....	35
14.6	Density Analysis .....	36
14.7	Mineral Resource Classification .....	36

14.8 SRK Audited Mineral Resource Statement .....	37
14.9 Exploration Potential .....	38
<b>15 MINERAL RESERVE ESTIMATES .....</b>	<b>39</b>
<b>16 MINING METHODS .....</b>	<b>39</b>
16.1 Introduction .....	39
16.2 Geotechnical Design Criteria .....	39
16.2.1 Geotechnical Data and Evaluation .....	39
16.2.2 Current Slope Design Criteria .....	40
16.2.3 SRK Revised Mine Design Criteria .....	40
16.2.4 Qualitative Assessment of Impact of the Revised Slope Angles on Ore Reserves ....	42
16.2.5 Other Geotechnical Considerations .....	43
16.2.6 Recommendations for Further Drilling .....	43
16.3 Pit Designs .....	43
16.4 Production Schedule .....	44
16.5 Waste Rock Management .....	46
16.6 Mine Equipment Requirements .....	46
16.7 Mining Operations/Production Assumptions .....	47
<b>17 RECOVERY METHODS .....</b>	<b>47</b>
17.1 Introduction .....	47
17.2 Investigations Undertaken and Development of the Plant Design .....	48
17.2.1 Minproc Detailed Feasibility Study .....	48
17.2.2 Basic Design by SNC and Bechtel .....	49
17.2.3 Additional Investigations by Newmont and Others .....	49
17.2.4 Further Development by SNC and RMGC .....	50
17.3 Summary of Mineralogy and Metallurgy Investigations and Findings .....	50
17.3.1 Mineralogy, Ore Types and Anticipated Plant Feed .....	50
17.3.2 Summary of Metallurgical Testwork Findings .....	51
17.3.3 Flowsheet and Process Development .....	51
17.4 Process Plant Flowsheet and Design .....	51
17.5 Plant Throughput and Metallurgical Recoveries .....	54
<b>18 PROJECT INFRASTRUCTURE .....</b>	<b>54</b>
18.1 Access .....	54
18.2 Tailings Management .....	55
18.3 Water Management .....	55
18.3.1 Water Supply and Water Balance .....	55
18.3.2 Acid Rock Drainage Treatment .....	56
18.3.3 Waste Water Disposal .....	56
18.3.4 Tailings Geochemistry and Contaminant Seepage .....	57
18.3.5 Pit Dewatering and Pit Lake Formation after Closure .....	57

18.4 Power Supply.....	58
18.5 Communications .....	58
18.6 Site Facilities.....	58
18.7 Summary Comments .....	58
<b>19 MARKET STUDIES AND CONTRACTS .....</b>	<b>58</b>
<b>20 ENVIRONMENTAL STUDIES, PERMITTING AND SOCIAL OR COMMUNITY IMPACT .....</b>	<b>59</b>
20.1 Romanian Regulatory Requirements, Permitting and EIA Process .....	59
20.2 Project History and Permitting Progress.....	60
20.3 Comparison with International Guidelines and Standards .....	63
20.4 Key Environmental and Social Issues .....	64
20.4.1 Socio-Economic Issues .....	64
20.4.2 Cultural Heritage Issues .....	64
20.4.3 NGO Opposition .....	65
20.4.4 Local Misconceptions, Perceptions and Expectations .....	65
20.4.5 Water .....	66
20.5 Closure.....	66
20.6 Conclusions .....	67
<b>21 CAPITAL AND OPERATING COSTS .....</b>	<b>67</b>
21.1 Initial Capital Costs .....	67
21.1.1 Basis of Q4 2008 Estimate.....	67
21.1.2 Update to Q3 2012 Terms .....	70
21.2 Sustaining Capital.....	71
21.3 Closure Costs .....	72
21.4 Operating Costs.....	72
21.4.1 Introduction .....	72
21.4.2 Mining .....	72
21.4.3 Processing.....	72
21.4.4 G&A .....	73
21.4.5 Other.....	73
21.4.6 Summary .....	73
21.4.7 Comparison to 2009 Technical Report.....	75
<b>22 ECONOMIC ANALYSIS .....</b>	<b>76</b>
22.1 Base Case .....	76
22.2 Economic Analysis Process.....	84
22.3 Sensitivity Analysis .....	87
22.4 Comparison to 2009 Technical Report .....	89
22.5 Summary.....	90
<b>23 ADJACENT PROPERTIES .....</b>	<b>90</b>

<b>24 OTHER RELVANT DATA &amp; INFORMATION.....</b>	<b>91</b>
<b>25 INTERPRETATION AND CONCLUSIONS .....</b>	<b>91</b>
<b>26 RECOMMENDATIONS .....</b>	<b>91</b>
<b>27 REFERENCES .....</b>	<b>92</b>

## **List of Technical Appendices**

<b>A RESOURCE SENSITIVITY DOCUMENT .....</b>	<b>A-1</b>
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## List of Tables

Table 1-1:	SRK Audited Mineral Resource Statement .....	4
Table 1-2:	SRK Audited Mineral Reserve Statement .....	5
Table 14-1:	Summary Statistics - Gold .....	29
Table 14-2:	Summary Statistics - Silver .....	31
Table 14-3:	Summary statistics – Sulphur .....	32
Table 14-4:	Summary Variogram Models – Gold .....	33
Table 14-5:	Summary Variogram Models – Silver .....	34
Table 14-6:	Summary Variogram Models – Sulphur .....	35
Table 14-7:	SRK Audited Mineral Resource Statement .....	38
Table 15-1:	SRK Audited Ore Reserve Statement .....	39
Table 16-1:	Material Input Parameters .....	41
Table 20-1:	RMGC Permitting Status .....	62
Table 20-2:	Equator Principles Compliance status .....	63
Table 21-1:	Estimated Capital Expenditure (Q4 2008) .....	68
Table 21-2:	Estimated Capital Expenditure .....	71
Table 21-3:	Sustaining Capital .....	72
Table 21-4:	Key Processing Consumable Cost Assumptions .....	73
Table 21-5:	Average Operating Costs .....	73
Table 21-6:	Unit Cash Costs of Gold Production .....	74
Table 21-7:	Operating Cost Comparison with 2009 Technical Report .....	75
Table 21-8:	Key Consumable Unit Cost Comparison with 2009 Technical Report .....	76
Table 22-1:	Forecasted TEPs .....	78
Table 22-2:	Summary Technical and Financial Analysis .....	86
Table 22-3:	Rosia Montana Project post-tax NPV in USD at Various Real Discount Rates .....	87
Table 22-4:	Gold Price Sensitivity .....	88
Table 22-5:	Operating Cost Sensitivity .....	88
Table 22-6:	Capital Cost Sensitivity .....	88
Table 22-7:	Exchange Rate Sensitivity .....	88
Table 22-8:	Summary Financial Analysis – Comparison with 2009 Technical Report .....	90

## List of Figures

Figure 4-1:	Rosia Montana Project location .....	11
Figure 5-1:	Project Infrastructure and site development plan .....	14
Figure 7-1:	Regional geology of the Rosia Montana area .....	17
Figure 7-2:	Rosia Montana Project geological map .....	18
Figure 14-1:	Modelled mineralised zones .....	26
Figure 14-2:	Estimation regions .....	27
Figure 14-3:	Log probability plots of composite gold data .....	30
Figure 14-4:	Log probability plots of composite silver data .....	32
Figure 16-1:	Revised SRK pit slope sectors showing lithology and alteration domains .....	42
Figure 17-1:	Schematic Flowsheet .....	53
Figure 21-1:	Monthly project capital expenditure .....	71
Figure 21-2:	Unit operating costs per tonne processed .....	74
Figure 21-3:	Unit operating costs per oz payable gold .....	75
Figure 22-1:	Mining production (ore and waste tonnage, strip ratio) .....	78
Figure 22-2:	Mining production (ore tonnage, gold grade) .....	79
Figure 22-3:	Mining production (ore tonnage, silver grade) .....	79
Figure 22-4:	Processing production (ore feed tonnage, gold grade) .....	80
Figure 22-5:	Processing production (ore feed tonnage, silver grade) .....	80
Figure 22-6:	Processing production (gold recovery v gold grade) .....	81
Figure 22-7:	Processing production (silver recovery v silver grade) .....	81
Figure 22-8:	Gold recovered .....	82
Figure 22-9:	Silver recovered .....	82
Figure 22-10:	Gross revenue .....	83
Figure 22-11:	Operating costs (pre-tax) .....	83
Figure 22-12:	Operating margin (revenue v operating costs pre tax) .....	84
Figure 22-13:	Sensitivity at a 10% Discount Rate .....	89

## TECHNICAL REPORT ON THE ROSIA MONTANA GOLD AND SILVER PROJECT, TRANSYLVANIA, ROMANIA.

### 1 SUMMARY

#### 1.1 Introduction

The Rosia Montana Gold and Silver Project (Rosia Montana Project or the Project) is located in west-central Romania. The Project is wholly owned by Rosia Montana Gold Corporation S.A. (RMGC), in which Gabriel Resources Ltd. (Gabriel or the Company) has an 80.69% equity shareholding. The remaining 19.31% of RMGC is owned by CNCAF Minvest S.A. (Minvest), a Romanian state owned mining company. This technical report has been prepared for Gabriel by SRK Consulting (UK) Ltd (SRK).

The Rosia Montana Project is an advanced stage gold and silver project, which has been the subject of several feasibility studies. The construction of the Project is now awaiting permitting and financing. RMGC intends for the Project to be constructed on an EPCM basis and plans to initiate a tender phase for this in due course.

The Project, as currently envisaged, will comprise an open pit mine and a processing plant comprising primary crushing, SAG and ball milling, cyanidation and adsorption onto activated carbon. A gravity recovery circuit has been incorporated into the circuit to facilitate the recovery of free gold and a continuous elution circuit has been selected for the treatment of the loaded carbon. The Project is planned to process a total of some 215 Mt of ore over a mining life of some 16 years. Low-grade ore mined during the initial five years will be stockpiled and processed during the final two years after the completion of mining.

This report describes the Project as currently envisaged, presents SRK's opinions on the Mineral Resource and Reserve and production as currently forecast and presents an economic model and cash flow forecast compiled by SRK from information provided by Gabriel in Q3 2012, each as at October 1<sup>st</sup> 2012.

The Project is located in west-central Romania near the village of Rosia Montana in Alba County and is within the Rosia Montana mining district. The district has a long history of mining and reached maximum development and peak gold production during the period of the Austro-Hungarian administrations (between the end of the 17th century up until the end of the first World War). The property is currently held under exploitation concession license number 47/1999 which covers an area of approximately 23.8823 km<sup>2</sup>. The concession was granted in June, 1999, and has a 20-year term, with provision for successive five-year extensions.

Modern underground mining was first undertaken at the Project by the Romanian State and began in the early 1960s, continuing until 1985. In 1970, open pit mining commenced at the Cetate orebody, extracting ore from new mining areas, but also recovering remnant pillars from the previous room and pillar mining areas. Open pit mining ceased in 2006.

The first major technical study commissioned by RMGC to assess the Project, which focussed on an operation the size of that now envisaged, was the Definitive Feasibility Study (DFS) produced for the Project by GRD Minproc Limited (Minproc) in August 2001 which assumed an ore mining rate of 20 Million tonnes per annum (Mtpa). Subsequent to this, further work was carried out by a variety of consultants and contractors who produced further feasibility study level reports, the most recent of which was prepared by Washington Group International Inc. (the Washington Group) who compiled a Final Feasibility Study (FFS) for the Project based on input from RMGC's various consultants that was completed in August 2006. This envisaged the development of four open-pits over 14 years at an average grade of 1.5 grammes per tonne (g/t) of gold (Au). One of the key aspects of the Project was that, in common with many other existing operations and in order to maximise discounted cash flow, higher grade material would be selectively processed with lower grade material being stockpiled to be processed for two/three years following the cessation of mining operations.

The Mineral Resource reported in the FFS and the pit design developed for the FFS have not been updated since that time and still form the basis of the Project and valuation as presented in this report. Notwithstanding this, a significant amount of additional technical work has been completed on other aspects of the Project. The most recent public document produced commenting on the Project was titled "Technical Report on the Rosia Montana Gold Project, Transylvania, Romania" which was issued in March 2009 (the 2009 Technical Report).

Geologically, the Rosia Montana Project deposit consists of several, mostly dacite-dominated, mineralised pipes located within a diatreme-maar complex consisting of a tuffaceous vent breccia; the surface expression of which has an irregular shape with lateral dimensions in excess of 2.5 km. Mineralisation in the area comprises veins, disseminated sulphides, stockworks and breccia fillings. Grades vary between 0.5 and 2.0 g/t Au, with some localised gold grades of over 30 g/t occurring in veins and breccias. The two largest orebodies within the area are Cetate and Carnic, which are characterised by finely disseminated pyrite within dacite porphyry and which outcrop on hills to the south of the east-west orientated Rosia Valley.

Together, Cetate and Carnic contribute approximately 63% of the Measured and Indicated Mineral Resource presented in this report. There are, however, six further orebodies that contribute to the total resource: Orlea, Carpeni, Carnicel, Cos, Jig and Igre. The mineralisation encountered in these deposits is similar to that of Cetate and Carnic, comprising dacite porphyry hosted disseminated pyrite, sub-vertical breccia zones, and crosscutting veins.



The exploration data used to derive the Mineral Resource Estimates presented in this report was collected during an exploration programme that commenced in 1998 under the management of RSG Global (RSG) in close consultation with RMGC field staff and management. This work comprised reverse circulation (RC) and diamond (DD) drilling from surface, along with underground channel sampling of all accessible underground drives and crosscuts. The surface drilling as a whole now provides coverage on an approximate 80 x 80 m grid over most of the well mineralised parts of the deposit, with frequent areas of infill drilling reducing the sample spacing to an average of 40 x 40 m. Underground drilling has allowed areas with no channel samples or with a low density of surface drilling coverage to be properly explored.

The DD core was halved and sampled at 1m intervals, one half of the core was stored in a library and the other half submitted to the laboratory. In the case of the RC drilling a Jones riffle splitter was used to reduce the sample submitted to the laboratory to one-eighth the drilled volume, the reject being stored. Samples were prepared and assayed at the on-site, custom built, laboratory managed by SGS Ltd. (formerly Analabs Pty. Ltd.). SRK considers that appropriate drilling, sample preparation, handling and assaying and verification procedures have been employed and as a result the quantity and quality of the available data is sufficient to support Mineral Resources to the level of confidence implied by the classification used in the statements of these below.

## **1.2 Mineral Resource Statement**

Table 1-1 below summaries SRK's audited Mineral Resource Statement based on a 0.4 g/t cut-off grade. SRK considers the statement to be in accordance with the Canadian Institute of Mining, Metallurgy and Petroleum (CIM), CIM Standards on Mineral Resources and Reserves, Definitions and Guidelines (CIM Standards). The only material difference between this and the Mineral Resource derived by RSG as reported in the 2009 Technical Report is that it has been reported at a lower cut-off grade.

**Table 1-1: SRK Audited Mineral Resource Statement**

<b><u>Measured Resources</u></b>					
<b>Deposit</b>	<b>Tonnage (Mt)</b>	<b>Au Grade (g/t)</b>	<b>Ag Grade (g/t)</b>	<b>Au Metal (Koz)</b>	<b>Ag Metal (Koz)</b>
Orlea	9.7	1.50	2	480	670
Cetate	49.5	1.26	6	2,010	9,950
Carnic	103.3	1.32	9	4,400	28,660
Carnicel	7.3	1.01	10	240	2,450
Jig	1.8	2.63	25	150	1,430
<b>Total Measured</b>	<b>171.5</b>	<b>1.32</b>	<b>8</b>	<b>7,260</b>	<b>43,160</b>
<b><u>Indicated Resources</u></b>					
<b>Deposit</b>	<b>Tonnage (Mt)</b>	<b>Au Grade (g/t)</b>	<b>Ag Grade (g/t)</b>	<b>Au Metal (Koz)</b>	<b>Ag Metal (Koz)</b>
Orlea	79.3	0.82	2	2,100	5,200
Carpeni	32.1	0.85	2	880	1,890
Cetate	73.2	0.87	3	2,040	7,480
Carnicel	9.9	0.99	10	310	3,290
Carnic	90.5	0.92	4	2,680	13,010
Cos	4.8	0.71	7	110	1,060
Jig	4.5	1.14	6	170	930
Igre	46.6	1.06	3	1,580	5,090
<b>Total Indicated</b>	<b>341.2</b>	<b>0.90</b>	<b>3</b>	<b>9,890</b>	<b>37,960</b>
<b><u>Measured Plus Indicated</u></b>					
	<b>512.7</b>	<b>1.04</b>	<b>5</b>	<b>17,142</b>	<b>81,117</b>
<b><u>Inferred Resources</u></b>					
<b>Deposit</b>	<b>Tonnage (Mt)</b>	<b>Au Grade (g/t)</b>	<b>Ag Grade (g/t)</b>	<b>Au Metal (Koz)</b>	<b>Ag Metal (Koz)</b>
Orlea	25.2	1.15	2	930	1,550
Carpeni	0.8	1.56	2	40	60
Cetate	2.0	0.63	2	40	130
Carnicel	0.7	1.17	14	30	300
Carnic	8.3	0.70	3	190	810
Cos	2.9	0.74	7	70	670
Jig	2.0	0.85	5	50	300
Igre	2.2	0.77	3	60	180
<b>Total Inferred</b>	<b>44.8</b>	<b>0.98</b>	<b>3</b>	<b>1,420</b>	<b>4,100</b>

Note: Numbers may not total due to rounding errors used in some of the calculations

The Project has been planned as a conventional open pit mining operation producing and delivering gold and silver bearing ores to the processing plant located immediately adjacent to the mine site. The open pit slope design criteria used in the pit optimisation, scheduling and reporting proposes a single set of slope design criteria for all four pits, namely 40° overall slopes and 42° inter-ramp slopes in all lithologies and geotechnical domains. While SRK considers this to be an oversimplification, it considers these to provide a reasonable basis for the mine design work subsequently undertaken.

The production schedule reflected by the valuation presented later in this report is based on that developed in 2005 by Independent Mining Consultants (IMC) as slightly modified for the 2009 Technical Report. Process cut-off grades vary by year in order to maximise the projected return on investment. Cut-off grades were based on net benefit per hour milled in order to account for the different throughput rates of hard, medium and soft ores. Notwithstanding this, for the first six years of the mine life the material between a grade of 0.8 g/t Au and a grade of 1.0 g/t Au is planned to be stockpiled in a specific area. At the end of this period, this stockpile is estimated to contain some 29.4 Mt of material with an average grade of 0.9 g/t, which is planned to be processed at the end of the Life of Mine (LoM).

The total material moved is 472 Mt, of which 215Mt is designated as ore and 257 Mt is designated as waste.

### 1.3 Mineral Reserve Statement

Table 1-2 below summaries SRK's audited Mineral Reserve Statement. This statement reflects the ore planned to be mined as assumed by the economic model presented later in this report. SRK considers this statement to be in accordance with the guidelines and terminology provided in the CIM Standards. This Mineral Reserve is the same as that presented in the 2009 Technical Report which reflects the fact that various pit limit constraints (physical features including permitting related protected areas and historic buildings) have been retained.

**Table 1-2: SRK Audited Mineral Reserve Statement**

Reserve Category	Tonnage (Mt)	Au Grade (g/t)	Ag Grade (g/t)	Au Metal (Moz)	Ag Metal (Moz)
Proven	112.5	1.63	9.01	5.9	32.6
Probable	102.5	1.27	4.55	4.2	15.0
<b>Total</b>	<b>214.9</b>	<b>1.46</b>	<b>6.88</b>	<b>10.1</b>	<b>47.6</b>

Note: Numbers may not total due to rounding errors used in some of the calculations

### 1.4 Operational, Environmental and Permitting Considerations

IMC has calculated equipment requirements from the annual mine production schedule, the mine work schedule and equipment shift production estimates. Specifically, IMC has opted for a loading configuration of three 19.5 m<sup>3</sup> hydraulic excavators, with a back up unit consisting of a Cat 992 hi-lift wheel loader. The large hydraulic units have been designated for the bulk of the excavation task inclusive of waste, low-grade and ore, whilst the Cat 992 will handle the remaining tasks. This residual material includes any low muck pile situation, such as initial loading at blasted faces.

While SRK has recommended to Gabriel that it investigates the potential improvements that could be achieved by purchasing equipment that could mine more selectively, SRK concurs with the methodology used, and, in general, agrees with the resultant Major and Auxiliary Mining Fleets. SRK has accepted all of this for the purpose of the economic analysis presented later in this report.

Waste rock will be stored in three main areas: at the Cetate Waste Rock Dump (WRD), the Carnic WRD and as backfill in the Carnic, Jig and Orlea pits, as well as for the Tailings Management Facility (TMF) development. The Cetate WRD is located north of the plant site while the Carnic WRD is located southeast of the Carnic Open Pit and north of the TMF.

The material planned to be processed has been shown to be partially refractory with the precious metals associated with, and partially locked in, sulphide minerals, mainly pyrite. Despite the partially refractory nature of the ore, a relatively conventional free milling gold recovery plant has been shown to be effective. The flowsheet selected incorporates primary crushing, SAG and ball milling, cyanidation and adsorption onto activated carbon. A gravity recovery circuit has been incorporated into the milling circuit for recovery of free gold and continuous elution circuits have been selected for the treatment of the loaded carbon. Plant tails will be detoxified with copper sulphate and sodium metabisulphite for the detoxification of residual cyanide prior to discharge.

Overall recoveries of approximately 80% for gold and 60% for silver are forecast over the LoM although these vary significantly dependent on the ore source (Carnic, Cetate, Jig or Orlea pits), the feed grade for gold and silver and the sulphide/sulphur level in the feed.

Overall SRK considers the proposed flowsheet to be appropriate and the assumed recoveries to be reasonable but notes that these may vary from those estimated on a month-to-month basis.

The TMF has been sized to contain 250 Mt of material and will be created by constructing a single dam in the Corna Valley, located south of the Process Plant and planned pits and west of the WRDs. While SRK has made some recommendations for further work, it considers the design of the tailings impoundment to be acceptable and construction to be feasible.

The Project site is traversed by an existing twin circuit 110 kV power line owned and operated by Transylvania Electrica S.A.(Electrica), a local company. This power line connects the existing Zlatna and Preparare substations. This power line will be relocated to the west of the Project site with a feed to the processing plant's main substation.

Provision has been made at site for an administration building, plant offices and a laboratory, a warehouse, workshops and storage yard, a gatehouse and weigh scale, the mine office, a mine workshop and truck wash facility, fuel and lubricant storage and potable water facilities and sewage and effluent plants. Overall, SRK is confident that the proposed infrastructure will be sufficient to support the operation as currently envisaged.

RMGC has undertaken a thorough and comprehensive environmental and social impact assessment study process and associated community and public consultation procedure for the Project. Further, RMGC has also appointed a suitably qualified and highly motivated and dedicated team to manage identified impacts and has well developed environmental, social and health and safety management systems in place to facilitate the implementation of identified management measures. Alternatives to the proposed mining and processing plans have been evaluated, and it is clearly demonstrated that of the options considered the current proposal is the most beneficial to the Rosia Montana area and has the least negative social and environmental impacts.

RMGC has a detailed understanding of the permitting requirements and the possible risks to the planned timelines for commencement of the Project, and has anticipated possible delays that could result from these risks. Where applicable, it has put in-place mitigation measures to address these risks. The necessary permits, endorsements and certifications have either been obtained or there is a strategy in place to obtain these. There is a risk of the environmental permit approval being further delayed if RMGC faces continuing legal challenges. The implications of the challenges need to be discussed with relevant authorities to determine if changes are needed to any of the existing permits or planned permit applications. Assuming these issues are addressed promptly, they should not significantly affect the overall Project integrity.

## 1.5 Economic Analysis

The initial and sustaining capital costs for the Project estimated in Q4 2008, and which formed the basis of the 2009 Technical Report, have been updated for the purposes of this report as at Q3 2012. These updated estimates are a combination of first principle estimates, quotes and escalations of previous estimates. Overall the initial capital cost has increased from USD876m to USD1,400m and the sustaining capital costs from USD366m to USD571m.

Operating costs have been estimated in accordance with standard industry practices and are valid as of Q3 2012. In summary, the LoM operating costs, including refining, transport, treatment and royalty equate to some USD16.97/t processed and some USD19.09/t processed over Years 1 to 5 of production.

The economic analysis presented here is based on the Rosia Montana Project Business Plan provided to SRK by the Company, but incorporates SRK adjustments where considered appropriate. It also reflects the Proven and Probable Mineral Reserve planned to be mined and processed over a 16 year period at the Project. It assumes a constant gold price of USD1,200/oz and a silver price of USD20/oz.

In summary, SRK has derived the following key financial LoM results:

- Operating cash cost (including royalty but excluding corporation tax), net of silver credits: USD399/oz;
- Undiscounted cash flow after tax: USD3,606m;
- Post tax NPV at a 10% discount rate: USD865m;
- Post tax IRR of 19.6%; and
- Post tax payback of initial capital outlay in Year 4 of production.

In summary, SRK considers that the exploration activities undertaken by RMGC since 1998 have delineated a significant gold deposit, with by-product silver, on the Rosia Montana Project property. Updated estimates of capital expenditure and operating costs, recently completed, have confirmed the technical feasibility and economic viability of the Project and the Proven and Probable Mineral Reserve of 215 million tonnes at an average grade of 1.46 g/t Au and 6.88 g/t Ag.

A comprehensive Environmental Impact Assessment (EIA) was completed early in 2006 and was submitted to the Romanian authorities for review. The review process was suspended by the Romanian government in September 2007, but recommenced in September 2010. The timing at which construction will commence remains dependent upon approval of the EIA. In the interim, RMGC has taken delivery of major equipment items with long lead times costing approximately USD44 million at the time of the purchase, including the primary crusher, the SAG mill, two ball mills, and mill drive systems. A number of households remain to be relocated before construction can commence.

On the basis of the discussion contained within the body of this report, it is concluded that the Project is both technically feasible and economically viable, and that the main challenge to be overcome before the Project can be brought to fruition lies in the area of permitting. While RMGC is considered to have appropriate plans and strategies in place to deal with this challenge, the outcome of the permitting process is not fully within its control.

## 2 INTRODUCTION

Rosia Montana is located in west-central Romania and is wholly owned by RMGC, in which Gabriel has an 80.69% equity shareholding. The remaining 19.31% of RMGC is owned by Minvest, a Romanian state owned mining company. This technical report has been prepared for Gabriel by SRK.

The Rosia Montana Project is an advanced stage gold and silver project, which has been the subject of several feasibility studies. The construction of the Project is now awaiting permitting and financing. RMGC intends for the Project to be constructed on an EPCM basis and plans to initiate a tender phase for this in due course.

The deposit itself consists of several, mostly dacite-dominated, mineralised bodies located within a diatrema-maar complex; the surface expression of which has an irregular shape with lateral dimensions in excess of 2.5 km. Mineralisation in the area comprises veins, disseminated sulphides, stockworks and breccia fillings. Gold grades vary between 0.5 and 2.0 g/t, with some localised gold grades of over 30 g/t occurring in veins and breccias.

The two largest orebodies; Cetate and Carnic, are characterised by the presence along with the gold of finely disseminated pyrite mineralisation hosted by dacite porphyry. These two orebodies outcrop on hills to the south of an east-west orientated valley and have been mined by open pit and underground methods in the past. Cetate and Carnic together contribute approximately 63% of the Measured and Indicated Mineral Resources derived by RSG and presented in this report.

There are six further orebodies that contribute to the total resource: Orlea, Carpeni, Carnicel, Cos, Jig and Igre. The mineralisation encountered in these deposits is similar to that of Cetate and Carnic, comprising porphyry hosted disseminated pyrite, sub-vertical breccia zones, and crosscutting veins.

The Project, as currently envisaged, will comprise an open pit mine and a processing plant comprising primary crushing, SAG and ball milling, cyanidation and adsorption onto activated carbon. A gravity recovery circuit has been incorporated into the circuit to facilitate the recovery of free gold and a continuous elution circuit has been selected for the treatment of the loaded carbon. The Project is planned to process a total of some 215 Mt of ore over a mining life of some 16 years. Low-grade ore mined during the initial five years will be stockpiled and processed during the final two years after the completion of mining.

This report describes the Project as currently envisaged, presents SRK's opinions on the Mineral Resource and Mineral Reserve and production forecast as currently forecast and presents an economic model and cash flow forecast compiled by SRK from information provided by Gabriel in Q3 2012, each as at October 1<sup>st</sup> 2012.

SRK is part of an international group (the SRK Group), which comprises over 1,500 professional staff offering expertise in a wide range of engineering and scientific disciplines. The SRK Group's independence is ensured by the fact that it holds no equity in any project and that its ownership rests solely with its staff. SRK has offices in UK, Sweden, Turkey, Russia, South Africa, North and South America, Kazakhstan, China, India and Australia. SRK has a significant amount of experience in undertaking technical-economic audits of, and monitoring of, mining and processing projects on behalf of banks and potential investors throughout the world and also in producing independent technical reports such as this in relation to the raising of equity or satisfying stock exchange listing requirements.

The work undertaken by SRK in compiling this report has been managed and reviewed by Dr. Mike Armitage, Group Chairman of SRK. Dr. Armitage is a Qualified Person (QP) as defined by CIM and outlined in National Instrument 43-101 of the Canadian Securities Administrators (NI 43-101). An appropriate certificate for Dr. Armitage accompanies this report.

Dr. Armitage was assisted by a team of SRK employees and associates, most notably Ben Parsons, who audited the Mineral Resource Estimate presented here, Sean Cremin who reviewed the mining aspects of the study, Allan McCracken who reviewed the geotechnical aspects of the work done, Paul Riley who reviewed the metallurgical testwork carried out to date, Sue Struthers who reviewed environmental aspects of the Project and Nick Fox who prepared the economic model presented at the end of the report. All of the above with the exception of Paul Riley and Sue Struthers are full time employees of SRK.

The most recent site visit carried out by SRK was by Dr. Armitage between December 12<sup>th</sup> and December 14<sup>th</sup>, 2011 during which he visited all localities and exposures within the licence area relevant to the most up to date Mineral Resource Estimate and made first hand observation of the drill core and sampling facilities. SRK does not consider that anything material has changed at site since this time and that this visit remains "Current". Previous site visits were undertaken by Sue Struthers between August 22<sup>nd</sup> and August 25<sup>th</sup>, 2011, which comprised a review of environmental aspects of the Project and included discussions with representatives of RMGC's Environment and Community Relations Departments, as well as representatives of the community and local Non-Governmental Organisations (NGOs) and by Allan McCracken and Nick Fox, between May 19<sup>th</sup> and May 21<sup>st</sup>, 2010, which comprised a review of the drill core from both a geotechnical and resource perspective.

SRK has also undertaken visits prior to this during which it selected core sections for inspection and verification against core logs and sample assay sheets and obtained the results of check and standard assay results for review.

SRK's opinion, effective as of October 1<sup>st</sup> 2012, is based on information provided to SRK by Gabriel throughout the course of SRK's investigations as described below, which in turn reflect various technical and economic conditions at the time of writing.

This report is based on technical information, which requires subsequent calculations to derive sub-totals, totals and weighted averages. Such calculations inherently involve a degree of rounding and consequently introduce a margin of error. Where these occur, SRK does not consider them to be material.

SRK is not an insider, associate or affiliate of Gabriel and neither SRK nor any affiliate of SRK has acted as advisor to Gabriel or its affiliates in connection with the Project. The results of the technical review by SRK are not dependent on any prior agreements concerning the conclusions to be reached, nor are there any undisclosed understandings concerning any future business dealings.

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

In producing this report, SRK has been heavily reliant upon information and data provided by Gabriel. Most notably all drill hole logging information and the survey, density and assay data presented in this report have been provided to SRK by Gabriel. Notwithstanding this SRK has, where possible, independently verified the data provided, and has undertaken a number of site visits to review the physical evidence for the deposit.

SRK has confirmed that the Mineral Resources and Reserves reported herein are within the mining licence boundaries given below. However, SRK has not conducted any legal due diligence on the ownership of the licences. Rather, SRK has relied upon a letter from Gabriel's Romanian legal advisor, which is addressed to Gabriel, which confirms the integrity of the ownership.

### **4 PROPERTY DESCRIPTION AND LOCATION**

The Project is located in west-central Romania near the village of Rosia Montana in Alba County and is within the Rosia Montana mining district. It is located immediately northeast of the town of Abrud, approximately 45km (80km by road) northwest of the regional capital of Alba Iulia, and 60km (90 km by road) north-northeast of the city of Deva. The village of Rosia Montana and the nearby town of Abrud are the two main centres housing staff and associated infrastructure for the Project. The proposed mine and process plant site will be located at the head of a small drainage basin within steep hilly/mountainous terrain at an elevation of approximately 850 metres above sea level (masl). The proposed tailings management area is located in the immediately adjacent valley to the mine/plant complex. The valley elevation in the area below the site is at approximately 600 masl.



The Project is located in the Apuseni Mountains just north of Deva. The district has a long history of mining and reached maximum development and peak gold production during the period of the Austro-Hungarian administrations (between the end of the 17th Century up until the end of the first World War). As a result of these historical mining activities, several abandoned waste dumps and tailings ponds exist on the property. In addition, approximately 140 km of historical underground workings, some dating from Roman times, have been identified and acid rock drainage (ARD) continues to be produced from the historical openings and dumps which currently discharge, untreated, into local streams. RMGC proposes to treat these effluents as part of its normal operating procedures and has recently completed a pilot plant trial to demonstrate this (commented upon later in this report).



**Figure 4-1: Rosia Montana Project location**

As noted above, the Project is wholly owned by RMGC, in which Gabriel has an 80.69% equity shareholding. On June 16<sup>th</sup> 1998, Romania enacted a mining law providing for, among other things, the granting of exploration and exploitation concessions to both Romanian and foreign entities. An exploration concession may be converted into an exploitation concession at any time upon the submission to, and approval by, National Agency for Mineral Resources (NAMR) of a feasibility study. An exploitation concession is granted for an initial term of 20 years and is renewable for successive five-year periods. An initial annual fee of 25,000 RON/km<sup>2</sup> (equivalent to approximately USD 8,000 at current exchange rates) is payable to the government of Romania. This fee may be adjusted for inflation. Holders of exploitation concessions must also pay to the state of Romania a net smelter royalty on all production plus a minor royalty for waste and aggregate material used in construction activities.

Exploitation concessions confer on the holder the right to explore, exploit, process, refine and trade all mineral substances (except oil, gas and radioactive substances) lying within the concession, as well as the right to use the surface of the land and available water.

Minvest, as the original titleholder of the Rosia Montana Project and other properties, made an application to the Romanian government under the then new mining law for an exploitation concession for the Rosia Montana Project, which was approved. The formal exploitation concession for the Project was granted to Minvest in June 1999. The terms and conditions of the concessions provided for the transfer of the property from Minvest to RMGC. This limited RMGC's involvement in the closure of the current mining operations run by the State, and left related liabilities to State bodies. The liabilities would be items such as environmental issues and redundancy packages. Further details on the permitting of the Project are included in Section 20-2 of this report.

The Rosia Montana Project property is currently held under exploitation concession license number 47/1999 which covers an area of approximately 23.8823 km<sup>2</sup>. The concession was granted in June, 1999, and has a 20-year term, with provision for successive five-year extensions. The initial redevelopment license expenditure commitments of USD 9,285,000 have been fulfilled. An annual environmental bond based on the work programme is also being paid.

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

The Rosia Montana mining district is readily accessible via a well-developed network of roads and includes a number of community access, logging and mining property roads and tracks, which permit vehicular access to most areas.

Access to the Project site is currently provided by the National Roads DN74 and DN74A and by County Road DJ742. DN 74 connects Abrud to Brad and Deva to the southwest, DN74A connects Alba Iulia city to the town of Campeni and the Country Road DJ742 connects Gura Rosiei, Rosia Montana, Corna and Gura Cornei.

Access to the plant site will be from the north via a new road constructed along the south bank of the Rosia Montana Creek. In addition to this, the local road network will be upgraded and alterations will be made to accommodate the transportation of major items of equipment during construction and subsequently during operations.

The climate of the area is designated as continental temperate and is characterised by hot summers, cold winters, significant snowfalls, and annual rainfall averaging 745mm.

Key climatic data for the site includes:

- |  |                              |
|--|------------------------------|
| • Average annual rainfall                | 745 mm (including snow melt) |
| • 1 in 25 year, 24 hour storm event      | 101 mm                       |
| • 24 hour Probable Maximum Precipitation | 450 mm                       |
| • Average annual snowfall                | 181 mm                       |
| • Dominant wind directions               | SW (30%), NE (13%)           |

The Project site is well serviced by existing services infrastructure including electrical power and telecommunications.

An existing twin circuit 110 kV power line, owned and operated by the local distribution company Electrica, connects the existing substations at Zlatna and Preparare (Rosia Poieni) and traverses the Project site.

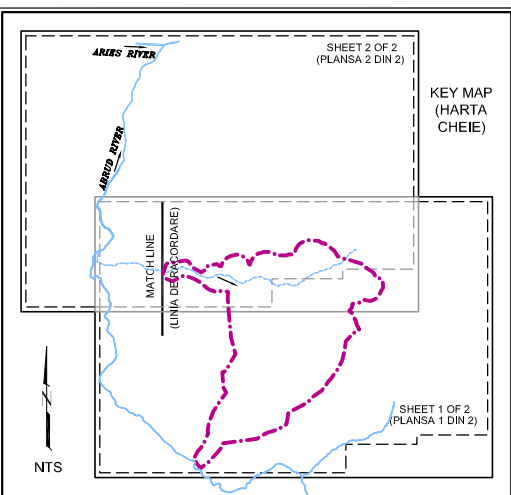
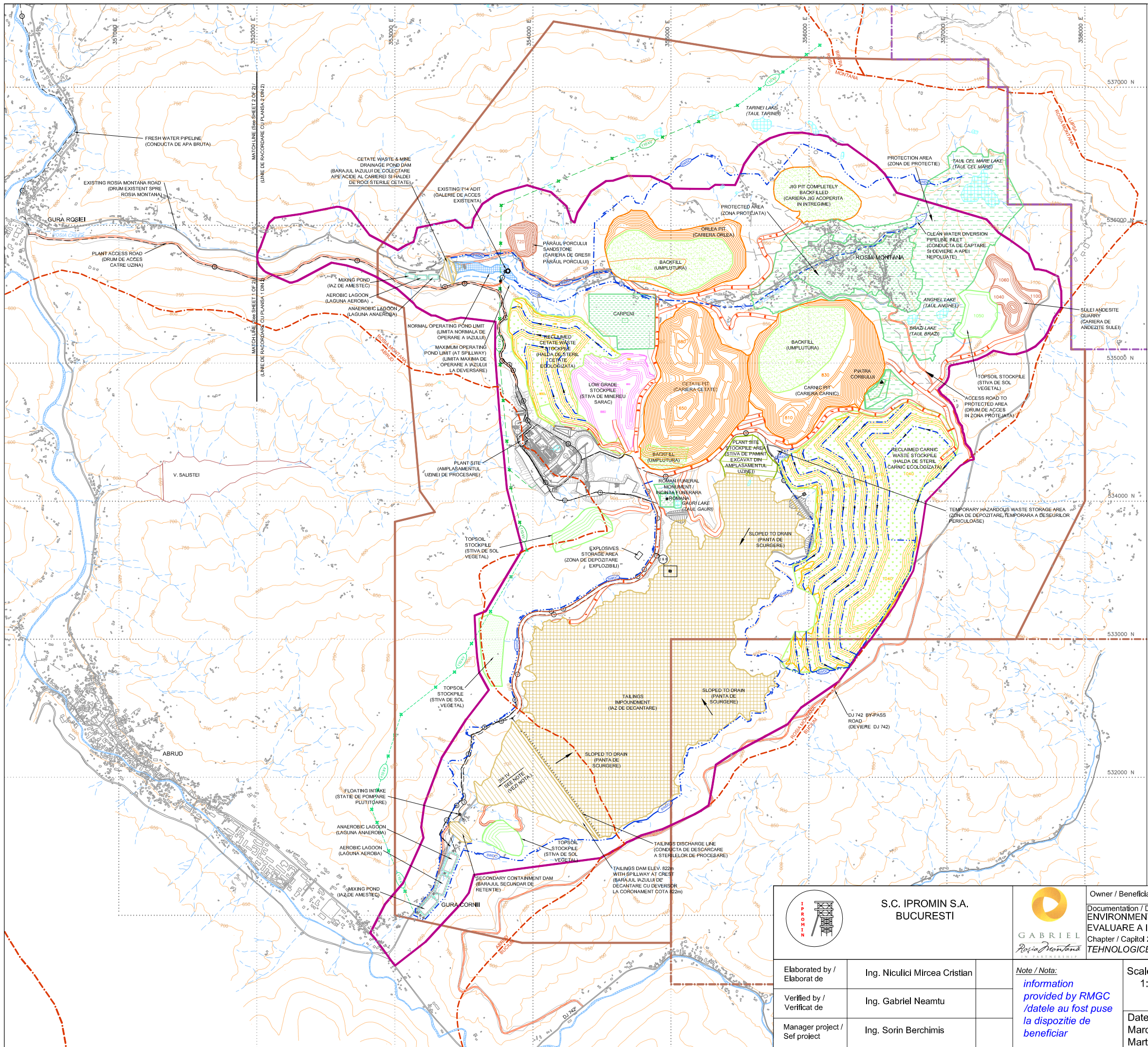
Fresh water for the Project will be provided from a new pumping station on the Aries River. The water will be delivered to the site by a buried 11.7 km long pipeline.

Two sources for construction materials have been identified within the Project site, namely the Sulei quarry (for rock fill) and the La Piriul Porcului quarry (for sandstone and aggregates).

The Project area is characterised by a partly forested, hilly landscape with elevations ranging between 500 and 1,000 masl and valleys ranging in depth from 100 to 200 metres.

Figure 5-1 shows the current infrastructure around the Rosia Montana Project and the planned infrastructure to be put in place and the planned surface footprint of the Project at the end of Year 14 of operations.





LEGEND / LEGENDA

- ROSIA MONTANA CURRENT MINE EXPLOITATION LICENCE LIMIT (RMGC) / LIMITA ACTUALA A LICENȚEI DE EXPLOATARE MINIERA ROSIA MONTANA (RMGC)
- ROSIA POIENI CURRENT MINE EXPLOITATION LICENCE LIMIT (CUPRUMIN ABRUD) / LIMITA ACTUALA A LICENȚEI DE EXPLOATARE MINIERA ROSIA POIENI (CUPRUMIN ABRUD)
- BUCIUM CURRENT EXPLORATION LICENCE LIMIT (RMGC) / LIMITA ACTUALA A LICENȚEI DE EXPLORARE BUCIUM (RMGC)
- CITY ADMINISTRATIVE TERRITORY LIMIT / LIMITA TERITORIULUI ADMINISTRATIV URBAN
- LIMIT OF INDUSTRIAL PROTECTION AREA / LIMITA DE PROTECȚIE A ZONEI INDUSTRIALE
- EXISTING STRUCTURES / CONSTRUCTII EXISTENTE
- MAJOR ROADS / DRUMURI PRINCIPALE
- MINOR ROADS / DRUMURI SECUNDARE
- PROPOSED MINE ROAD / DRUM DE EXPLOATARE PROPUȘ
- RIVER / RÂU
- STREAM / CURS DE APA
- LAKES / LACURI
- EXISTING RAILWAY / CALE FERATA EXISTENTA
- EXISTING 110 kV POWERLINE / LINIE ELECTRICA EXISTENTA AERIANA DE 110 kV
- RELOCATED 110 kV POWERLINE / REAMPLASAREA LINIEI ELECTRICE DE 110 kV
- TAILINGS DELIVERY PIPELINE / CONDUCTA STERILE DE PROCESARE
- RECLAIM WATER & CORNIA DISCHARGE PIPELINE / CONDUCTA DE DE RECIRCULARE A APEI SI DESCARCARE IN PARAU CORNIA
- SECONDARY CONTAINMENT DAM PUMP BACK PIPELINE / CONDUCTA DE RECIRCULARE A EXFILTRATILOR DIN IAZUL DE DECANTARE
- CETATE POND TO ARD PLANT PIPELINE / CONDUCTA APA NETRATATA DIN IAZUL DE COLECTARE CETATE CATRE STATIA DE EPURARE A APELOR ACIDE
- CIRNIC WASTE DRAINAGE COLLECTION POND TO CETATE POND PIPELINE / CONDUCTA TRANSFER APE ACIDE DIN IAZUL DE COLECTARE CIRNIC CATRE IAZUL DE COLECTARE A APELOR ACIDE CETATE
- ARD PLANT TO ROSIA CREEK PIPELINE / CONDUCTA DESCARCARE APE TRATATE DIN STATIA DE EPURARE APE ACIDE IN PARAU ROSIA
- ARD PLANT TO CORNIA CREEK PIPELINE / CONDUCTA DE DESCARCARE A APELOR TRATATE DIN STATIA DE EPURARE A APELOR ACIDE IN PARAU CORNIA
- FRESH WATER PIPELINE / CONDUCTA DE APA BRUTA
- SPIGOT DISCHARGE LINE / CONDUCTA DESCARCARE STERILE DE PROCESARE
- SURFACE WATER DIVERSION CHANNEL AND FLOW DIRECTION / CANAL DE DEVIERE A APELOR DE SUPRAFATA SI SENSUL DE CURGERE
- FLOATING INTAKE / STATIE DE POMPARE PLUTITOARE
- PUMPING STATION (FUTURE LOCATION) / STATIE DE POMPARE (LOCATIE VIITOARE)
- PROTECTED AREAS & PROTECTION AREA / ZONE PROTEJATE SI ZONA DE PROTECȚIE
- RECLAIMED AREA / ZONA ECOLOGIZATA
- STEREO 70 COORDINATE GRID / COORDONATE IN SISTEMUL STEREO 70

NOTE (NOTA):

- ACCESS ROAD TO BE INCORPORATED INTO FACES OF DAM / PE FATA AVAL A BARAJULUI VA FI CONSTRUIT UN DRUM DE ACCES



S.C. IPROMIN S.A.  
BUCURESTI



Owner / Beneficiar: S.C. ROSIA MONTANA GOLD CORPORATION S.A.

Documentation / Documentatie:  
ENVIRONMENTAL IMPACT ASSESSMENT REPORT / RAPORT DE  
EVALUARE A IMPACTULUI ASUPRA MEDIULUI

Chapter / Capitol 2 : TECHNOLOGICAL PROCESSES / PROCESE  
TEHNOLOGICE

Exhibit /  
Planșa

2.5

Sheet/Planșa 1/2

Elaborated by /  
Elaborat de

Ing. Niculici Mircea Cristian

Verified by /  
Verificat de

Ing. Gabriel Neamtu

Manager project /  
Sef proiect

Ing. Sorin Berchimis

Note / Nota:

information  
provided by RMGC  
/datele au fost puse  
la dispozitie de  
beneficiar

Scale / Scara:  
1:25000

Date / Data:  
March /  
Martie 2006

Title / Denumire Plan:

SITE DEVELOPMENT - END OF YEAR 14 -  
OPERATIONS / PLAN DE SITUATIE -  
SFARSITUL ANULUI 14 - OPERARE

## **6 HISTORY**

### **6.1 Mining Activity**

The Rosia Montana Project has been mined since Roman times but this activity has been concentrated during the following four principal periods:

- Roman era;
- Austro-Hungarian administrations (end of 17th century to 1918);
- Inter-war period (1918 to 1939); and
- Modern era (1947 to present).

While the high-grade quartz veins and breccias at Cetate and Carnic were mined both from the surface, and to a limited extent from underground, during Roman times, most of the historic underground development and peak gold production occurred during the period of the Austro-Hungarian administration.

More modern underground mining was undertaken by the Romania State and began in the early 1960s, continuing until 1985. Underground mining during this period was carried out from strike development along individual quartz veins (predominantly at Orlea, Tarina, Carnicel, and also within Cetate and Carnic) and room and pillar stoping within breccias and dacite at Cetate and Carnic.

In 1970, open pit mining commenced at Cetate, extracting ore from new mining areas, but also recovering remnant pillars from the previous room and pillar mining areas. The open pit was subsequently extended to the southwest to access ore hosted within the dacite at Cetate. Open pit mining at Cetate ceased in 2006. Open pit mining was also conducted on the western side of Carnic from 2000 until early 2004. Further details on the latest ownership and permitting activities are set out further in Section 20-2 of this report.

### **6.2 Exploration Activity**

Exploration during the 1970s and 1980s was undertaken under the control of the Romanian state companies S.C. Minexfor S.A. (Minexfor) and Regia Autonomia a Cuprului Deva or Minvest (Regia Deva). Samples collected during this period were routinely annotated onto plans and sections and gold and silver assays recorded by hand in assay ledgers. In 1984, a “feasibility study” was compiled by Regia Deva, based on information acquired from exploration carried out up to 1984. This essentially comprised the compilation of the available data into a series of maps, plans, sections and tables.

In 1992, Minexfor completed an 18-hole diamond drilling program at Vaidoaia-Jig (Lespedar) to confirm and extend the findings of previous exploration carried out at Vaidoaia and the previous feasibility study was then updated to reflect this.

## 6.3 Previous Studies

The first major technical study commissioned by RMGC and focussed on an operation the size of that now envisaged, was the Definitive Feasibility Study produced for the Project by GRD Minproc Limited in August 2001 which assumed an ore mining rate of 20 Million tonnes per annum (Mtpa). Subsequent to this, further work was carried out by SNC-Lavalin Engineers and Constructors and IMC resulting in an updated LoM Plan, which was based on a reduced mining rate of 13 Mtpa. A Project Development Report (PDR) was then produced by the Rygnestad Group LLC (Rygnestad) in February 2003 which consolidated the additional work carried out since the DFS.

In October 2005, RMGC commissioned Washington Group International Inc. to compile a FFS for the Project based on input from RMGC's various consultants that was completed in August 2006. This envisaged the development of four open-pits over 14 years at an average grade of 1.46 g/t Au. One of the key aspects of the Project was that, in common with many other existing operations and in order to maximise discounted cash flow, higher grade material would be selectively processed with lower grade material being stockpiled to be processed for two/three years following the cessation of mining operations.

The Mineral Resource reported in the FFS and the pit design developed for the FFS have not been updated since that time and still form the basis of the Project and valuation as presented in this report. Notwithstanding this, a significant amount of additional technical work has been completed on other aspects of the Project. Notably RMGC and its consultants have:

- Completed a programme of sampling of existing development and developed a detailed model of the mined out areas;
- Prepared an updated mining schedule and mining capital and operating costs;
- Purchased certain long lead items of equipment which are currently in storage;
- Updated construction, capital and process operating costs and further progressed various design aspects;
- Progressed planning and site information gathering for the tailings dams and embankments and construction cost estimates; and
- Completed the construction of the first community resettlement site (at Recea in Alba Iulia) and handed-over to the respective residents for whom surface rights had been obtained at the Project site.

The most recent public document produced commenting on the Project was titled "Technical Report on the Rosia Montana Gold Project, Transylvania, Romania" which was issued in March 2009. This is termed the "2009 Technical Report" in this report.

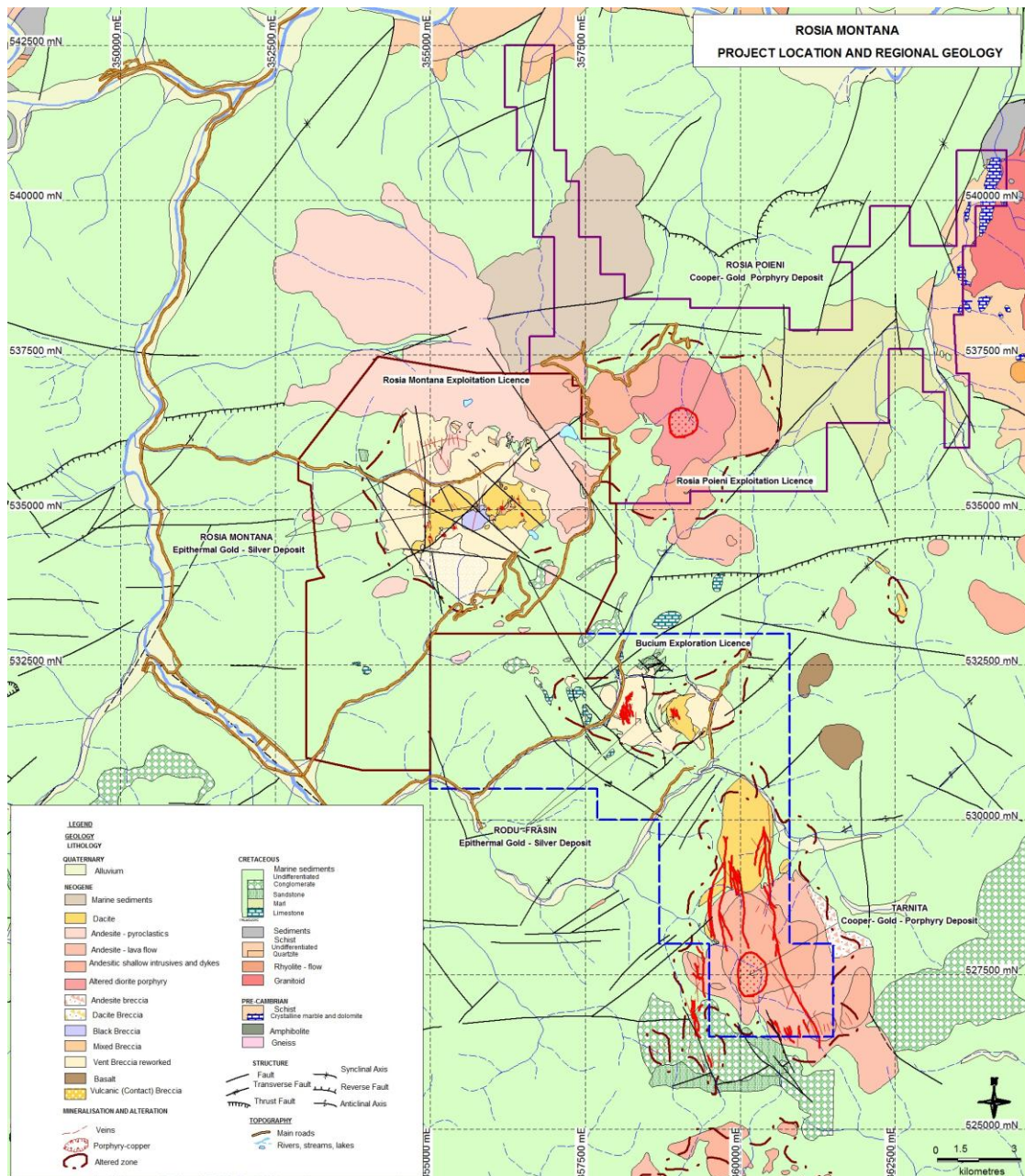
The above work has not been compiled into a single document but is covered in a series of documents, all of which have been provided to SRK to review. Notwithstanding this additional work, in general terms the Project remains largely as envisaged in 2005.



## 7 GEOLOGICAL SETTING AND MINERALISATION

### 7.1 Regional Geology

Geologically, Romania is comprised of four Mesozoic and older terranes exposed in the Carpathian Mountains which wind through the country from the north to the southwest. An area of some 900 km<sup>2</sup> of the Apuseni Mountains just north of Deva is known as the Golden Quadrilateral. Historically this constitutes Europe's most important gold producing area. The Rosia Montana Project deposit, is located in the centre of the Apuseni Mountains, and within the northern-most of three northwest trending belts of volcanism found in the Golden Quadrilateral. The Mesozoic host rocks are dominantly Cretaceous black shale and sandstone sediments and these are overlain by Miocene sediments and tuffs.



**Figure 7-1: Regional geology of the Rosia Montana area**

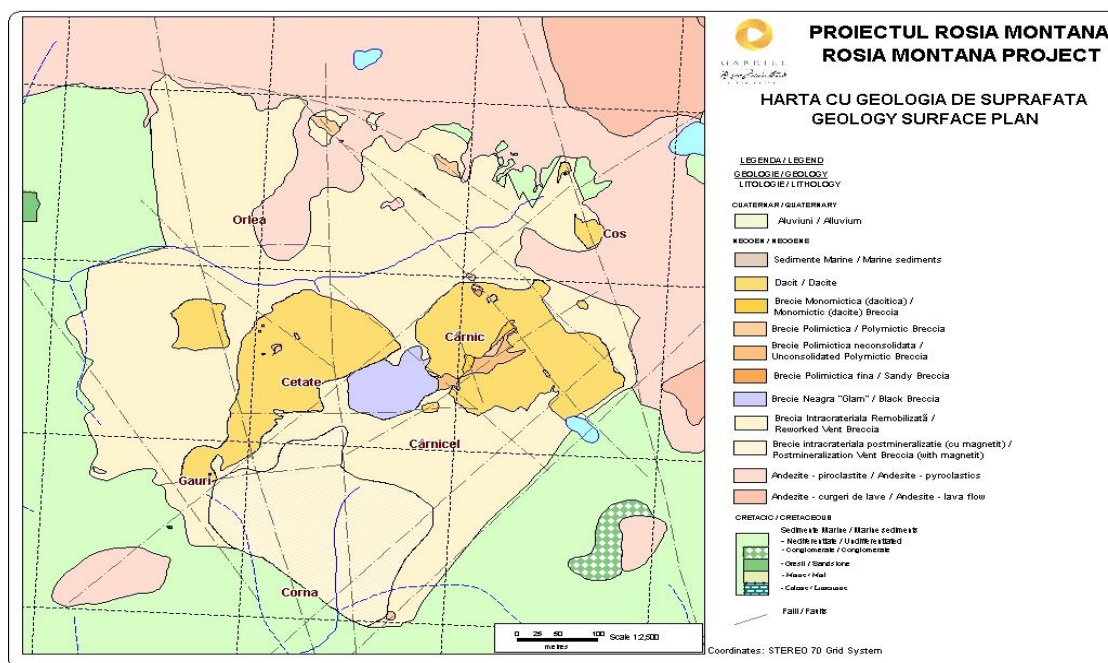
## 7.2 Local Geology

The Rosia Montana Project deposit itself consists of several, mostly dacite-dominated, mineralised pipes located within a diatreme-maar complex consisting of a tuffaceous vent breccia; the surface expression of which has an irregular shape with lateral dimensions in excess of 2.5 km, Figure 7-2. Mineralisation in the area comprises veins, disseminated sulphides, stockworks and breccia fillings. Grades vary between 0.5 and 2.0 g/t Au, with some localised gold grades of over 30 g/t occurring in veins and breccias. The two largest orebodies within the area are Cetate and Carnic, which are characterised by finely disseminated pyrite within dacite porphyry and which outcrop on hills to the south of the east-west orientated Rosia Valley.

Together, Cetate and Carnic contribute approximately 63% of the Measured and Indicated Mineral Resource presented in this report. There are, however, six further orebodies that contribute to the total resource: Orlea, Carpeni, Carnicel, Cos, Jig and Igre. The mineralisation encountered in these deposits is similar to that of Cetate and Carnic, comprising dacite porphyry hosted disseminated pyrite, sub-vertical breccia zones, and crosscutting veins.

Structure has played an important role at the Rosia Montana Project, supplying, firstly, dilation for the emplacement of the maar-diatreme complex and, secondly, the structural permeability up which the mineralising fluids flowed. Two types of structures have been identified at the Rosia Montana Project, regional scale faults and more localised faulting related to the formation of the diatreme.

The Rosia Montana Project deposits are hosted within an extensive zone of strong hydrothermal alteration. The distribution of alteration assemblages is quite complex, however, it can be simplified down to the following groupings: chlorite-carbonate-smectite alteration; phyllic-argillic alteration; QIP (quartz-illite-pyrite) alteration; quartz-adularia replacement; and silicification.



**Figure 7-2: Rosia Montana Project geological map**



## 7.3 Mineralisation

The gold and silver mineralisation at the Rosia Montana Project is associated primarily with sulphides, and approximately 80% of the gold occurs in free form. Pyrite and associated gold and silver are disseminated throughout the mineralised bodies providing a low background grade and are also concentrated in 1 to 10 cm scale veinlets, which occur as stockworks. The frequency, intensity and orientation of the veinlets are variable although they tend to be more prolific where alteration intensity increases and it is this process that has concentrated metal in the central highly altered cores at Cetate and Carnic.

There are several different styles of mineralisation at the Rosia Montana Project and these are described in turn below.

1. Dacite-hosted mineralisation:

This style of mineralisation is characterised by wide zones of finely disseminated sulphide (pyrite) hosted within dacite porphyry. QIP and silica-adularia alteration are distinctive features of the mineralised dacite and the best indicator of gold and silver grade. Narrow, usually widely spaced, stockwork veining is always present but is minor in terms of contained gold and silver. The individual veins are generally steeply dipping, discontinuous and less than 1m wide though in places the veins have blown out into narrow hydrothermal breccia pipes. Significant gold mineralisation of this style occurs at Cetate, Carnic, Carpeni, Gauri, Cos and parts of the Vaidoia zone.

2. Sub-vertical breccia zones crosscutting dacite intrusive bodies:

These mineralised breccias are commonly of mixed lithology and are considered to represent structurally controlled phreatic-magmatic breccias. The mineralisation occurs within strongly silicified alteration zones which contain low to moderate amounts of disseminated fine-grained sulphide within both the matrix and breccia clasts. Both Cetate and Carnic contain mineralisation of this style.

Along the margins of the polymictic breccias a zone of monomictic crackle breccias often occurs comprising angular blocks of dacite in a fine matrix of rock flour that originated from the polymictic breccia bodies. These can be fairly localised features and formed as the polymictic breccia events crackle brecciated the surrounding dacite or caved blocks of the adjacent dacite into the breccia pipes or dykes. These crackle breccia zones often have increased permeability and therefore focused the mineralising fluids and became well mineralised. At Carnic a significant volume of this type of brecciation occurs at the bend in the main XPO breccia. This is also coincident with a zone of well-mineralised hydrothermal brecciation and an area that has been heavily mined by large “corandas” (stopes) in the past.

3. Disseminated and vein hosted gold-silver mineralisation within vent breccia:

A significant amount of the gold-silver mineralisation is hosted by the vent breccia surrounding the dacitic intrusions. This mineralisation is characterised by silicification and finely disseminated pyrite and by infrequent, and generally narrow (less than 1 m), veining. Examples of this style of mineralisation are present at Carnicel, Vaidoia, Jig (also known as Lespedari), Igre, Orlea and Tarina.

4. Diatreme breccia pipe hosted mineralisation:

This type of mineralisation is hosted by the sub-vertical diatreme breccia pipes at Igre and Jig. It is characterised by intense, pervasive silicification of both the breccia matrix and the diatreme breccia clasts. Disseminated pyrite is also pervasive within the matrix and clasts and sometimes completely replaces the black shale clasts. Zones of rhodochrosite have also been identified, occurring within the matrix of the diatreme breccia.

5. Cretaceous sediment hosted mineralisation:

This mineralisation has been identified at Igre, Gauri, East Carnic and Cos. The mineralisation occurs directly below the vent breccia-Cretaceous sediment contact and is usually hosted by shale, sandstone and less frequently by conglomerate beds. The mineralisation is characterised by both silicification and pervasive fine-grained disseminated pyrite and in some areas (Igre, Gauri and East Carnic) by hydrothermal crackle brecciation that varies from mm-width widely spaced spidery crackle breccia through to more intense mosaic (jigsaw) brecciation. Clasts are always very angular and made up of locally derived sediment. The brecciation can be over 50 m thick and tends to be most intense close to the vent breccia-Cretaceous contact. The breccia matrix is typically vuggy and crystalline, some coliform banding has been observed and up to five phases of mineralisation can be present. The mineralisation is dominated by carbonate (both calcite and rhodochrosite), quartz and pyrite with galena and sphalerite not uncommon and rarer chalcopyrite.

Gold has been identified by petrography in numerous samples as electrum. Occurrences were noted as minute (4 µm) inclusions in pyrite, as minute grains (up to 25 µm) intergrown with, and overgrowing Ag-sulphosalts and tellurides. It has also been observed as coarser grains (up to 100 µm) intergrown with carbonate and barite, with drilling locally intersecting some very coarse (1 cm) occurrences. The electrum is also associated with quartz, galena, and sphalerite and has a fineness ranging from 0.537 to 0.763 (Leach & Hawke, 1997).

## 8 DEPOSIT TYPE

Mârza et al. (1997) documented the Rosia Montana Project as a low-sulphidation epithermal deposit. More recently, the Rosia Montana Project has been interpreted as an intermediate-sulphidation epithermal deposit (Sillitoe and Hedenquist, 2003) which evolved from a low-sulphidation epithermal system to a more intermediate epithermal system.

The lithologies within the diatreme complex are dominated by breccias, including magmatic-phreatic and sub-aqueous reworked breccia, intruded by porphyritic dacitic sub-volcanic intrusives. These intrusions are interpreted as Neogene age and are informally named the Carnic and Cetate dacites (Cetate and Carnic massifs). The dacite bodies are interpreted to have intruded vertically through the diatreme breccias and to have spread laterally at shallower levels forming surface domes. An alternative interpretation is that only one major dacite intrusion has occurred and that this has been split into the now separate Carnic and Cetate dacite bodies by a northeast trending strike-slip fault.

## 9 EXPLORATION

As indicated previously, all exploration data collection at the Rosia Montana Project prior to 1998 was undertaken by Romanian State companies. However, since 1998 exploration has been undertaken under the management of RSG in close consultation with RMGC field staff and management. It is this information that has been used to derive the Mineral Resource Estimates presented in this report and, therefore, this information that this section comments upon.

All surveying, topography, underground workings, and drill hole collars for the Project are reported to be based on the Stereo70 grid system. Aerial photography was flown by RMGC as part of the feasibility study with the topography generated by licensed surveyors Spectrum Survey and Mapping (Spectrum) of Perth, Australia. This has, however, now been superseded by a LiDAR topographic survey undertaken by Fugro in 2010.

The exploration work itself has comprised RC and DD drilling from surface, along with underground channel sampling of all accessible underground drives and crosscuts. Surface channel sampling was also undertaken to extend the known surface geochemical and assay database. During 2000, a programme of underground DD drilling was undertaken from 714 Level, the lowest accessible level in the Cetate and Carnic underground development.

The channel sampling was completed on 1m intervals from all the accessible and safe drives within the Rosia Montana deposit, and from surface channels and pits. The widths and depths of each channel were measured and samples were routinely weighed prior to final bagging in order to maintain an even sample size and to avoid sampling bias in harder rock types. The average channel sample weight was maintained at 3.7 kg. In total the Company completed some 1,688 runs of channel sampling totalling some 71,952 m and this now provides an approximate 30 m spaced network of sample lines in the cores of the main orebodies.

The extent of the underground workings has been determined from digitised historical plans. Check surveying of portals and traverses within the underground development has confirmed the accuracy of these. In addition, during the validation of the underground survey traverses undertaken by Spectrum, all visible start points for the channel samples were surveyed and were subsequently compared with those recorded in the underground channel sampling three-dimensional database.

Subsequent to May 2005, some additional geotechnical drilling has been undertaken and additional underground channel sampling completed. This data was collected subsequent to the cut-off date for the data used to derive the Mineral Resource Estimate presented in this report but is not material in the context of the size of the database as a whole and no additional resource estimation studies have been completed incorporating this.

## 10 DRILLING

The RSG sample database, on which the Mineral Resource Estimate presented in this report is based, comprises information from the following drilling (in addition to the information from the underground sampling commented upon above):

- 348 DD drill holes totalling some 31,905m
- 629 RC drill holes totalling some 75,436m
- 131 RC pre-collar diamond drill holes totalling some 29,237m

The drilling was undertaken by Genfor SRL, the Romanian subsidiary of RB Drilling Ltd. The company used a variety of RC, DD and multi-purpose drill rigs including the following: Shramm T985, T64 and T66 RC rigs, Warman UDR1000 multi-purpose rig, G&K 850 multi-purpose rig, Edson 6000 RC rig, KL400 multi-purpose rig, Drill Tech DK40 RC rig, Longyear 44 DC rig, and RB57 DC rig. The resulting core comprises PQ (1%), HQ (42%) and NQ (57%).

All surface and underground drill holes have been downhole surveyed using Eastman or Sperry Sun single-shot cameras, based on a downhole interval of approximately 50m. Due to ground conditions, many RC holes had to be surveyed inside the drill rods, resulting in the production of dip measurements only, rather than dip and azimuth measurements. Some RC holes have been surveyed after the removal of the drill rig, using PVC piping to protect the Eastman single-shot cameras. In these cases the PVC piping was lowered down the hole as far as possible and camera shots were taken at 50m intervals. Spectrum routinely surveyed all drill hole collars.

Drill core recoveries were calculated by comparing the measured length of recovered core with the distance recorded on the core blocks between each drill run. Core recovery for samples in the database is on average in excess of 95%, except for the 2002 geotechnical drilling, which averaged 86%. SRK considers the core recovery to be acceptable. In the case of DD, where poor ground conditions were encountered, a triple tube core barrel, sub-three metre core runs and specialised drilling mud were used to maximise core quality. All core was photographed prior to sampling.

The DD core was marked off at 1m intervals and sampled to produce half-core (lengthways) using a diamond core saw. RC samples were routinely collected at 1m intervals and the cuttings split with a Jones riffle splitter. Field duplicates were taken via the splitter every 20 samples. The bags of cuttings were routinely weighed prior to taking the sub-sample via the Jones riffle splitter. Sample weights were routinely measured on a meter-by-meter basis as part of the standard reverse circulation drilling procedures.

The surface drilling as a whole now provides coverage on an approximate 80 x 80 m grid over most of the well mineralised parts of the deposit, with frequent areas of infill drilling reducing the sample spacing to an average of 40 x 40 m. Underground drilling has allowed areas with no channel samples or with a low density of surface drilling coverage to be properly explored.

## 11 SAMPLE PREPARATION, ANALYSES & SECURITY

As commented above, the DD core was halved and sampled at 1m intervals, one half of the core was stored in a library and the other half submitted to the laboratory. In the case of the RC drilling a Jones riffle splitter was used to reduce the sample submitted to the laboratory to one-eighth the drilled volume, the reject being stored. Random replicate samples (10%), whereby a sample taken from the LM5 pulveriser was sub-sampled and assayed twice, and second split samples (approximately 10%), whereby two individual samples were taken from the LM5, were taken for quality control.

Samples were prepared and assayed at the on-site, custom built, laboratory managed by SGS Ltd. (formerly Analabs Pty. Ltd.), an internationally accredited assay laboratory group.

All drill hole and channel samples were crushed and milled to 85% passing 75 microns in an LM5 pulveriser. Core samples were crushed with a jaw crusher before pulverising. 300 g scoop samples were taken from the bowl of the LM5, with the remainder of the sample pulp being stored. 50g sub-samples were submitted for fire assay, with an atomic absorption spectrometry (AAS) finish. A normal fire assay batch consisted of 50 assays, comprising 40 original samples, 4 replicate samples, 3-second split samples, 2 standards and a blank. Prills were digested in aqua regia to dissolve the gold and silver and the solution was then assayed by AAS and the results were back-calculated to provide the sample assay result.

Check samples were also sent to external laboratories and in total approximately 1,500 samples were checked externally at SGS (Analabs) in Perth and ALS Chemex (Bondar Clegg) in Canada.

A variety of sample types were used to generate a dataset of sulphate assays. Although the distribution of sulphate assays covers the orebodies scheduled to be mined, the high-grade core areas are underrepresented. Given the importance of sulphate assays in the metallurgical recovery algorithms applied in the revenue determinations, and notwithstanding the fact that SRK considers the assumptions made by Gabriel in this regard for the purpose of its production planning to be appropriate, SRK has recommended to Gabriel that further work be carried out prior to the commencement of mining to confirm that the highly altered core areas do not have materially different sulphide / sulphate ratios. As the sulphide ores are more refractory, an increase in the sulphide / sulphate ratio would result in a decrease in the metallurgical recovery and vice-versa.

A total of 6,213 density determinations have been carried out since January 1998, on both diamond drill core samples and hand specimens obtained from underground development. The determinations themselves were undertaken at the Cepromin laboratory in Deva, Romania, which is a commercial laboratory previously run by the Romanian government prior to privatisation.

Samples were collected and data recorded according to detailed mineralised zone location, lithology and style and intensity of alteration. Diamond core samples were prepared by 'squaring off' the ends of approximately 15cm billets of half core. Bulk density determination was by standard water immersion method with each sample coated in wax prior to immersion. Standard laboratory samples were used to calibrate the scales between each measurement. All samples were returned to site and the samples placed back into the core trays, without removing the wax coating, as a record. Results are supplied in hardcopy format with the bulk density measurement reported to two decimal places.

SRK considers that the reported sample preparation, handling and assaying procedures are of a sufficiently high standard and appropriate to support the Mineral Resource estimates as reported.

## 12 DATA VERIFICATION

All surface and underground channel samples, RC chips and DD core have been geologically logged using a logging scheme developed by RMGC. Geological logging has been carried out mostly on a one-meter basis, with particular attention to oxidation type, rock type, tectonic/structural fabrics, veining intensity, alteration intensity, sulphide content and moisture content. In addition, the occurrences of voids and/or insufficient sample have been recorded. Detailed geological drawings of all channel sampled trenches and road cut exposures have also been generated.

During the 1998 to 2000 resource delineation phase, over 1500 sample pulps were sent to both SGS (Analabs) in Perth, Australia, and ALS Chemex (formerly Bondar Clegg) Laboratories in Vancouver, Canada, for independent verification of laboratory bias. Post-2000, regular batches of samples (a total of 104 samples) were sent each month to SGS and ALS Chemex as part of the routine QA/QC process.

The channel sampling and drilling data represent different sampling techniques and, as such, required comparison before both datasets were accepted into the final exploration database used in the Mineral Resource Estimation procedure. A detailed investigation comparing the different data types was completed as part of the 2001 feasibility study.

A total of 34 pairs of drill holes, representing 'twinning' holes, have been completed during two phases, in 2002 and 2004 respectively. Most of the 2002 twinned drill holes were completed as specific tests of pre-existing holes; however, a number were completed as re-drills of holes which failed to reach the target depth. The results of this twin drilling reinforced the conclusion that, while there is a high degree of variation at a local level, there is no bias between the primary drilling and the twin drilling. Notably, as the scale of comparison is increased, the degree of variation is reduced significantly.

The supplied drilling data were reviewed and validated by RSG prior to being compiled in an appropriate format for resource evaluation. The database validation comprised: checking of underground and surface channel sampling traces against the locations of the surveyed underground workings; adjusting the locations of the surface channels that were noted to deviate substantially from the surveyed topography; ensuring the compatibility of total hole depth data in the collar, survey, assay, and geology database files; checking of drill hole survey data for unusual or suspect downhole deviations; ensuring the integrity of sequential downhole depth and interval data in the survey, assay, and geology files; checking of high-grade assays in the primary gold and silver assay fields against the laboratory assay reports; replacement of less than detection limit assays with 0.005g/t Au and 0.5g/t Ag, the insertion of character entries, and blanks for unsampled intervals with nominal low-grade values; checking of lithology and alteration codes; and the removal of non-essential information from validated database files.

No anomalies were identified in the manual cross-checks of the digital assay data and hard copy assay certificates and the final resource database comprises a total of 1,108 drill holes (for an aggregate of 136,578 m) and 1,688 channels (for an aggregate of 71,952m).

In summary, in SRK's opinion, appropriate verification procedures have been employed and as a result SRK considers that the quantity and quality of the available data is sufficient to support Mineral Resources to the level of confidence implied by the classification used in the statements of these in Section 14 below.

## **13 MINERAL PROCESSING AND METALLURGICAL TESTING**

Comments on Mineral processing and metallurgical testwork are presented in Section 17 below.

## **14 MINERAL RESOURCE ESTIMATES**

### **14.1 Introduction**

This section of the report presents SRK's audited Mineral Resource Statement which is based on the Mineral Resource estimate derived by RSG for the FFS in 2005 and SRK's comments thereon. Notably, SRK has not independently re-estimated a Mineral Resource Estimate for the Rosia Montana Project, but has rather reviewed and commented upon the quantity and quality of the underlying data and the methodologies used by RSG to derive the estimates as reported and, as part of this, undertaken a series of check calculations in order to support its audited Mineral Resource Statement.

### **14.2 Geological Modelling**

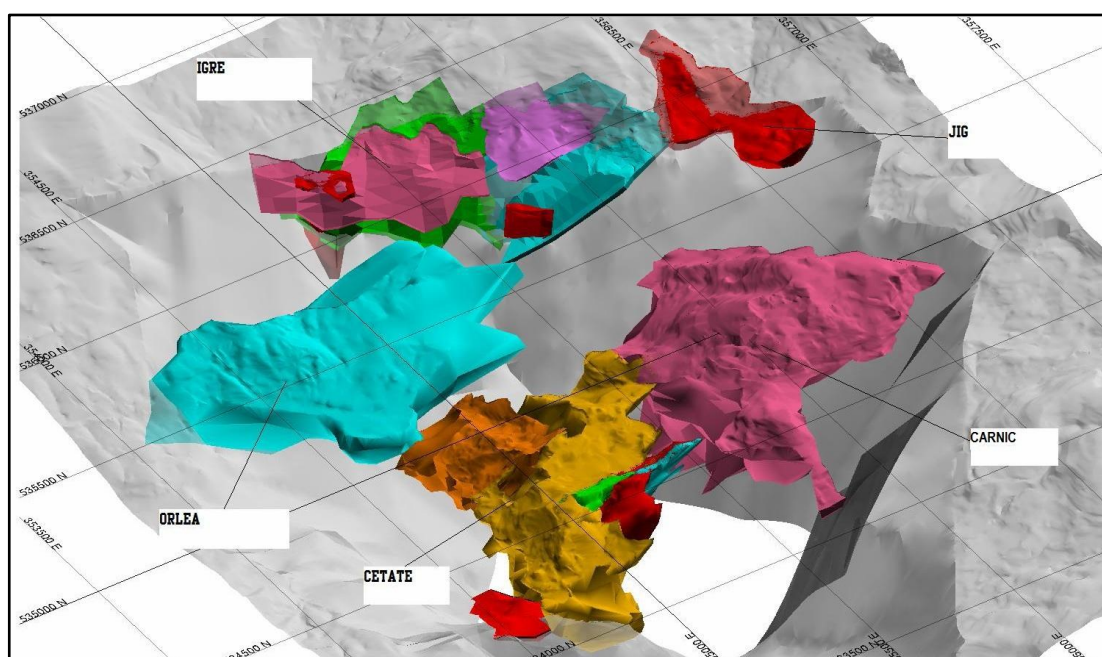
A 3-D wireframe model of the surface topography was generated by Spectrum Survey based on aerial photography in combination with ground survey. The wireframe model is in reasonably close agreement with the drill hole collars and provides a detailed representation of the ridges, valleys and topographical breaks.

A 3-dimensional model of the underground workings and development was produced by RMGC technical staff, and has been applied to enable mined out areas to be accounted for in the resource estimation procedure. Specifically, the relative volume of each individual block, affected by the underground development, was calculated and applied to reduce the block volume and subsequently tonnage. The model estimates that approximately 2.02 million cubic meters of potential ore has been removed by previous underground mining.

With regards the deposit itself, lithology, oxidation and mineralised domain boundaries were interpreted and wireframe modelled in 3D and used to constrain the resource estimate produced. This modelling was initially completed by RMGC technical staff in 2002 and then validated in detail by RSG using the Vulcan software package. These interpretations were reviewed using new drill and sample data collected between 2002 and 2005 and still found to be suitable representatives of the mineralisation.

The general approach taken to construct the mineralisation zone interpretation was based, in part, on the logged lithologies and alteration but was primarily focussed on capturing regions of anomalous gold mineralisation based on a notional 0.3g/t Au lower cut-off grade. It was noted that, above this grade, the continuity of the mineralisation breaks up.

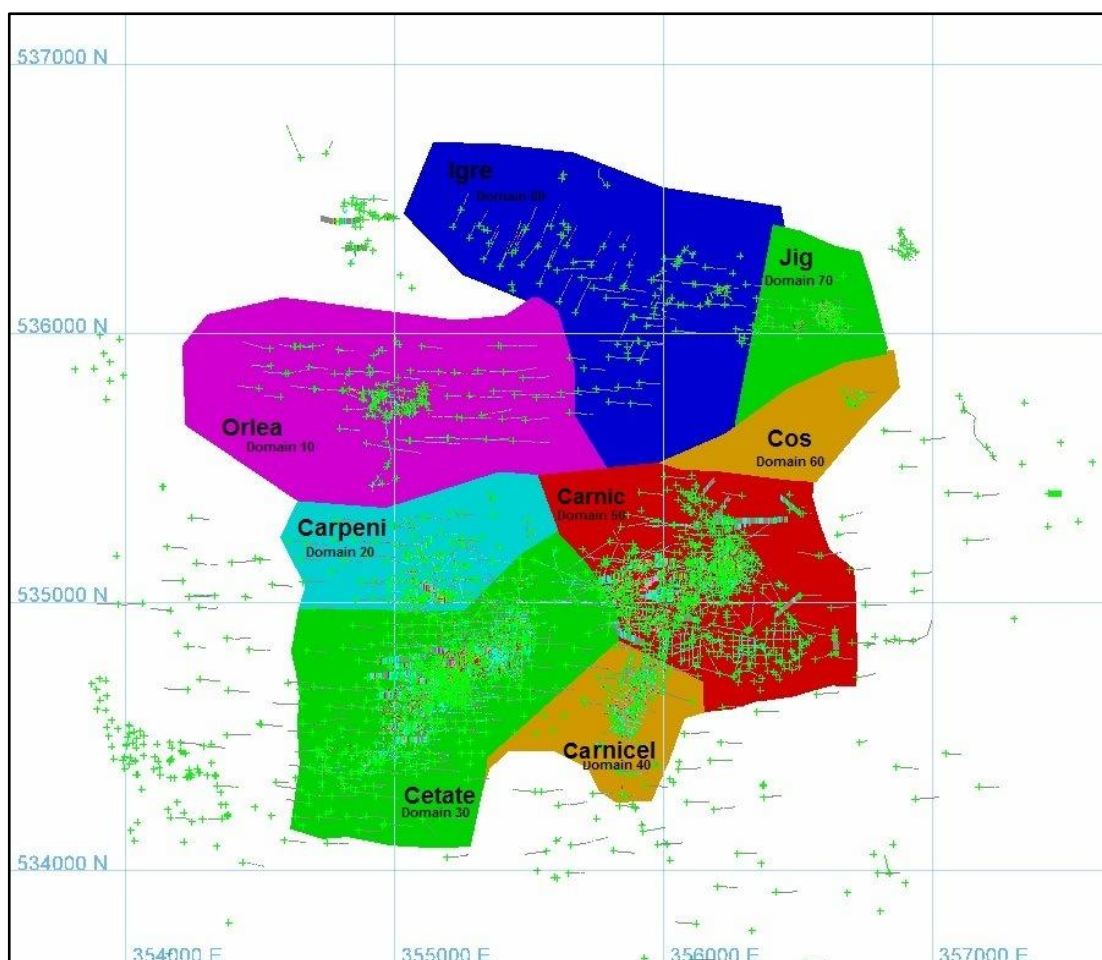
The final modelled mineralisation zones used for the estimate are presented in Figure 14-1 below.



**Figure 14-1: Modelled mineralised zones**

The Project region has been subdivided into nine estimation regions based primarily on the spatial distribution of the historic mining centres. The estimation regions are consistent with previous studies and allow the effective reporting of the resource model but do not represent unique or major changes in geology and/or grade characteristics. These are shown in Figure 14-2 below.





**Figure 14-2: Estimation regions**

The alteration model, further divides the mineralisation into quartz-adularia alteration or silicic zones (SIK), and zones with little or no quartz-adularia alteration (NSIK) respectively. Specifically, where silicic and potassic alteration was recorded as moderate, strong, or intense this was categorised as SIK while the remaining areas were categorised as NSIK. A third alteration type has also been modelled (QIP) which comprises areas with quartz-illite-pyrite alteration and which is essentially intermediate between the quartz-adularia (SIK) and the Argillic zones. This intermediate alteration code has only been used at Cetate and Carnic. Regions of strong quartz-adularia alteration are also modelled in the Carnic region.

At Cetate, the QIP alteration zone is interpreted as sub vertical, with a northeast-southwest strike. At Carnic, the previously separated SIK zones were combined into a single QIP zone. These zones are interpreted to coalesce to the north of Carnic, and the SIK/QIP zone that traverses Gauri and Cetate is considered likely to extend through to Jig, directly northeast along strike. East-west trending alteration zones are interpreted at Orlea and Carpeni. At Igre the SIK alteration has been interpreted to be associated with structure and the polymict breccia.

Finally, a hardness coding (which is important from a processing perspective) has also been derived and applied to the different alteration types. This coding splits up the orebody into, hard, medium and soft hardness categories. In summary, hardness was modelled at the Rosia Montana Project such that:

- Parts of the Carpeni (dacite) were modelled as medium.
- Parts of the Cetate dacite and XPO breccias were modelled medium and hard.
- Parts of the Carnic dacite were modelled as medium and hard.
- Parts of Igre were modelled as medium.
- All SIK material at Jig was considered as hard.
- All or the remains of Orlea, Carpeni, Cetate, Carnic, Carnicel, Jig, NSIK, and Igre were considered soft.

## **14.3 Statistical Analysis**

### **14.3.1 Introduction**

RSG undertook detailed statistical analyses of gold, silver and sulphur data captured within the geological envelopes in preparation for resource estimation. This work was undertaken on regular 5m composites which were generated from both the drill samples and channel samples. Each sample was coded according to its geographical location (“region”), lithology, alteration assemblage, and mineralised zone.

Further, for the purpose of the estimation, the drill hole database and the channel database respectively were combined to form a combined sample database. All statistics, variography, and estimation from this point on have been completed using the combined dataset, unless explicitly stated otherwise.

Descriptive statistics, histograms, and probability plots were compiled for the composited gold, silver, and sulphur assay data, grouped by the region and alteration domains. These were used to assess the statistical characteristics of the datasets, to determine an appropriate method for interpolating resource grades, and to facilitate the selection of upper cuts, if considered necessary.

SRK considers RSG’s approach to grade capping to be appropriate given the random distribution of outlier grades.

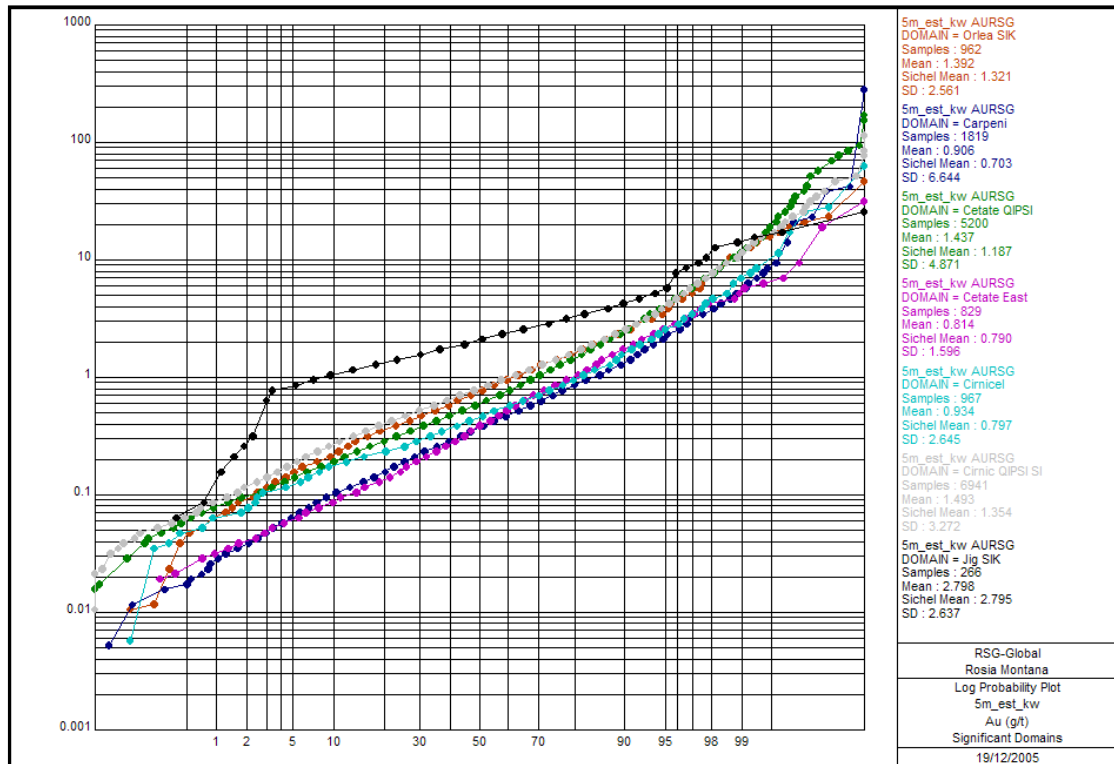
### **14.3.2 Gold**

Descriptive statistics of the composited gold data subdivided by region and alteration domains are presented in Table 14-1 below. The QIP/SI and SIK domains have the highest mean gold grades while the Jig SIK has the overall highest gold grade. The Igre 9 domain has the lowest mean gold grade. The normalised variability of the grades, indicated by the coefficient of variation values (CV; calculated by dividing the standard deviation by the arithmetic mean), is highest for Carpeni and the Cetate NQIPSI compared to the other datasets.

**Table 14-1: Summary Statistics - Gold**

	Orlea		Carpeni	Cetate			Gauri	Carnicel	Carnic	
	SIK	NSIK	ALL	QIPSI	NQIPSI	East	ALL	ALL	QIPSI	NQIPSI
Count	962	1,139	1,819	5,200	3,982	829	143	967	6,941	3,861
Minimum	0.01	0.019	0.005	0.016	0.009	0.02	0.013	0.006	0.01	0.005
Maximum	48.18	46.85	272.34	179.80	168.59	30.53	5.80	63.22	112.12	129.47
Mean	1.39	0.69	0.91	1.44	0.79	0.81	0.51	0.93	1.49	0.77
Median	0.80	0.36	0.39	0.63	0.35	0.40	0.24	0.48	0.84	0.38
Standard Deviation	2.56	2.01	6.64	4.87	4.41	1.60	0.81	2.64	3.27	3.10
Variance	6.55	4.05	44.12	23.72	19.42	2.54	0.65	6.99	10.70	9.62
Coefficient of Variation	1.84	2.91	7.33	3.39	5.56	1.96	1.59	2.83	2.19	4.02
	Jig		Igre							Waste Dumps
	SIK	NSIK	4	5	6	7	8	9	10	All
Count	266	114	194	132	127	215	418	68	37	167
Minimum	0.063	0.005	0.013	0.005	0.005	0.042	0.006	0.014	0.03	0.02
Maximum	25.29	3.12	7.29	9.88	5.83	25.06	27.44	2.04	8.33	4.23
Mean	2.80	0.60	1.05	0.89	0.62	1.38	0.85	0.31	1.02	0.62
Median	2.17	0.37	0.67	0.64	0.31	0.59	0.35	0.20	0.28	0.50
Standard Deviation	2.63	0.66	1.14	1.25	0.88	2.33	2.22	0.34	1.78	0.52
Variance	6.93	0.43	1.29	1.57	0.78	5.44	4.93	0.11	3.16	0.28
Coefficient of Variation	0.94	1.10	1.09	1.41	1.43	1.69	2.60	1.08	1.75	0.85

Log probability plots shown in Figure 14-3 below indicate that all the datasets form positively skewed distributions typical of gold deposits.



**Figure 14-3: Log probability plots of composite gold data**

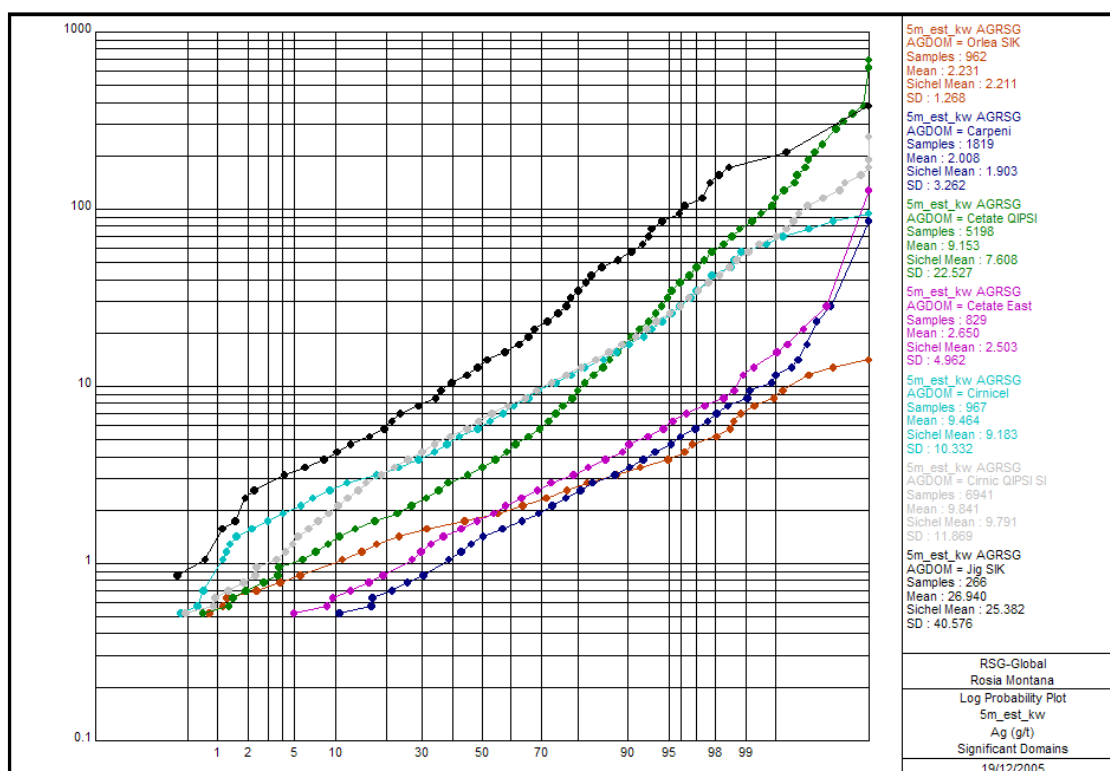
### 14.3.3 Silver

Descriptive statistics of the composited silver data, subdivided by the region and alteration domains, are presented in Table 14-2 below. The QIP/SI and SIK domains have the highest mean silver grades while the Jig SIK has the overall highest mean silver grade followed by Cetate QIPSI and Carnic QIPSI/SI. The Igre 9 domain has the lowest mean silver grade. The normalised variability of the grades, indicated by the coefficient of variation values, is highest for Cetate QIP-SI compared to the other datasets.

**Table 14-2: Summary Statistics - Silver**

	Orlea		Carpeni	Cetate			Gauri	Carnicel	Carnic	
	SIK	NSIK	ALL	QIPSI	NQIPSI	East	ALL	ALL	QIP SI and SI	NQIPSI
Count	962	1,139	1,819	5,198	3,982	829	143	967	6,941	3,861
Minimum	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Maximum	14.6	63.2	85.9	665.6	246.6	128.6	38.2	98.0	269.6	156.0
Mean	2.2	1.9	2.0	9.2	3.4	2.7	3.1	9.5	9.8	5.6
Median	2.0	1.8	1.4	3.6	2.0	2.0	2.2	6.4	6.8	3.2
Standard Deviation	1.3	2.3	3.3	22.5	7.9	5.0	4.4	10.3	11.9	8.4
Variance	1.6	5.4	10.6	507.4	61.7	24.6	19.0	106.6	140.9	70.3
Coefficient of Variation	0.6	1.2	1.6	2.5	2.3	1.9	1.4	1.1	1.2	1.5
	Jig		Igre							Waste Dumps
	SIK	NSIK	4	5	6	7	8	9	10	All
Count	266	114	194	132	127	215	418	68	37	167
Minimum	0.9	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Maximum	395.8	68.4	22.4	45.2	52.0	138.4	50.8	28.2	15.6	16.7
Mean	26.9	5.2	3.2	6.5	3.2	4.4	2.5	1.5	2.9	4.1
Median	14.2	3.3	2.2	4.6	2.0	2.8	2.0	0.9	2.4	3.5
Standard Deviation	40.5	7.6	2.9	6.0	5.4	9.9	3.5	3.4	2.9	2.4
Variance	1640.2	58.4	8.4	35.8	29.5	98.0	12.2	11.8	8.3	5.6
Coefficient of Variation	1.5	1.5	0.9	0.9	1.7	2.2	1.4	2.3	1.0	0.6

As was the case with the gold composites, the log probability plots of these datasets shown in Figure 14-4 below indicate they all form positively skewed distributions typical of silver deposits.



**Figure 14-4: Log probability plots of composite silver data**

#### 14.3.4 Sulphur

The statistics of the total sulphur data are presented in Table 14-3 below. Low variability is noted for the Orlea and Igre sulphur datasets with the Orlea region displaying only slight skew while the Igre dataset shows significant positive skew and bi-modal behaviour, due to grouping of the mineralisation zones.

**Table 14-3: Summary statistics – Sulphur**

	Total	Orlea	Carpeni	Cetate	Carnicel	Carnic	Jig	Igre	Tarina	Not Region
Count	8,672	712	530	3,048	176	3,149	39	969	4	45
Minimum	0.01	0.06	0.09	0.02	0.15	0.01	0.01	0.01	0.3	0.03
Maximum	15.45	4.03	3.53	15.45	3.68	8.48	1.37	6.90	0.38	2.92
Mean	1.71	1.60	1.36	1.89	1.70	1.74	0.64	1.46	0.35	0.76
Median	1.72	1.58	1.34	1.95	1.81	1.72	0.67	1.40	0.35	0.17
Standard Deviation	0.86	0.57	0.67	0.95	0.82	0.74	0.34	1.03	0.03	0.96
Variance	0.74	0.33	0.45	0.90	0.68	0.55	0.12	1.05	0.00	0.92
Coefficient of Variation	0.50	0.36	0.49	0.50	0.49	0.43	0.53	0.70	0.09	1.27

## 14.4 Geostatistical Analyses

A detailed variography analysis has been completed on the 5m run-length composites and within the various orebody and alteration domains.

The modelled variography typically displays a high degree of short-scale variability that is comprised of moderate (22% to 39%) relative nuggets and a short-scale structure that has been modelled with a range of approximately 25 meters. It is typical for the higher-grade domains, for example the Cetate and Carnic QIPSI zones, to exhibit the highest relative nugget effects, which are closer to 40%. This has been interpreted to represent the high variability of this mineralisation, as observed underground and evidenced by the twin drilling.

The interpreted Igre mineralisation zones, which have similar geometry and statistical character, have been grouped together to allow robust variography to be generated. The combined variography has then been applied to estimate the separate zones with the variogram rotations adjusted based on the individual mineralisation zone geometry.

The fitted variogram models for gold and silver are presented as Table 14-4 and Table 14-5 respectively.

**Table 14-4: Summary Variogram Models – Gold**

Domain	Rotation			% Relative Nugget	C <sub>0</sub>	C <sub>1</sub>	Range (m)			C <sub>2</sub>	Range (m)		
	X	Y'	Z''				X	Y	Z		X	Y	Z
Orlea (SIK)	90	0	0	38%	1.25	1.35	25	20	17	0.68	147	78	48
Orlea (NSIK)	90	0	0	29%	0.20	0.30	85	85	18	0.18	150	150	60
Carpeni	0	0	0	34%	0.41	0.47	37	44	12	0.34	136	136	44
Cetate (qipsi)	40	0	0	39%	2.60	2.35	31	30	16	1.72	195	184	113
Cetate (east)	0	0	0	30%	0.34	0.63	19	19	14	0.17	76	31	35
Cetate (nqipsi)	40	0	0	39%	0.81	0.97	33	33	19	0.28	193	129	64
Gauri	0	0	0	34%	0.06	0.04	65	65	65	0.07	73	73	73
Carnicel	20	0	0	34%	0.49	0.57	15	32	13	0.38	58	79	23
Carnic (qipsi and si)	30	0	0	39%	1.80	1.85	29	35	14	1.00	205	142	120
Carnic (nqipsi and si)	30	0	0	32%	0.32	0.30	29	21	15	0.38	120	128	85
Jig (SIK)	0	0	0	23%	0.42	0.64	20	40	25	0.77	125	60	60
Jig (NSIK)	0	0	0	23%	0.10	0.15	20	40	25	0.18	125	60	60
Igre4	300	0	0	26%	0.34	0.58	70	50	35	0.37	70	50	35
Igre5&6	300	0	25	22%	0.11	0.22	125	30	20	0.18	125	180	25
Igre7&8	300	0	35	28%	0.63	1.19	200	30	33	0.43	200	205	33

**Table 14-5: Summary Variogram Models – Silver**

Domain	Rotation			% Relative Nugget	C <sub>0</sub>	C <sub>1</sub>	Range (m)			C <sub>2</sub>	Range (m)		
	X	Y'	Z''				X	Y	Z		X	Y	Z
Orlea (SIK)	90	0	0	36%	0.51	0.53	12	22	24	0.37	52	85	40
Orlea (NSIK)	90	0	0	24%	0.34	0.80	153	105	73	0.27	175	120	73
Carpeni	0	0	0	29%	0.76	0.69	60	30	65	1.15	178	118	102
Cetate (qipsi)	40	0	0	27%	52	56	29	29	33	85	222	252	135
Cetate (east)	0	0	0	28%	1.2	1.3	23	50	31	1.8	43	91	43
Cetate (nqipsi)	40	0	0	28%	9	14.5	39	45	24	8.2	204	130	76
Gauri	0	0	0	41%	2.3	1.3	35	35	35	2	99	99	99
Carnicel	20	0	0	31%	31	25	35	95	95	44	168	95	95
Carnic (qipsi and si)	30	0	0	38%	49	42	22	25	9	38	321	244	157
Carnic (nqipsi and si)	30	0	0	15%	6	12	55	68	26	21.5	168	138	136
Jig (SIK)	0	0	0	18%	136.6	258.0	28	45	17	364.2	65	45	35
Jig (NSIK)	0	0	0	18%	2.46	4.64	28	45	17	6.56	65	45	35
Igre4	300	0	0	19%	1.1	3.0	145	145	65	1.8	165	165	70
Igre5&6	300	0	25	22%	2.49	5.21	135	90	30	3.63	135	95	35
Igre7&8	300	0	35	25%	1.63	1.95	155	25	33	2.93	240	180	46

Sulphur variography was generated to allow sulphur estimates to be generated. To allow robust generation of variography, the sulphur variography was generated for grouped mineralisation zones.

The sulphur variogram models are characterised by low relative nuggets and extended ranges of continuity. The extended variogram ranges indicate that the data spacing is sufficient to produce a globally robust estimate, with the low nugget effect reflecting relatively low levels of close spaced (down the hole) variability. The variogram models fitted for sulphur are provided in Table 14-6.



**Table 14-6: Summary Variogram Models – Sulphur**

Domain	Rotation			C <sub>0</sub>	C <sub>1</sub>	Range (m)			C <sub>2</sub>	Range (m)		
	X	Y'	Z''			X	Y	Z		X	Y	Z
Orlea	90	0	0	0.10	0.40	53	62	18	0.50	118	181	75
Carpeni	0	0	0	0.08	0.30	99	106	28	0.62	245	146	74
Cetate	40	0	0	0.07	0.52	20	16	16	0.41	215	163	191
Carnic	30	0	0	0.08	0.62	69	83	63	0.30	225	202	115
Igre	320	0	30	0.15	0.38	190	230	65	0.47	203	260	70
Other	90	0	0	0.08	0.22	35	40	45	0.70	295	220	90

RSG reported nugget effects varying between 22% and 39%, while variograms produced by SRK using the same parameters vary between 22% and 56%.

Most of the variograms have been modelled with two structures; with the longest range modelled by RSG being 200m for Domains 7 and 8 in the Igre deposit. In general, SRK considers the variographic analyses reported by RSG to have been appropriately carried out and the results to reflect the geology of the individual deposits.

## 14.5 Grade Interpolation

RSG created a resource block model using block dimensions of 10m East by 10m North by 10mRL with sub-blocking to 5m Easting by 5m Northing by 2.5mRL for the purpose of providing appropriate definition of the topographic surface, geological, and mineralisation zone boundaries.

While not an issue for the Mineral Resource as a whole, this block size is small in comparison to the wide spaced drilling present in most of the deposits and as a result of this, in combination with the local variability, the individual block grades derived will have a relatively high estimation variance.

The primary grade interpolation technique used by RSG was Ordinary Kriging (OK), although interpolations were also run using Nearest Neighbour (NN) and Inverse Distance Weighting Squared (IDW<sup>2</sup>) as a check of this.

The search parameters derived by RSG are dependent on the orientation of the mineralised zones. In the majority of cases, a three-stage methodology was implemented, with a minimum of 6 composites, and a maximum of 12 required to report a block grade in every case. The rotation parameters are also consistent for each deposit. The first pass searches range from 50 x 50 x 40 m (for Orlea SIK domain) to 80 x 80 x 30 m (for Igre 5, 6, 7, 8 and 9 domains). The largest search implemented was 160 x 160 x 90 m, which was used for Igre 5, 6, 7, 8, 9 and Carpeni.

The block model was extensively validated by RSG against the geological model wireframes and the surface topography. The model was validated by viewing in multiple orientations using the 3-D viewing tools in Vulcan. Based on the visual review, the block model was considered robust.

Mill throughput indicators of soft, medium or hard were assigned to the block model using wireframed solids. With a few exceptions, the individual domains were considered to be defined by hard boundaries and each was estimated using data within that domain only. The exceptions were:-

- The contacts of SIK and NSIK domains allowed one block on either side of the boundary to search both the SIK and NSIK data.
- Carnic and Carnicel were considered to have a soft boundary between them, as the two domains occur within the Carnic mineralisation zone.
- Igre 7 and 8 composite data were combined to estimate the individual domains.

Finally, the three-dimensional model of the underground workings in the Rosia Montana Project region was used to reduce the volume of each block affected by the previous mining.

## 14.6 Density Analysis

Density values were assigned to different rock and alteration types, and coded to the block model, resulting in each estimated block being assigned a density value based on the intersection of alteration and rock type wireframes.

## 14.7 Mineral Resource Classification

The RSG resource estimate for the Rosia Montana Project was classified in a combination of Measured, Indicated and Inferred categories based on the CIM Guidelines.

Specifically, RSG classified the resource on a block by block basis. Notably, blocks were individually classified as Measured, Indicated or Inferred according to the number of data points captured by the search ellipsoids used in their estimation, the distance to the nearest data point, and whether the block occurred within a SIK domain for Orlea and Jig, and QIP/NQIP domains for Cetate and Carnic. Classification wireframes were constructed based on these criteria, and blocks were classified as Measured, Indicated or Inferred based on which wireframe their centroids fell within.

Specifically, Measured Resources comprise those blocks occurring within the SIK Zone for Orlea and Jig and the QIP or NQIP for Cetate and Carnic, that were estimated in the first interpolation run, based on a minimum of 8 composites and where the distance to the nearest composite was not more than 30 m and where the data was collected from a minimum of 3 drill holes or underground drives.

Indicated Resources comprise those blocks also estimated in the first interpolation run and which were not classed as Measured, as long as the distance to the nearest composite was not more than 70m, a minimum of 6 composites were used and the data was collected from a minimum of 2 drill holes or underground drives.

Finally, Inferred Resources comprise blocks lying further than 70m from the closest composite but which were still estimated using a minimum of 6 composites and where data was collected from a minimum of 2 drill holes or underground drives.

Igre was assessed on a zone by zone basis with adjustment of higher confidence zones to Indicated Resource, which did not meet the above criteria. In addition, the southern extension of Orlea was also assessed and a more restrictive classification criterion applied such that blocks that would otherwise have been considered as Indicated were in fact categorised as Inferred.

A solid wireframe was constructed for the Measured category based on the criteria presented above, and cells whose centroids were located within the wireframe were classified as a Measured Resource. Assignment of Indicated and Inferred resource categories into the block model was achieved by the use of a block model manipulation script.

Although SRK considers it more appropriate to classify resources on an area rather than block by block basis, overall it considers that the classification of the Mineral Resource is in accordance with the CIM Guidelines. For the purpose of its audited statement below, SRK has reported the Mineral Resource at a cut-off of 0.4 g/t Au to reflect the fact that at current gold prices this material has potential to be economic. This is a lower cut-off than used by RSG reflecting the fact that the gold price has increased more relative to the estimated operating costs since 2005 and therefore SRK considers that more of the resource has potential to be economic than considered at that time by RSG.

## **14.8 SRK Audited Mineral Resource Statement**

Table 14-7 below summaries SRK's audited Mineral Resource Statement based on a 0.4 g/t cut-off grade. SRK considers the statement to be in accordance with the guidelines and terminology provided in the CIM Standards. The only material difference between this and the resource derived by RSG and included in the 2009 Technical Report is that it has been reported at a lower cut-off grade. The sensitivity of the Mineral Resource to changes in cut-off is presented in Appendix A.

As commented earlier in this report SRK has confirmed that this Mineral Resource falls within the exploitation concession held by RMGC but its exploitation is dependent upon obtaining all of the permits necessary to enable construction and mining to commence as envisaged in this report. Further details on the latest ownership and permitting activities are set out in Section 20-2 of this report and SRK's conclusions as to the viability of the Project are set out in Section 25.

**Table 14-7: SRK Audited Mineral Resource Statement**

<b><u>Measured Resources</u></b>					
<b>Deposit</b>	<b>Tonnage (Mt)</b>	<b>Au Grade (g/t)</b>	<b>Ag Grade (g/t)</b>	<b>Au Metal (Koz)</b>	<b>Ag Metal (Koz)</b>
Orlea	9.7	1.50	2	480	670
Cetate	49.5	1.26	6	2,010	9,950
Carnic	103.3	1.32	9	4,400	28,660
Carnicel	7.3	1.01	10	240	2,450
Jig	1.8	2.63	25	150	1,430
<b>Total Measured</b>	<b>171.5</b>	<b>1.32</b>	<b>8</b>	<b>7,260</b>	<b>43,160</b>
<b><u>Indicated Resources</u></b>					
<b>Deposit</b>	<b>Tonnage (Mt)</b>	<b>Au Grade (g/t)</b>	<b>Ag Grade (g/t)</b>	<b>Au Metal (Koz)</b>	<b>Ag Metal (Koz)</b>
Orlea	79.3	0.82	2	2,100	5,200
Carpeni	32.1	0.85	2	880	1,890
Cetate	73.2	0.87	3	2,040	7,480
Carnicel	9.9	0.99	10	310	3,290
Carnic	90.5	0.92	4	2,680	13,010
Cos	4.8	0.71	7	110	1,060
Jig	4.5	1.14	6	170	930
Igre	46.6	1.06	3	1,580	5,090
<b>Total Indicated</b>	<b>341.2</b>	<b>0.90</b>	<b>3</b>	<b>9,890</b>	<b>37,960</b>
<b><u>Measured Plus Indicated</u></b>					
	<b>512.7</b>	<b>1.04</b>	<b>5</b>	<b>17,142</b>	<b>81,117</b>
<b><u>Inferred Resources</u></b>					
<b>Deposit</b>	<b>Tonnage (Mt)</b>	<b>Au Grade (g/t)</b>	<b>Ag Grade (g/t)</b>	<b>Au Metal (Koz)</b>	<b>Ag Metal (Koz)</b>
Orlea	25.2	1.15	2	930	1,550
Carpeni	0.8	1.56	2	40	60
Cetate	2.0	0.63	2	40	130
Carnicel	0.7	1.17	14	30	300
Carnic	8.3	0.70	3	190	810
Cos	2.9	0.74	7	70	670
Jig	2.0	0.85	5	50	300
Igre	2.2	0.77	3	60	180
<b>Total Inferred</b>	<b>44.8</b>	<b>0.98</b>	<b>3</b>	<b>1,420</b>	<b>4,100</b>

Note: Numbers may not total due to rounding errors used in some of the calculations

## 14.9 Exploration Potential

The lateral limits to the orebodies explored to date are largely determined by the extent of drilling and therefore there is potential for the discovery of further mineralisation with additional drilling. Most notably, SRK considers that further exploration is justified to explore the extensions to the Orlea, Carnic and Igre orebodies and SRK is aware that outline drilling budgets have been developed for this work.

## 15 MINERAL RESERVE ESTIMATES

Table 15-1 below summarizes SRK's audited Mineral Reserve Statement. This reflects the ore planned to be mined as assumed by economic model presented later in this section and simply comprises that portion of the Mineral Resource reported above that, inclusive of mining dilution and allowing for mining losses, falls within the pit outlines designed as commented below.

SRK considers the statement to be in accordance with the guidelines and terminology provided in the CIM Standards. This Mineral Reserve is the same as that presented in the 2009 Technical Report which reflects the fact that the mining schedule has not been updated since this time. Further details on the latest ownership and permitting activities are set out in Section 20-2 of this report and SRK's conclusions as to the viability of the Project are set out in Section 25.

**Table 15-1: SRK Audited Ore Reserve Statement**

<b>Reserve Category</b>	<b>Tonnage (Mt)</b>	<b>Au Grade (g/t)</b>	<b>Ag Grade (g/t)</b>	<b>Au Metal (Moz)</b>	<b>Ag Metal (Moz)</b>
Proven	112.5	1.63	9.01	5.9	32.6
Probable	102.5	1.27	4.55	4.2	15.0
<b>Total</b>	<b>214.9</b>	<b>1.46</b>	<b>6.88</b>	<b>10.1</b>	<b>47.6</b>

Note: Numbers may not total due to rounding errors used in some of the calculations

## 16 MINING METHODS

### 16.1 Introduction

The Project has been planned as a conventional open pit mining operation producing and delivering gold and silver bearing ores to the processing plant located immediately adjacent to the mine site. This section of the report discusses the mining aspects of the Project and specifically the pit design and production schedule upon which the cash flow forecasts presented later in this report and the Mineral Reserve estimate presented above are based.

### 16.2 Geotechnical Design Criteria

#### 16.2.1 Geotechnical Data and Evaluation

The geotechnical data for the Project and used to derive slope angles for the open pits was collected between 1999 and 2003 and included work by Golder Associates (Golder) up until 2001 and Knight Piesold (KP) from 2001 onwards. This data comprised geotechnical logging of exploration drill core and six specific geotechnical holes, which were orientated, logged and tested. The mining geotechnical evaluation was subsequently used in the SNC Basic Engineering Study and subsequently by IMC. SRK had reviewed the geotechnical and hydrogeological data and considered that they were limited both in terms of the numbers of the holes in each of the four pits and in their location, as the economic pits were significantly larger than those anticipated at the time of drilling. Notwithstanding this, the exploration drilling, geological modelling, past open pit and underground mining and the exposure of the Cetate and Carnic ore bodies provide a valuable data source.

### 16.2.2 Current Slope Design Criteria

The open pit slope design criteria developed for the SNC Basic Engineering Study and used by IMC in the pit optimisation, scheduling and reporting proposes a single set of slope design criteria for all four pits, namely 40° overall slopes and 42° inter-ramp slopes in all lithologies and geotechnical domains.

SRK considered this could be an oversimplification relative to the different conditions which were present in terms of the strong rocks which could support steeper slope angles and the weak highly altered breccias which would have to be cut at much shallower angles.

In order to test whether this represented a risk, SRK has undertaken a reassessment of all of the available geotechnical data and defined design domains which reflected the different geotechnical conditions for each of the pits.

### 16.2.3 SRK Revised Mine Design Criteria

Material input parameters were generated using logging and laboratory test data available and, where data was limited, SRK estimated empirical values. The material input values used in the subsequent slope stability analysis is shown in Table 16-1 below.

Sections were chosen through each of the pit slopes for limit equilibrium stability analysis. These represented the more critical slopes which could have impacted on the reserves.

Using a minimum acceptance criteria for factor of safety of the slopes of 1.3, each of the slopes were assessed as to whether they needed to be flattened from the average inter-ramp slope of 42° to increase stability or whether they could be steepened safely. The resulting allowable slope angles derived by SRK are shown in Figure 16-1 below.

**Table 16-1: Material Input Parameters**

Lithology	UCS (MPa)				GSI	mi	D	Unit Weight (t/m3)	UCS Comments
	Average	Std Dev	Min	Max					
Dacite – Weathered	3.6	7.7	0.25	25	45	23	0.9	2.19	Weathered RMGC IRS logs
Dacite	18.9	10.4	8.7	33.7	53	23	1	2.19	Golders and KP testing (outliers removed)
Silicic Dacite	53.0	22.6	37	69	53	23	1	2.545	Golders testing of silicic Dacites
Intrusive Polymicritic Breccia	14.0	17.5	0.25	35	45	16	0.8	2.45	RMGC IRS logs
Sandy Breccia	68.9	37.2	25	74	45	16	1	2.45	RMGC IRS logs
Black Breccia	5.6	13.7	0.01	27	45	16	0.7	2.45	RMGC IRS logs
Post Mineralisation Vent Breccia	14.9	20.8	0.01	41	45	16	0.8	2.45	Applied from Vent Breccia (as no data)
Cretaceous	9.8	10.6	0.1	21	50	15	0.8	2.45	RMGC IRS logs
Vent Breccia	14.9	20.8	0.01	41	45	16	0.8	2.45	RMGC IRS logs
Mixed Breccia	14.9	20.8	0.01	41	45	16	0.8	2.45	Applied from Vent Breccia (as no data)
Andesite	71.0	-	-	-	50	23	1	2.5	Golders testing of volcanoclastics
RMR from updated (2011 photo logged/verified) KP log, (GSI= RMR-5)									
Disturbance factor of 0.8 for weaker materials as effects will be less pervasive into rock mass									
D factor of 1 for harder UCS materials									
mi - empirical (-0.5 std dev), unit weights from KP and Golders testing									
Unit weight for breccias taken from Vent Breccia test result									
Max UCS values for RMGC IRS data taken as average + 2 std dev									

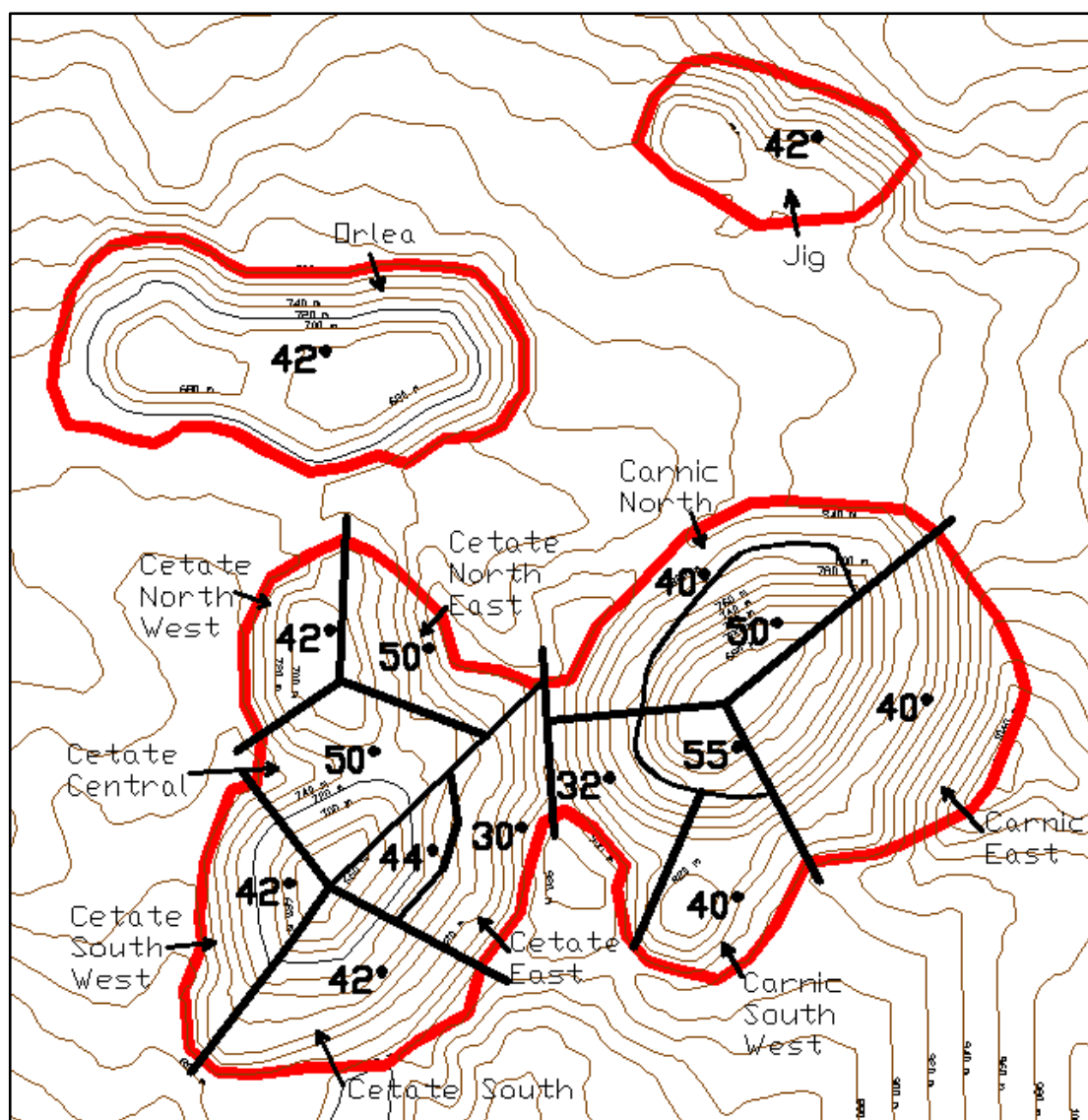


Figure 16-1: Revised SRK pit slope sectors showing lithology and alteration domains

#### 16.2.4 Qualitative Assessment of Impact of the Revised Slope Angles on Ore Reserves

An assessment of the revised slope angle impact on Cetate showed a relatively small amount of change between the 'old' and 'revised' pit profiles. Although a more convex pit profile is now achieved, it is considered that the impact on the Mineral Reserve would not be material.

In Carnic, the updated slope angles do not change the pit profiles considerably. While there is 'upside' on the northern slope due to increased dacite slope angles, on the eastern side of the pit a 50m buffer zone to protect the exclusion zone behind the crest of the pit would affect the pit profile negatively. The potential loss of ore in this section, however, would be tempered with the increased slope angles in the north of the pit.

The slope angles for Jig and Orlea are unchanged.



Notwithstanding the above analysis, the specific geotechnical design criteria used for the current pit design and which are therefore reflected in the valuation presented later in this report comprise:-

- 42° inter-ramp slope angles,
- Road widths of 27m (> 4 times haul truck width)
- Road Grades of 8% (and 10% where prudent).
- Nominal working widths of between 100 and 125m.

On the basis of its more detailed slope criteria assessment, SRK is confident that whereas slope flattening is required in some areas and while this will result in some local reserve reduction and/or increased waste stripping, this is balanced by sections where steeper slopes can be formed. Overall, therefore, SRK has accepted the existing pit designs developed by IMC for the purpose of the valuation presented in this report but has recommended that more work be done prior to mining to ensure that the slopes are optimised prior to the commencement of operations.

### **16.2.5 Other Geotechnical Considerations**

The groundwater conditions will have the benefit of the drainage from the old underground workings until the adit levels are reached. Thereafter pit slope drainage measures will be required.

The existence of the large open stopes from historic mining will require a cautious approach to open pit mining above these areas. Working open pit benches of certain minimum thicknesses dependent on the old stope spans and ground conditions will be required to be left during open pit operations. This does not impact the recoverable reserves, as these crown pillars will then be blasted into the stopes, but close management and control of mining practices will be required to ensure no impact on the production schedule rate.

### **16.2.6 Recommendations for Further Drilling**

Few drill holes intersect the currently proposed pit walls and almost no geotechnical data exists for Jig and Orlea. SRK has therefore recommended that further geotechnical drilling is undertaken in these areas and Gabriel has confirmed that approximately 3,000m of geotechnical drilling will take place in the coming months and this campaign will be progressed further ahead of, or during, the construction process. Borehole locations have been identified which should be drilled, appropriately timed in the life of the mining. The boreholes should be RMR logged and structurally logged. The data from these boreholes will be used to better define: breccia/dacite contact conditions; rock mass conditions of each lithology; collect structural data; and confirm silicic alteration as the indicator of the 'strong' dacite. This data will enable more robust design criteria to be developed to be used in the mine planning and execution.

## **16.3 Pit Designs**

The pit designs reflected by the valuation presented later in this report are based on those developed by IMC in 2005 and slightly modified in 2009 and reflect the geotechnical analysis commented on above.

While the ultimate limits of the pits were developed using conventional floating cones methodology, they are also constrained by certain physical features which restricted the size of the economic pits in several areas. These physical features included protected areas and the location of a mausoleum and various other historic buildings located throughout the Rosia Montana valley.

## 16.4 Production Schedule

The production schedule reflected by the valuation presented later in this report is based on that developed by IMC in 2005 and slightly modified in 2009. Process cut-off grades vary by year in order to maximise project return on investment. Cut-off grades were based on net benefit per hour milled in order to account for the different throughput rates of hard, medium and soft ores. Notwithstanding this, for the first six years of the mine life the material between a grade of 0.8 g/t Au and a grade of 1.0 g/t Au is planned to be stockpiled in a specific area. At the end of this period, this stockpile will contain some 29.4 Mt of material with an average grade of 0.9 g/t, which is planned to be reclaimed at the end of the LoM.

The total material moved is 472Mt, of which 215Mt is designated as ore and 257Mt is designated as waste.

SRK's only concerns with the current production schedule are the assumptions used to derive the production grades for the first six years of mining (and to a lesser extent beyond this) during which the orebody is effectively being high-graded. IMC's schedule is based on the selective mining of 10 x 10 x 10 m blocks and assumes, therefore, that each block will be mined individually and either allocated to the low grade stockpile (LGS) or waste dumps or used as direct mill feed (DMF) or for TMF development.

SRK considers that there will be some misallocation between DMF, LGS, and Waste material types for the 10 x 10 x 10 m selective mining unit assumed. The availability of additional grade control information, which will be gathered as part of the production planning, will determine the allocation of ore between DMF, LGS and waste.

In producing this 43-101 report, SRK has assessed this issue in a semi-quantitative manner. Specifically, SRK has:-

- Reviewed the geostatistical parameters used in the main zones to be mined during the first 5 years of the Project, including the latest sampling information.
- Tested the block variance difference to review block size selection.
- Re-estimated the main zones into larger block sizes.
- Applied Uniform Conditioning and reconciliation to the 10 x 10 x 10m Ordinary Kriged RSG model.
- Drawn conclusions on the potential selectivity issues in the current block model used for mine design and planning.

As commented above, SRK considers the block size to be relatively small given the current sample spacing, including the areas surrounding the underground sampling. To test for any potential error introduced by the block size SRK completed a change of support calculation at different block sizes and recorded the block variance at each stage. The results showed a significant decrease in the block variance as the block size increases. As the block variance decreases, the confidence in the estimate of the block increases as the grades become more smoothed.

To deal with the issue of smoothed grades, SRK would recommend the use of uniform conditioning to model the potential selectivity at the smaller block sizes (10 x 10 x 10 m) or, as it is more commonly known, the Selective Mining Unit (SMU).

To complete the analysis SRK then re-estimated a number of key zones (located in the region of the 5 year pit), where the initial mining will take place. The results of this study indicated that, globally, the selectivity in the grade distribution proposed by the 10 x 10 x 10 m models could be achieved.

To complete the study, SRK has utilised Datamine Mining Software Mineable Reserve Optimiser. The programme works by defining the minimum block size for a mineable unit plus a minimum sub-block which allows the mining unit to effectively float (moving window). SRK used a minimum block size of 30 x 30 x 10 m (MMU) and a minimum sub-block size of 10 x 10 x 10 m block which matches the block size used with the RSG model.

SRK has then tested a number of scenarios by adjusting the head-grade required to measure the sensitivity on different tonnages and grades which can be compared to the LoM plan and cashflow model.

In creating the different scenarios, SRK monitored the number of zones created to give an indication of the risk on the mine plan and to achieve the head grade. Ideally, SRK was looking for large continuous zones per bench, which would indicate low risk on errors in a block by block basis due to the relatively small block size used in the RSG model.

The proposed plan for processing during the first 5 years is approximately 64 Mt at a grade of 1.90 g/t Au, which, based on the review work completed, could be achieved by selecting mining blocks with a grade of greater than 1.0 g/t. A review of the potential mining blocks indicates these zones to be continuous and reasonable for mining but so as to err on the conservative side, for the purpose of the cash flow forecasts presented later in this report, SRK has assumed there will be a degree of misallocation between ore planned to be processed immediately and ore planned to be stockpiled. Specifically, SRK has assumed that 63.5 Mt at a grade of 1.84 g/t Au, which would be a drop in grade in the order of 3%, will actually be processed during the first 5 years.

In addition to the study on the initial 5 years feed SRK also completed a broader study on the potential dilution over the remainder of the LoM Plan from year 6 onwards. To complete the study SRK has focused on the material mined directly from the pits between year 6 and year 14 which marks the end of mining from within the open pits.

To assess the potential grade of any mining dilution SRK has completed a similar exercise to that completed on the initial 5 years by identifying continuous areas of the required grade. As part of this study SRK also investigated the mean grades at various cut-off grades lying outside of the areas of continuous mining zones and concluded that any dilution of this material would have grades between 0.6 and 0.7 g/t Au.

SRK's assessment suggested that some 80% of the required tonnage could be achieved with only a very slight decrease in the grade but that if 10% dilution is assumed at a mean grade of 0.65 g/t Au then the full tonnage could be achieved with a drop in grade of only some 1.5%. As above, SRK has assumed that this grade reduction will be realised in the cash flow forecasts presented later in this report.

## 16.5 Waste Rock Management

Waste rock will be stored in three main areas: at the Cetate Waste Rock Dump (WRD), the Carnic WRD and as backfill in the Carnic Pit, Jig and Orlea pits, as well as for the TMF development. The Cetate WRD is located north of the plant site while the Carnic WRD is located southeast of the Carnic Open Pit and north of the Tailings Management Facility (TMF).

## 16.6 Mine Equipment Requirements

IMC has calculated equipment requirements from the annual mine production schedule, the mine work schedule and equipment shift production estimates. Specifically:-

- Drilling will be performed with conventional rotary blast hole drills utilizing 25cm diameter bits.
- Blasting will be performed with conventional ANFO explosives and ANFO-slurry blends.
- Blast hole cuttings will be assayed for grade control purposes. Hardness information and geologic data will also be recorded.
- Ore and waste will be loaded by 19m<sup>3</sup> hydraulic shovels, of which requirements vary but three will be required throughout most of the mine life with a back-up unit consisting of a Cat 992 hi-lift wheel loader.
- Ore and waste will be hauled by 146t capacity rear-dump trucks. Ore will be delivered to the primary crusher or to the low grade stockpile, and waste to the waste storage areas, the tailings impoundment or, later in the mine life, to the Jig, Orlea and Carnic pits. A maximum fleet of 21 haul trucks will be required in production years 8 through 13.
- The major mining equipment will be supported by bulldozers, graders, front-end loaders, maintenance equipment and miscellaneous mobile units.

While SRK has recommended to Gabriel that it investigates the potential improvements that could be achieved by purchasing equipment that could mine more selectively, SRK concurs with the methodology used, and in general agrees with the resultant Major and Auxiliary Mining Fleets, and has accepted all of this for the purpose of the valuation presented later in this report.

## 16.7 Mining Operations/Production Assumptions

The mine is scheduled to work 360 days per year utilising 4 crews to maintain three shifts per day, eight hours per shift schedule and allows for 5 days of lost shifts per year for weather related delays and other issues. SRK concurs with the shift patterns, and assessment of a 73% productive operating coefficient, when machines are mechanically available (i.e. 350 minutes from a possible 480 minutes, with allowances for shift change, meal breaks, refuelling and inspections).

SRK concurs with the equipment availabilities assumed (generally 85% mechanical availability and between 80 to 90% utilisation of availability), especially over a 24 hour 3 shift/day operation.

IMC has derived the individual output parameters for the main excavators, and drill rigs from a “first principle” basis, utilising machine information such as swing cycle times, bucket fill, haul truck compatibility.

Salaried staff requirements have been estimated for both expatriate and national employees. All expatriate staff are planned to remain on the property for three years after which a national occupies the position.

Mine labour requirements have been derived from the mine schedule and have been divided into mine operations and mine maintenance. The peak number of personnel in the mining operations is in Year 9 while the lowest number of personnel occurs in the later years when the mining operation comprises only the rehandling of previously constructed stockpiles.

## 17 RECOVERY METHODS

### 17.1 Introduction

The Rosia Montana Project is a large tonnage low grade epithermal gold silver deposit with gold:silver ratios generally averaging around 1:5 and as high as 1:10. The material has been shown to be partially refractory with the precious metals associated with, and partially locked in, sulphide minerals, mainly pyrite. Despite the partially refractory nature of the ore, a relatively conventional free milling gold recovery plant has been shown to be effective. The flowsheet selected incorporates primary crushing, SAG and ball milling, cyanidation and adsorption onto activated carbon. A gravity recovery circuit has been incorporated into the milling circuit for recovery of free gold and continuous elution circuits have been selected for the treatment of the loaded carbon. Plant tails will be detoxified with copper sulphate and sodium metabisulphite for the destruction of residual cyanide prior to discharge.

Overall recoveries around 80% for gold and 60% for silver are forecast over the LoM although these vary significantly dependent on the ore source (Carnic, Cetate, Jig or Orlea pits), the feed grade for gold and silver and the sulphide sulphur level in the feed.

The Rosia Montana Project process plant has been investigated in several studies and design and engineering development phases including a detailed feasibility study undertaken by Minproc in 2001 and several subsequent stages of preliminary engineering design. The work has included numerous phases of metallurgical test work, and development and design of the flowsheet and treatment plant. In addition to the detailed feasibility study, design and costing has included work undertaken by SNC; Bechtel Corporation (Bechtel) for whom the process plant design was undertaken by Ausenco Ltd. (Ausenco) and the Washington Group based on the designs developed by Ausenco. Further design work has also been undertaken by SNC and most recently directly by RMGC. The current design presented by RMGC is based on the design developed by SNC during its period as EPCM contractor between 2006 and the end of 2007.

The design has been further developed since 2007 by RMGC as part of a Cost Optimisation Program (COP) aimed at reducing the Project capital and operating costs details of which were presented in the 2009 Technical Report and the Front End Engineering Design (FEED) report prepared by RMGC dated September 2009. The aim of the FEED report in addition to presenting updated 2008 costs was to document the status of the design following the consolidation of the work done by SNC and incorporation of the COP.

## **17.2 Investigations Undertaken and Development of the Plant Design**

### **17.2.1 Minproc Detailed Feasibility Study**

The first detailed feasibility study for the Project was undertaken by Minproc in 2001 and included metallurgical testwork undertaken by Ammtec to assess;

- Grind versus recovery;
- Detailed cyanidation testwork (including, for example, the effect of cyanide strength, leach time, oxygen addition, leach additives)
- Gravity separation;
- Flotation on gravity tails;
- Heap leach amenability;
- Carbon adsorption kinetics and equilibrium;
- Cyanide destruction;
- Intensive treatment of sulphide concentrate by fine grinding and pressure oxidation;
- Diagnostic leach.

In addition, testwork was undertaken into equipment sizing parameters - Bond Work Index (crushing, rod and ball), Unconfined Compressive Strength (UCS), Abrasion Index (Ai), Media Competency Tests / JK Pendulum tests for SAG milling, settling rate tests and viscosity measurements at different slurry densities. Pilot testing was also undertaken to simulate the proposed milling circuit of SAG + ball mills in series with pebble crushing of the SAG mill discharge oversize.

Based on the testwork investigations, a treatment flowsheet was developed and the study presented a conventional free-milling gold recovery plant with a treatment rate of 20 Mtpa.

### 17.2.2 Basic Design by SNC and Bechtel

The basic engineering design phase of the Project was initially awarded to SNC in 2002 and subsequently awarded to Bechtel in 2003. Further testwork commissioned by SNC included work undertaken by SGS in Canada, which included investigations into cyanide detoxification. The plant flowsheet as generally presented in the Minproc DFS was retained as the basis of the design although the throughput was reduced to nominally 13 Mtpa with a view to reducing the initial Project capital cost. The plant design parameters were based on the testwork undertaken by Ammttec Ltd. (Ammtec), Amdel Pty Ltd. (Amdel) and SGS.

Bechtel subcontracted the design of the process plant to Ausenco, who commissioned further metallurgical testwork, mainly undertaken by Ammttec. The findings of the previous testwork undertaken by Ammttec and SGS formed the basis of the design work with additional testwork undertaken into gravity concentration, leach kinetics (including the effect of carbon addition), the effect of cyanide concentration, oxygen addition, carbon adsorption kinetics, carbon equilibrium and pulp viscosity measurements. Further tests were also undertaken on behalf of Ausenco into cyanide detoxification of leach tails by CyPlus with samples provided to potential equipment suppliers to investigate agitation and settling performance related to equipment sizing and performance.

The Ausenco design was used by the Washington Group to develop detailed capital and operating costs in 2006.

### 17.2.3 Additional Investigations by Newmont and Others

At the time of the acquisition of a shareholding in the parent company, Newmont undertook a testwork program to confirm the design parameters selected for treatment of the Rosia Montana Project material including investigations into grind size, gravity concentration, cyanide strength, leaching conditions (addition of lead nitrate and increased lime addition), and potential preg-robbing tendencies. Newmont also investigated, in further detail, ore variability on samples from the different pits, the results of which were reviewed by Aurifex Pty Ltd. (Aurifex) to develop revised recovery algorithms for gold and silver for the different ore sources.

Two further phases of metallurgical investigations were undertaken under the direction of John Goode and Associates using testwork facilities at SGS in Canada. The aim of the first phase of testwork was to further investigate the effect of gravity recovery after milling on overall precious metal recoveries. The testwork also investigated leaching at coarser grind sizes and the effect of extended leach time. The second phase of testwork further investigated gravity recovery of gold and quantified the increased overall recovery by incorporating gravity concentration, the recirculation of cyanide solution from the tailings and the potential reuse of residual cyanide including the effect of iron chemistry on cyanide stability.

### 17.2.4 Further Development by SNC and RMGC

SNC was awarded the EPCM contract for the Project in 2006 although, due to other commitments, could not fully staff the project team and relied, to a certain extent, on personnel from RMGC, to undertake the “early works” on the Project, where some of the front end engineering design was completed and long delivery items were identified, specified and ordered. SNC continued with the plant design and project execution until towards the end of 2007 culminating in the generation of a close out report and the preparation of a detailed cost estimate, although this estimate was not formally issued given the suspension by the Romanian government of the Rosia Montana Project EIA review process.

Since the end of 2007 further development on the Project has been undertaken by an RMGC owner’s team, comprising primarily of personnel previously involved with SNC. This work included the completion of the COP based mainly on the design developed by SNC and the completion of the FEED report.

The results of the above work were then reflected in the 2009 Technical Report.

In 2012, the capital and operating costs were updated by RMGC to reflect a base date of Q3 2012. Minor changes were made to the basis of the costs (consumptions of liners, choice of reagents, etc.) although these are not considered significant.

## 17.3 Summary of Mineralogy and Metallurgy Investigations and Findings

### 17.3.1 Mineralogy, Ore Types and Anticipated Plant Feed

The Rosia Montana Project is a large, low grade epithermal deposit with dacite and mixed breccia accounting for the majority of ore; dacite being the dominant lithology. Three different alteration types have been identified:

- Argillic – highly altered rock, which is not competent and sometimes friable.
- Potassic – competency ranges from medium to hard.
- Silicic – hard and abrasive.

In the investigations, ore from the different proposed pits was classified into hard, medium and soft categories and representative samples of each type produced for evaluation. Gangue minerals consist of quartz, feldspar and muscovite. Mineralogical and diagnostic investigations concluded that:

- up to 80% of the gold is free or amenable to cyanidation;
- 20-30% of the gold is occluded in the sulphides as fine grains (“blebs”) or as solid solution;
- only a small portion of the gold (<5%) is locked in silica;
- gold is almost always associated with silver; and
- impurities include copper (generally up to 100ppm (around 59.68ppm average) and arsenic (around 89.91 ppm average).

Other investigations also indicated that a certain amount of coarse gold could be expected, which is, to an extent, supported by the significant variations indicated between the assayed head grade and the back-calculated head grade for some samples in the variability testwork.



### 17.3.2 Summary of Metallurgical Testwork Findings

A detailed review of the metallurgical testwork undertaken is presented in the 2009 Technical Report. Further details of the earlier testwork are available in the then 43-101 compliant report by Roscoe Postle and Associates (RPA) issued in 2004, which reviews the work undertaken by Ammtec for Minproc for the DFS and by SGS for SNC for the earlier phases of the preliminary plant design. In summary, the conclusions of the testwork undertaken to date are that:

- All ore types are amenable to conventional SAG / ball milling with pebble crushing of critical size material (SABC circuit).
- Relatively high recoveries can be achieved by milling to a relatively coarse grind followed by cyanidation.
- Recoveries of gold and silver at the same grind size are shown to be related to the feed grade, sulphur content and the ore source (Cetate, Carnic, Jig and Orlea pits)
- Liberated coarse gold and silver can be recovered by gravity after milling, resulting in marginally improved overall gold recoveries of 1-2%.
- Primary milling to below 150 microns does not improve leach recovery with higher gold grades generally being observed in the finer fractions highlighting the partially refractory nature of the ore. The simultaneous addition of carbon with cyanide was noted to improve the leaching kinetics particularly for gold.
- Lime consumption is relatively high due to the sulphide level in the ore.

### 17.3.3 Flowsheet and Process Development

Based on the extensive metallurgical test work, milling and direct cyanidation are considered to be the optimum treatment process. The process is entirely conventional and consists of crushing, grinding, gravity concentration, cyanide leaching in a CIL circuit, and recovery of gold and silver by adsorption on to carbon, electrowinning and smelting. The only relatively new technology will be the use of a continuous elution circuit.

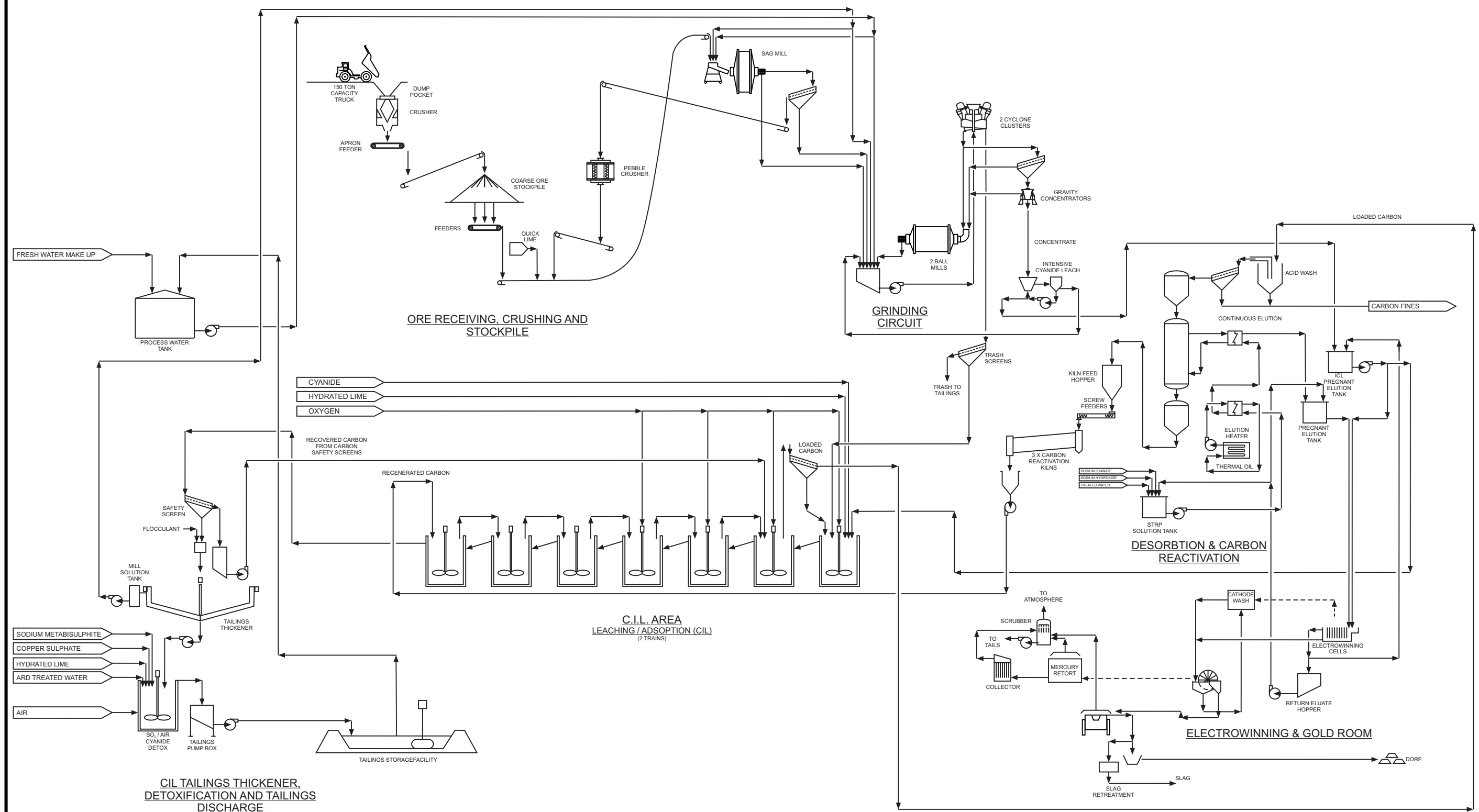
Tailings slurry from the processing plant will be treated in the cyanide detoxification circuit and pumped for permanent storage in the Tailings Management Facility (TMF) which will be located in the Corna valley.


## 17.4 Process Plant Flowsheet and Design

The proposed process route, a schematic of which is shown in Figure 17-1, comprises the following unit process steps:

- Ore receipt and open circuit primary crushing.
- Stockpile of primary crushed ore on an open pile with reclaim using apron feeders.
- Two stage milling (SAG and ball) to 80% minus 150 µm with provision for removal and crushing of critical size material in a pebble crusher (SABC circuit).
- Closed circuit classification using hydrocyclones of the milled product with the underflow returning to the ball mills.
- Recovery of a gravity concentrate from a portion of the hydrocyclone underflow using high speed centrifugal concentrators with intensive leaching of the concentrate through to production of electrowon gold and silver metals.

- Carbon in Leach (CIL) on the cyclone overflow consisting of 1 stage of pre-leach and six CIL adsorption stages.
- Tailings dewatering in a high rate thickener and recycle of overflow solution to the milling circuit.
- Detoxification of the tailings thickener underflow using copper sulphate and sodium metabisulphite (SO<sub>2</sub>/air process).
- Carbon acid wash, continuous Zadra elution and regeneration of the stripped carbon.
- Electrowinning of gold from the eluate, retorting for removal of mercury and smelting of the gold to doré.



Rev:	Rev. Date:	Description	Drawn	Chkd	Appd	Project Title:	UK4627 ROSIA MONTANA	
						Drawing Title:	SCHEMATIC FLOW DIAGRAM	
<div>  <div> SRK Consulting (UK) Ltd  CHURCHILL HOUSE, CHURCHILL WAY  CARDIFF, CF10 2HH  UK TEL: +44 (0) 29 20 348 150  FAX: +44 (0) 29 20 348 199  www.srk.co.uk </div> </div>						Originator:	SP	Figure/Drawing No.:-
						Date Drawn:	OCTOBER 2012	
						Scale:	N.T.S.	

The plant will operate as a single stream up to the discharge of the SAG mill after which the two ball mills, centrifugal concentrators and classifying hydrocyclones will operate as two separate independent streams. The streams will then be recombined for transfer to leach / CIL where they are again separated into two parallel streams for leach and CIL. Following acid wash the loaded carbon will be stripped in three parallel elution circuits. A single tailings thickener will be installed.

## **17.5 Plant Throughput and Metallurgical Recoveries**

The ore feed to the plant is classified into soft, medium and hard material and the throughput achievable has been calculated on this basis. There is a blend of ore types during the LoM and variations in the hardness of the plant feed dictate how the achievable throughput varies from the nominal plant design figure. Notably the plant throughput is projected to increase substantially above 13 Mtpa from year 9 when the ore blend will be less hard. The maximum indicated target throughput is in year 10 and 11 when up to 15.4 Mtpa is scheduled to be treated.

Significant work has been undertaken to correlate the relationships between plant recovery, feed grade and sulphide sulphur content and revised algorithms have been developed by Aurifex based on the variability test work undertaken by Minproc and Newmont. The proposed algorithms supersede the original forecast recoveries developed by Minproc for the DFS although are still based on the same variable inputs; source, head grade and sulphur level. The plant recoveries forecast result in annual gold recoveries of between 70 and 83% and silver recoveries between 55 and 66% over the LoM.

Overall SRK considers the assumed recoveries to be reasonable but notes that these may vary from those estimated on a month-to-month basis.

## **18 PROJECT INFRASTRUCTURE**

### **18.1 Access**

As commented earlier in this report, there are extensive road networks in the area and the general road infrastructure in the area is good but of a rural nature.

Access to the Project site is provided by the National Roads DN74 and DN74A and by the County Road DJ742. DN74 connects Abrud to Brad and Deva to the southwest, DN74A connects Alba Iulia city to the town of Campeni and the Country Road DJ742 connects Gura Rosiei, Rosia Montana, Corna and Gura Cornei. The DJ742 is 14.16 km long and is mostly a Type IV category road, although it is a Type III category road between Gura Rosiei and Rosia Montana. The DJ742 shall require some upgrade and alterations to accommodate the transportation of major items of equipment during construction and subsequently during operations.

Access to the plant site will be from the north via a new road constructed along the east bank of the Rosia Montana Creek.

## 18.2 Tailings Management

The tailings management facility (TMF) has been sized to contain 250 Mt of material and will be created by constructing a single dam in the Corna Valley, located south of the Process Plant and planned pits and west of the WRDs.

At the start-up of operations, the TMF will consist of a cofferdam (constructed to elevation 682 masl) that will be encompassed within the TMF Starter Dam (constructed to elevation 739 masl), both of which will be contained within the upstream toe of the main tailings dam. The Starter Dam has been designed as a water retaining structure in perpetuity, as the maximum phreatic surface has been modelled to be at about its crest.

The starter dam will be constructed with chimney drains on either side of the central clay core. A drain blanket will be installed at the base of the starter dam downstream of the centreline (and continue to the downstream toe of the ultimate dam footprint), and will capture seepage and relieve pore pressures. The tailings dam will be raised vertically each year after the Stage 2 Starter Dam has been completed, using a centreline method of construction. The downstream slope of the dams will be overall 3 horizontal to 1 vertical (3H:1V), and will be constructed from tailings on the upstream side and waste rock on the downstream side, separated by filter material.

A Secondary Containment Dam (SCD) will be constructed downstream of the main rockfill dam during initial operations. A series of semi-passive treatment lagoons will be constructed below the SCD and are intended to treat seepage water, runoff water from the face of the TMF dam or excess water stored in the TMF reclaim pond.

The TMF Basin preparation will include the removal of topsoil material, and regrading and compaction of exposed colluvial material to form a low permeable barrier layer. In areas with unsuitable material (exposed rock or poor quantity soils material), the area will be covered with a geosynthetic clay liner or a compacted colluvial layer. In addition, a series of drains will be constructed at the base of the basin. While SRK has made some recommendations for further work, it considers the design of the tailings impoundment to be robust and construction to be feasible.

## 18.3 Water Management

### 18.3.1 Water Supply and Water Balance

The main demand for water at the Project will be at the processing plant with other uses including the supply of potable water for the operations staff and the inhabitants of the relocated village of Rosia Montana, for dust suppression and for equipment washdowns. Water from the ARD treatment plant will also be used, when necessary, to sustain stream and river baseflows in the nearby Corna and Rosia Montana valleys.

SNC generated a detailed site water balance in 2003 which has since been reviewed and updated in stages by MWH, most recently in November 2007, and considers 9 operational sub-areas including an assessment of the TMF, process plant, Cetate Water Catchment Dam, WRDs and the proposed Acid Rock Drainage (ARD) treatment plant.

The processing plant, at the heart of the circuit, will be dependent on supernatant water from the TMF, treated water from the ARD treatment plant, run-off from the Plant pond and make up water from the Aries River.

An important element of the water balance is the split between that component of rainfall that is lost to the system through evapo-transpiration and infiltration and that which ends up as run-off that collects in the various ponds (Carnic, Cetate and tailings) and contributes to the mine circuit.

SRK is satisfied that the currently assumed water balance adequately models climatic extremes and that the most recent design capacities for the TMF, and the Carnic and Cetate ponds is sufficient to accommodate these extremes.

### **18.3.2 Acid Rock Drainage Treatment**

In order to develop design criteria for an acid rock drainage (ARD) treatment plant, Ausenco conducted a laboratory testwork programme at Ammtec in Australia in late 2003 / early 2004. This programme reflected an SNC Lavalin ARD flowsheet developed in 2002, with the circuit comprising of lime neutralisation / sludge settling / discharge overflow pH adjustment. The programme achieved most of the criteria however, did not achieve the calcium sulphate discharge limits and it was thought that either dispensations as appropriate would be sought or, as noted in the 2006 project EIA, an additional stage of sulphate reduction could be included should the reduction be necessary.

During 2010/11, a German based firm, WISUTEC, in collaboration with Romanian based ECOIND successfully conducted both metal precipitation / ettringite laboratory testwork on the Rosia Montana Project ARD solution as well as an alternative treatment method via membrane separation. Metal precipitation using conventional lime neutralisation techniques was able to achieve nearly all discharge limit criteria, the exceptions being sulphates, calcium and TDS (confirming previous testwork undertaken by Ammtec); subsequent processing including ettringite precipitation was able to achieve the necessary requirements. The membrane separation circuits were also able to achieve the necessary requirements.

A pilot plant was installed at Rosia Montana in 2011 and successfully operated in 2012 in order to provide detailed design data as well as finalise the ARD treatment configuration. The pilot plant was designed by WISUTEC and subsequently constructed by Bauer Water GmbH (as a sub-contractor to WISUTEC). The pilot plant accommodated both the ettringite and membrane separation flowsheets and demonstrated both technologies to be capable of sufficiently treating ARD solutions to satisfy regulatory discharge requirements.

### **18.3.3 Waste Water Disposal**

The water balance work indicates that the key repository for waste-water is the tailings pond, which will receive waste-water from the processing plant, sewage from effluent and run-off from the waste rock drainage ponds (in the event that water from this source is not acid-generating).

To understand the potential for contaminant seepage to occur and to thereby facilitate the engineering of an appropriately designed TMF, it is important to characterise and then to model the hydrogeological regime in the formations underlying the future facility and the containment dam downstream.

To this end, MWH:

- Undertook a comprehensive geotechnical and hydrogeological drilling campaign in the summer of 2003.
- Performed seepage analyses on both the TMF and the SCDs, and
- Conducted an on-site review of existing information on the geological and geotechnical characteristics of the proposed TMF.

While SRK has made some recommendations for work that should be undertaken during the detailed design phase, overall we are confident that sufficient work has been done to understand this aspect to the level required at this stage.

#### **18.3.4 Tailings Geochemistry and Contaminant Seepage**

The use of cyanide and the demonstrated potential for ARD are two issues that are planned to be addressed in the Project design. In the short term, the transport and fate of cyanide will be the main consideration, while in the longer term the potential for metal leaching and net acid generation from the tailings will be considered.

In 2012 MWH completed a technical evaluation of the tailings seepage water geochemistry, the potential for cyanide migration, ARD/metal leaching and their consequent impacts, which came to the opinion that ARD will not be an issue in this case. However, provision for water treatment has been made in the Project budget and which adequately cover the cost of dealing with any potential ARD that could occur. Further, field tests will also be undertaken of actual tailings generated during the early phases of operation and the closure plans will be amended to reflect the results of this, if required.

#### **18.3.5 Pit Dewatering and Pit Lake Formation after Closure**

KP, in its water baseline report, concluded that mine dewatering requirements will be negligible down to an elevation of 700m where the water table is likely to be encountered. Most of the seepage water pumped from the mine will be sourced from the network of abandoned and submerged underground mines that will adjoin the future pits.

Uncertainty over the hydrogeological character of the vent breccia makes it difficult to accurately predict likely seepage rates in to the mine. However, estimates of inflow have been made, most recently in connection with predictions for the rate of pit lake formation after closure.

SRK broadly accepts MWH's basis for estimating inflow to the pit, which is that the bulk of water is sourced from the large network of existing underground workings with 70% of discharge associated with the 714 Adit, and only a 30% contribution from groundwater stored in the surrounding saturated rock matrix and the wider network of fractures beyond. Observations made at the site support the notion of a limited reservoir of groundwater, though the amount of test work has been limited to date. Further investigation will be carried out into this prior to the pits reaching the 700m elevation.

## 18.4 Power Supply

The Project site is traversed by an existing twin circuit 110 kV power line owned and operated by Transalvania Electrica S.A., a local company. This power line connects the existing Zlatna and Preparare substations. This power line will be relocated to the west of the Project site with a feed to the processing plant's main substation.

RMGC has applied to Electrica for a permit to enable connection of 64 MW with an estimated absorbed power of 52 MW. Electrica is currently analysing the application by way of a Solution Study. Previous Solution Studies conducted in earlier years had indicated significant infrastructure upgrades would be required to enable the connection of the RMGC load. Subsequent to the previous Solution Studies the amount of power drawn by large consumers in the region has reduced. The impact of this load reduction is being analysed as a part of the current Solution Study.

## 18.5 Communications

A PABX communications system will be installed, connecting each major location of the site. A radio system with a base station at a central point and vehicle mounted radios and hand held sets will also be installed. The site is already connected to the internet and this will be upgraded as required.

## 18.6 Site Facilities

Provision has been made for the following facilities on site:-

- Administration Building
- Plant offices and Laboratory
- Warehouse, Workshops and Storage yard
- Gatehouse and Weigh scale
- Mine Office, Mine workshop and Truck Wash Facility
- Fuel and lubricant storage
- Potable water, sewage and effluent plants

## 18.7 Summary Comments

Overall, SRK is confident that the proposed infrastructure will be sufficient to support the operation as currently envisaged.

# 19 MARKET STUDIES AND CONTRACTS

Neither the Company nor SRK has undertaken a market or contracts study for this report.



## 20 ENVIRONMENTAL STUDIES, PERMITTING AND SOCIAL OR COMMUNITY IMPACT

### 20.1 Romanian Regulatory Requirements, Permitting and EIA Process

Environmental approval is granted in accordance with the EIA procedures set out in Governmental Decision 918/2002 and the following Ministerial Orders provide procedural frameworks for EIAs:

- Ministerial Order 860/2002 - for approval of the environmental impact assessment and the issuance of environmental agreement procedures;
- Ministerial Order 863/2002 - for approval of the methodology guidelines applicable to the stages of the environmental impact assessment framework procedure;
- Ministerial Order 864/2002 - for approval of impact assessment and public participation in the decision-making procedure for projects with 'transboundary impact'.

European Union (EU) EIA legislation has been transposed into Romanian law and the regulations reflect the UN-ECE 1991 Convention on Environmental Impact Assessment in a Transboundary Context (the 'Espoo Convention') and the 1998 Aarhus Convention concerning access to information, public participation in decision making and access to justice in environmental matters. The EU Mine Waste Directive addressing the management of mining wastes has been referenced by the Romanian authorities in the EIA Guidelines issued for the Project in May 2005 and has been fully adopted for the Project.

Under Annex 1.1 of Ministerial Order 860/2002, proposed mining activities require an EIA. In addition to meeting current Romanian and EU legal requirements in its EIA, RMGC has adopted the more stringent requirements of the World Bank guidelines or industry best practice and best available techniques (BAT), even where these are not implemented in Romanian law. The guidelines of the World Bank cover a number of issues not fully addressed by Romanian and EU law, and provide an important framework for the Project, particularly in relation to resettlement and relocation of local residents who own property affected by mining.

Guidelines and agreements that have been taken into account in the EIA include:

- International Council on Monuments and Sites (ICOMOS)
- UNEP/ICME International Cyanide Management Code for the Manufacture, Transport and Use of Cyanide in the Production of Gold
- International Commission on Large Dams (ICOLD)
- Equator Principles
- IFC Guidelines
- Global Compact Initiative
- APELL for mining
- Various biodiversity conventions outlined in chapter 4.6 of the EIA study report.

Construction and mining can commence only once a number of Construction Permits are obtained. This is the last in a sequence of complex permitting requirements, the status of which is summarized in Table 20-1 below.

## 20.2 Project History and Permitting Progress

In June 1998, the Romanian government enacted a new mining law which provided for the first time that exploration and exploitation concessions could be granted to both Romanian and foreign entities. The new mining law contained transition provisions, which required all holders of existing titles to exploration and exploitation concessions to make application within certain time periods for the grant of a new form of concession license. Minvest, as the titleholder to the Rosia Montana Project, made application to the Romanian government for an exploitation concession for the Project. This was granted in December 1998 to Minvest as the titleholder and to RMGC as the affiliated company and came into full force and effect in June 1999 allowing for exploitation (under license number 47/1999) of gold and silver ores in the Rosia Montana Project area, with a 20 year term, which will need to be extended in time.

In December 1999, Gabriel completed a positive pre-feasibility study on the Project and upon delivery of this to RMGC increased its indirect holding in RMGC to 80% with pre-emptive rights over the remaining 20% held by Minvest. In October 2000, Minvest transferred title to the Project directly to RMGC and RMGC became the titleholder to the Project directly. Subsequent to this grant the following are the key milestones related to the environmental and social aspects of the Project:

- Archaeological research by National Research Program “Alburnus Maior” (set up under the scientific coordination of the National Romanian History Museum in Bucharest) was initiated in 2000 with RMGC financing;
- Consultation meetings with regional and local authorities, local communities and Project opponents in 2001 – these meetings are ongoing;
- Amendment of the Action Plan for relocation and resettlement and technical aspects of the Project in May 2004 to reflect recommendations from the community and civil society;
- Draft feasibility studies, environmental baseline studies and Project design work undertaken between 2002 and 2006, ;
- Land/property acquisition in three phases (June 2002 – Sept 2002, Feb 2003 - May 2004 and October 2006 – February 2008);
- Construction of Recea between July 2007 and September 2009, being the purpose-built new neighbourhood in Alba Iulia for the families within the Project development area who chose to move to the city (Recea was inaugurated in September 2009 and 125 local families have now moved to their new homes);
- Initiation of the EIA procedure in December 2004 with an application to the Alba Environmental Protection Agency - the EIA Report was submitted to the Ministry of Environment in May 2006;
- The first update to the EIA, following 16 EIA public consultations (14 in Romania and 2 in Hungary) in July/August 2006, comprising the Q&A annex submitted in May 2007 (answering 5,610 questions and providing additional reports to support the answers);

- Suspension of the EIA review by the Ministry of Environment in September 2007 following a legal challenge of the Project's Urbanism Certificate after only 4 Technical Analysis Committee (TAC) meetings (June – August 2007). The TAC consists of a number of ministerial and national authority (e.g. National Agency for Mineral Resources or National Administration of Romanian Waters) representatives that play a major role in the permitting stage of a Project. The TAC performs a review of the EIA report together with the Environmental Competent Authority (Ministry of Environment in the case of the Rosia Montana Project) and provides its feedback in relation to the Project's associated impact, in order to support the Environmental Competent Authority in the decision making process for the environmental permit. Depending on the complexity of the assessed Project, the Environmental Competent Authority may invite, as technical experts, any other organisation ( e.g. the Romanian Academy of Science or Geological Institute of Romania) in order to bring the relevant expertise for the assessment of the Project's impact and to provide relevant feedback for a final decision.
- The completion of an update of the Feasibility Study, submitted to the NAMR in February 2010;
- Resumption of TAC meetings with the completion of a second update to the EIA with additional EIA information sent to the Ministry in 2010 and 2011;
- The submission of the final EIA update in August 2011, with answers to the 392 questions from the most recent TAC review and additional information provided in October 2011;
- A fourth TAC meeting in November 2011 which concluded the review of all chapters of the EIA and all additional information provided by RMGC between 2006 and 2011, at the end of which no further questions were posed by TAC representatives.

There is ample evidence that environmental and social issues arising from the EIA have been incorporated into the Project design, with significant changes to the proposed pit excavations, redefining of the industrial areas and increase in the number and size of protected areas within the concession. There has also been a constant refining of the resettlement and relocation options, procedure and processes based on results of the ongoing community/public consultations.

**Table 20-1: RMGC Permitting Status**

Permit	Area	Status	Authorising body
Exploitation license	Concession	Granted 1999; application for upgrade of license submitted	National Agency for Mineral Resources
EIA	Rosia Montana Project	Submitted 2006, updates and annexes 2007, 2010 August and October 2011	Technical Analysis Committee (TAC) of Ministry of Environment, with Government ratification
General Urban Plans for affected villages (PUGs)	Rosia Montana, Abrud, Bucium and Campeni villages/towns	Completed and approved 2002 (Rosia Montana and Abrud) and extended expiry to July 2014, 2008 (Campeni and 1999 (Bucium); revisions required following Project design changes	Alba County Council, relevant local authorities
Zonal Urban Plan (PUZ Industrial)	Project area	Updates completed; New PUZ Strategic Environmental Assessment endorsement received; 17 out of 22 endorsements obtained; approval expected 2013	Ministry of Regional Development, local councils (Rosia Montana, Abrud, Bucium) to grant final approval
PUZ Historical	Historical centre and archaeological areas	9 out of 13 endorsements obtained. Approval pending - expected 2013	Ministry of Culture
Carnic Archaeological Discharge	Carnic area	Approved and certificate obtained July 17 <sup>th</sup> 2011	Ministry of Culture
Acquisition of Surface Rights	All areas affected by project footprint	Ongoing. Expected to take 12 months following issue of the Environmental Permit (EP), but may take longer due to compulsory purchase	RMGC; Romanian government; Alba County Council (CC)
Land use change Forestry	Forested areas on the Project footprint within the concession	To start issue of the EP. Anticipated 6 months	Ministry of Environment; Romanian government
Land use change Agriculture	Agricultural areas affected by Project footprint	To start following issue of the EP. Anticipated 8 months	Ministry of Agriculture; Romanian government
Reserve Homologation	Project area within the concession	Current reserve calculations audited; subject to EIA approval in case of design modifications	National Agency for Mineral Resources
Construction Permit for mining project	All operations required for the project within the concession	Application to be submitted once all studies, approvals and endorsements of the UC obtained. Expected 2013/2014	Alba County Council

RMGC's ability to obtain construction permits for the Project is predicated on securing all necessary surface rights within the Project footprint, the attainment and timing of which is subject to third party actions and a number of risk factors which are not within its control. Whilst RMGC has designed the Project to follow all applicable laws to protect against permitting delays, legal challenges brought forward by NGOs or other parties – those currently ongoing and those that may be introduced in the future – have the potential to cause significant delays to the Project timeline. Ultimately, the Romanian government determines the timing of the EP issuance and all other permits and approvals required for the Project, subject to the Romanian courts dealing with litigation in a timely manner.

## 20.3 Comparison with International Guidelines and Standards

The general review of the EIA together with updates given in the presentations and site visit discussions indicate the environmental and social assessment processes undertaken by RMGC, together with the procedures for resettlement and relocation, are compliant with the Equator Principles applicable to Category A projects in middle-income OECD countries, as Romania is classified according to the World Bank Development Indicators Database. SRK's opinion of the Project in terms of Equator Principles compliance is summarised below in Table 20-2.

**Table 20-2: Equator Principles Compliance status**

Principle	RMGC Project Status
EP1: Review and categorisation - Categorise the risk of a project based on the environmental and social screening criteria of the International Finance Corporation (IFC)	The Project is classified as Category A according to the IFC criteria as it has potential significant adverse social or environmental impacts that are diverse, irreversible or unprecedented and under Romanian legislation and European Union EIA Directive, the Project requires a detailed impact assessment.
EP2: Social and environmental assessment - For Category A projects, a social and environmental assessment to address relevant impacts and risks of the project is required with mitigation and management measures relevant and appropriate to the nature and scale of the project.	A comprehensive ESIA study has been carried out which describes the Project setting; identifies and classifies environmental and social impacts; proposes appropriate mitigation measures for negative impacts; and evaluates alternatives for the Project, which justifies the proposed design. Public consultation has been and continues to be a fundamental part of the process.
EP 3: Applicable social and environmental standards – As the Project is located in an OECD country not designated as High-Income, the assessment will be in compliance with applicable IFC Performance Standards and Industry Specific EHS Guidelines as well as with local laws.	The RMGC assessment appears to be compliant with all of the applicable IFC and EHS Guidelines as well as Romanian legal and regulatory requirements. While the EP is still pending, based on the documentation reviewed and discussions with RMGC personnel, there is no reason to believe the permits will be not be granted subject to reasonable conditions.
EP 4: Action Plan & Management System - Category A projects in OECD countries not designated as High-Income, the borrower has prepared an Action Plan and Social and Environmental Management System that addresses Project impacts and risks.	While RMGC does not have an overall Action Plan, the Project Environmental and Social Policies and Commitments demonstrate the intention, and there is a comprehensive set of Social and Environmental management and monitoring plans that are structured in several levels of detail.
EP 5: Consultation & Disclosure - Category A projects located in OECD countries not designated as High-Income, have been in appropriate consultation with Project affected communities, EIA documentation made available to the public and consultation results taken into account.	The RMGC EIA process has been characterised by intensive and wide reaching public consultation with all levels of stakeholders from international transboundary to local community. The level of project disclosure and transparency is high, and consultation results have guided the progressive project design.
EP 6: Grievance Mechanism - The borrower will establish a readily accessible grievance mechanism as part of the management system and inform the affected communities about the mechanism.	RMGC has simple, accessible grievances mechanisms in place to address community complaints – including open-door walk-in offices at Rosia Montana, Corna, the Recea Community and at Alba Iulia. There are also post boxes and phone line for community complaints.
EP 7: Independent Review - An independent social and/or environmental expert not directly associated with the borrower will review the Project to assess for Equator Principles compliance.	Independent review is currently underway.
EP 8: Covenants - The borrower will covenant in financing documentation: a) Comply with all relevant host country social and environmental laws, regulations and permits; b) Action Plan; c) Periodic reports; d) Decommission the facilities, where applicable and appropriate, in accordance with an agreed plan.	RMGC has made commitments to comply with or exceed Romanian legal requirements; has Management and Action Plans in place; has a system for periodic reviews and reporting; and has committed to close the mine in a responsible manner, with a prepared closure plan and costs estimated for inclusion in the financial model.
EP 9: Independent Monitoring and Reporting - Independent monitoring of compliance during the life of the Project	Not yet applicable.

## 20.4 Key Environmental and Social Issues

The EIA report identified the key issues for the Project and these are summarised below. SRK's review of the available documentation and site visit has not identified any further issues likely to be material to the Project.

### 20.4.1 Socio-Economic Issues

The Project promises the benefits of employment, both directly through RMGC and also indirectly as a result of the demand for services and supplies. However, the delay in the Project starting has had adverse consequences on many people in the area. A significant majority of people living in the mining communities in and around Rosia Montana want mining and mining traditions to continue. Mining has long been the predominant source of employment in Rosia Montana and Abrud but unemployment is now a major problem. In Rosia Montana, for example, the potential working population is some 1,800, however only approximately 500 have an income from a gainful economic activity, the majority employed by RMGC, and around 1,000 people have no income.

According to the initial resettlement action plan (2003), acquisition of land for the Project required the resettlement of 430 households under the industrial objectives, 317 under the protected area but linked to the Project footprint and 253 households in the buffer of the industrial zone - meaning nearly a thousand households from and around the direct Project footprint. This sensitive issue is dealt with by the RMGC's Community Relations Department and a dedicated resettlement team. The guiding document for this process is the Resettlement and Relocation Action Plan, which is based upon the World Bank's involuntary resettlement recommendations and in line with Romanian laws and EU Directives.

Some 794 residential properties have already been purchased by RMGC, and a further 155 households still remain to be acquired for the Project to proceed. Monitoring of the social impacts on those who have relocated has shown that the majority are better off. Ongoing difficulties of adjustment, integration and a lack of jobs for a small number of relocated families are being addressed with a tailored support programme by the RMGC Resettlement team. For those who resettled in Recea, the outcome is generally better, with most people settling well, employment high, training and schooling readily available and retention of the community fabric and continuing connections with Rosia Montana. Those that chose to resettle locally in Rosia Montana are frustrated by the delay in construction of any additional relocation sites. They decided to stay in the area largely because of the expectation of employment at the Project, and the lack of jobs due to the permitting delay is a major issue. However, RMGC Community Relations have put specific social mitigations in place to address these problems, including a 'social jobs' programme to reduce poverty and frustration.

### 20.4.2 Cultural Heritage Issues

Rosia Montana has a 2,000-year documented mining history dating back to the Roman occupation. The progression of mining technology from past to the present represents a valuable chronology of industrial mining heritage. The decreasing population in Rosia Montana has resulted in significant modifications to both the economy and the appearance of the village, with many houses of heritage value in states of disrepair or collapsed.

The key cultural heritage sites include the mining shafts and galleries of Roman construction; two Roman buildings; 41 'Historical Monuments'; a variety of artefacts from the Roman period; 10 churches and 12 cemeteries; and the oral history of a community shaped by an extensive mining history. The research and documentation of this heritage undertaken over nearly 10 years has led to considerable changes and modifications in the Project design. RMGC has also contributed considerable funds, in the order of USD15m, to the excavation, preservation and restoration of many of these heritage sites. It has based its Community Sustainable Development Programme on the development of this aspect of the village of Rosia Montana as a potential long term solution to economic sustainability post mining. Although the archaeological discharge certificates and relevant PUZs required for approval of the EIA have either been secured or are in the final stages of the permitting process, issues related to misinformed public perceptions of the destruction of Romanian heritage could continue to cause delays to the Project. An independent monitoring group is addressing these public misconceptions to increase confidence in the RMGC commitment to patrimony preservation.

#### **20.4.3 NGO Opposition**

Most of the NGO opposition to the Project is environmentally based, especially with reference to the use of cyanide, Acid Rock Drainage (ARD), anticipated pollution and changes to landscape through excavation and deforestation. Significantly this type of opposition increases with distance from the Project, with the most intransigent and vociferous opposition coming from outside the local area and indeed Romania.

Most of the legal challenges and delaying objections to the Project have been associated with such concerns. RMGC has actively engaged with many of the opposing NGOs and has endeavoured to provide reassurances and demonstrate proactive mitigation measures to be put in place. Much of the stakeholder consultation activities and community relations approaches have tried to address the issue of negative perceptions, misunderstanding or disinformation from these opposing NGOs.

#### **20.4.4 Local Misconceptions, Perceptions and Expectations**

Local opposition within the Rosia Montana village is small, with a very small minority voicing any resistance to the Project. There are also doubts about the quoted and expected employment opportunities and economic advantages from the Project. Of more concern are the unfounded but inflammatory allegations of corruption and oppression of the local community by RMGC, which need to be vociferously refuted.

One potential area of conflict is the resourcing of RMGC's workforce. It is crucial RMGC makes accurate assessments of the labour demands for construction and mining operations, and publicises these transparently. If employment expectations are unrealistically high, and perceived promised jobs are not realised, there could be a backlash against the Project. Deficiencies in relevant experience and skills base of the local workforce pool is being addressed with renewed training programmes and capacity building to be able to fulfil the local employment expectations.

### 20.4.5 Water

Because of the existing high levels of contamination from historical mining activities, many of the impacts on water from the Project going ahead, particularly on water quality, will be beneficial. The water treatment measures incorporated in the design will result in significant and measurable improvements to the environmental conditions in the streams flowing from the Project area. However, the Project will use technologies involving hydrochloric acid and cyanide (CN) so management of these and other toxic chemicals requires compliance with Romanian and EU laws and use of modern international best safety practices to avoid pollution. The negative perception of cyanide resulting from past accidents is a significant issue for RMGC and manifests in public opposition to the Project, particularly from outside the mining region. Project design reduces CN concentrations by detoxification, with slurry in the tailings management facility predicted to contain less than 5 mg/L CN<sub>WAD</sub> which is significantly below the EU Mine Waste Directive limit of 10 mg/L CN<sub>WAD</sub>. Discharge to the TMF would be halted if there were any failure of this detoxification process but any untreated slurry would anyway be contained within the TMF with no off-site release. These issues are captured in the RMGC water and cyanide management plans.

Impacts to surface water flows will occur due to direct interception and containment of contaminated and uncontaminated surface water flows by Project infrastructure. Further contaminated drainage will be diverted from old mine dumps and workings for treatment. The net result could impact the flows in the Rosia and Corna streams, as well as those downstream. Where possible, clean water will be diverted to the respective catchments downstream. However, prolonged pit dewatering operations may result in groundwater drawdown leading to reduced groundwater contributions to surface water flows.

## 20.5 Closure

The EIA details post closure decommissioning plans and most Project features will be rehabilitated to blend with the natural landscape at the end of mine life. RMGC has included an adjusted total of USD146m for closure costs in the economic analysis presented below in Section 22 of this report. The previous 2009 estimate totalled some USD128m. The difference between the two estimates however is solely a function of this being updated to Q3 2012 terms through the application of escalation factors and the utilisation of the updated exchange rates as outlined below in Section 22.

Towards the end of the operations phase, the production and waste deposition technologies will increasingly be adapted to the requirements of closure and rehabilitation. Three of the open pits will be backfilled with waste rock and the Cetate pit will be flooded to create a lake. The pit remnants will remain as a locally prominent feature to symbolise the valley's mining heritage. Although the deposition of tailings will result in a significant change to the topography of the Corna Valley, the TMF will be restructured and vegetated. Semi-passive water treatment installations will treat mine effluents but active treatment systems will also continue if required to maintain discharge standards. The existing monitoring system will be adapted for post-closure to check rehabilitation effectiveness and identify any additional mitigation measures required. However, the Mine Rehabilitation and Closure Management Plan will evolve with technological advances, changing public opinions, and improved knowledge of the environmental impacts.



## 20.6 Conclusions

RMGC has undertaken a thorough and comprehensive environmental and social impact assessment study process and associated community and public consultation procedure for the Project. Further, RMGC has also appointed a suitably qualified and highly motivated and dedicated team to manage identified impacts and has well developed environmental, social and health and safety management systems in place to facilitate the implementation of identified management measures. Alternatives to the proposed mining and processing plans have been evaluated, and it is clearly demonstrated that of the options considered the current proposal is the most beneficial to the Rosia Montana area and has the least negative social and environmental impacts.

RMGC has a detailed understanding of the permitting requirements and the possible risks to the planned timelines for commencement of the Project, and has anticipated possible delays that could result from these risks. Where applicable, it has put in-place, mitigation measures to address these risks. The necessary permits, endorsements and certifications have either been obtained or there is a strategy in place to obtain these. There is a risk of the environmental permit approval being further delayed if RMGC faces continuing legal challenges. The implications of the challenges need to be discussed with relevant authorities to determine if changes are needed to any of the existing permits or planned permit applications. Assuming these issues are addressed promptly, they should not significantly affect the overall Project integrity.

## 21 CAPITAL AND OPERATING COSTS

### 21.1 Initial Capital Costs

#### *Introduction*

The initial and sustaining capital costs for the Project originally estimated in Q4 2008, and which formed the basis of the 2009 Technical Report on the Rosia Montana Project, have been updated for the purposes of this report and are effective as at Q3 2012. These updated estimates are a combination of first principle estimates, quotes and escalations of previous estimates and have been generated with the assistance of the following companies/groups:

- IMC (Mining)
- MWH (Civil & Bulk Earthworks)
- Metifex (Process Facility)

In addition, RMGC has internally derived its estimate of Owners Costs.

This section of the report outlines the basis of the original initial capital cost estimate of 2008 and summarises the resulting revised estimate for the Project effective as at Q3 2012.

#### 21.1.1 Basis of Q4 2008 Estimate

The Q4 2008 capital cost estimate is summarised below in Table 21-1.

**Table 21-1: Estimated Capital Expenditure (Q4 2008)**

<b>Component</b>	<b>Initial Capital (USD'm)</b>
Mining	89
Processing	115
TMF	99
Infrastructure, Utilities	137
EPCM and Indirect Costs	158
Owners Costs	203
Contingency	73
<b>Total</b>	<b>876</b>

Excluding uncertainties at the time arising from the then 2008 global economic crisis, and the associated volatility in commodity prices and currency exchange rates, the estimate was judged to be accurate to a typical feasibility study level of approximately  $\pm 15\%$ . The contingency provision included in the estimate of initial capital was approximately 9.5% (excluding the payment of value-added taxes, which were understood to be recoverable by RMGC).

The Q4 2008 estimate was prepared in terms of the currency in which the expenditures were expected to be incurred. These are principally RON, Euros and USD, with lesser amounts in Australian and Canadian dollars. All estimates were then converted to USD at prevailing 2008 exchange rates.

Construction labour rates were based on surveys conducted in Romania during 2007 escalated to fourth quarter 2008 on the basis of supplemental data provided by RMGC.

Mine capital expenditures were estimated by IMC in accordance with standard procedures and consisted principally of pre-production stripping, equipment costs and certain mine infrastructure. Budgetary quotations were obtained for all major equipment. The cost of minor equipment was obtained from a combination of budgetary quotations and industry data. The cost of pre-production stripping was estimated in the same manner as mine operating costs (see below).

The costs of earthworks and certain items of infrastructure were estimated by MWH. Direct costs were developed for unit rates of production for each cost item. These unit costs were then multiplied by the relevant material quantities. Indirect costs were developed for the entire scope of work and allocated pro-rata among the individual cost items.

Direct costs were estimated from first principles and were prepared by reducing major activities to the most detailed, or lowest level, activities that could be interpreted from the original estimate. Activity sheets were then prepared for each of these detailed activities.

The individual activity sheets identify the total production quantity required and itemise each piece of equipment needed to perform the task, the total staffing requirements and any materials required per crew. The productivity for each crew was calculated by using the assumed machine capacities, operating speeds and efficiencies, factoring in travel distances, load sizes, loading cycle times, manoeuvring times and waiting periods as appropriate. The total crew hours required were then calculated using the crew production rate and required production quantity. The hours per shift worked by each crew, the number of shifts worked per day and the assumed overall efficiency of the crew were used to determine total production days required for input to the construction schedule. Cost per unit rate of production was obtained by adding the hourly cost of each piece of equipment or staff member and dividing the result by the hourly production rate. This cost per unit of production was then multiplied by the required quantity to obtain the activity total cost.

Material quantities were obtained from estimates prepared by MWH for the SNC estimate in 2007, with some optimisation of earthworks for roads and plant site excavations performed by MWH.

The capital expenditure estimates for all Project facilities, other than those developed by IMC and MWH, were prepared by Metifex based on the work undertaken by SNC in 2007. SNC's work was halted in November 2007, prior to final issue, following suspension by the Romanian government of the Rosia Montana Project EIA review process. SNC provided a close-out report on the status of its work. This close-out report included the detailed capital estimate for the Project, which had been completed but had not been subjected to a final review by SNC. Some design modifications were made after SNC's work was halted and the estimate was amended to reflect these. Based on the information provided by SNC, RMGC determined all of its basic cost estimates in mid-2007 terms and then escalated these to Q4 2008 terms using appropriate inflation indices.

The initial capital expenditure estimates for the process plant and those items of infrastructure included in the Metifex scope of work were developed on the following bases:

- Budgetary quotations were obtained by SNC for all major equipment units. The cost of minor units of equipment was obtained from in-house industry standard data or by factoring.
- Quantities compiled by SNC for concrete, structural steel and like items were based on quantity take-offs from general arrangement drawings, single line electrical diagrams, and piping and instrumentation diagrams. Unit prices of bulk materials were based on budgetary quotations obtained by SNC from potential Romanian suppliers.
- The major components of EPCM and indirect costs were estimated from first principles. Minor components were factored. Contingency allowances were allocated on the basis of the adjudged quality of the underlying estimate.

The Owner's component of initial capital expenditure was estimated by RMGC. Owner's capital expenditures were estimated on the following bases:

- Budgetary quotations were obtained for resettlement site construction though some associated costs were estimated based on actual housing resettlement construction works to date.

- The cost of acquiring surface rights was based on the approved purchase prices used by RMGC between mid-2007 and the start of 2008. These prices were not escalated, as Romanian property values fell in the latter half of 2008.
- Engineering consulting services were estimated from first principles. Provision was made for the costs of RMGC's own Project team.
- Provision was made for the payment of those Romanian taxes which will be levied during the construction period. Principal among these is the forestry land use change tax, which was estimated on the basis of a legislative proposal (subsequently enacted).

### 21.1.2 Update to Q3 2012 Terms

The Mining component of the Q3 2012 initial capital cost is based on estimates prepared by IMC. IMC updated the mine production schedule to align with the revised input parameters (such as Au and Ag pricing), retained the various permitting constraints and retained quantities (i.e. equipment list and the like) from the 2008 Project mine plan and then applied updated equipment fleet pricing from manufacturers, labour rates from RMGC and some rates obtained from the IMC database.

The Civil & Bulk Earthworks component of the initial capital cost is based on estimates prepared by MWH. The quantities are based on the MWH Civil layouts developed in 2009 while rates are from manufacturers for equipment pricing details, RMGC for fuel pricing and labour rates, and from MWH database for projects of similar scope.

The Process Facilities component of the estimate remains based on the quantities developed by SNC in 2007 but the pricing has been escalated by RMGC using a combination of market indices (Eurostats) and actual pricing from equipment suppliers (where available).

The Owners Costs have been updated from first principles and include increases to costs for relocation and resettlement, general and administration costs and patrimony projects together with a number of other costs that make up the upfront capital in RMGC's vision for sustainable development for the Project.

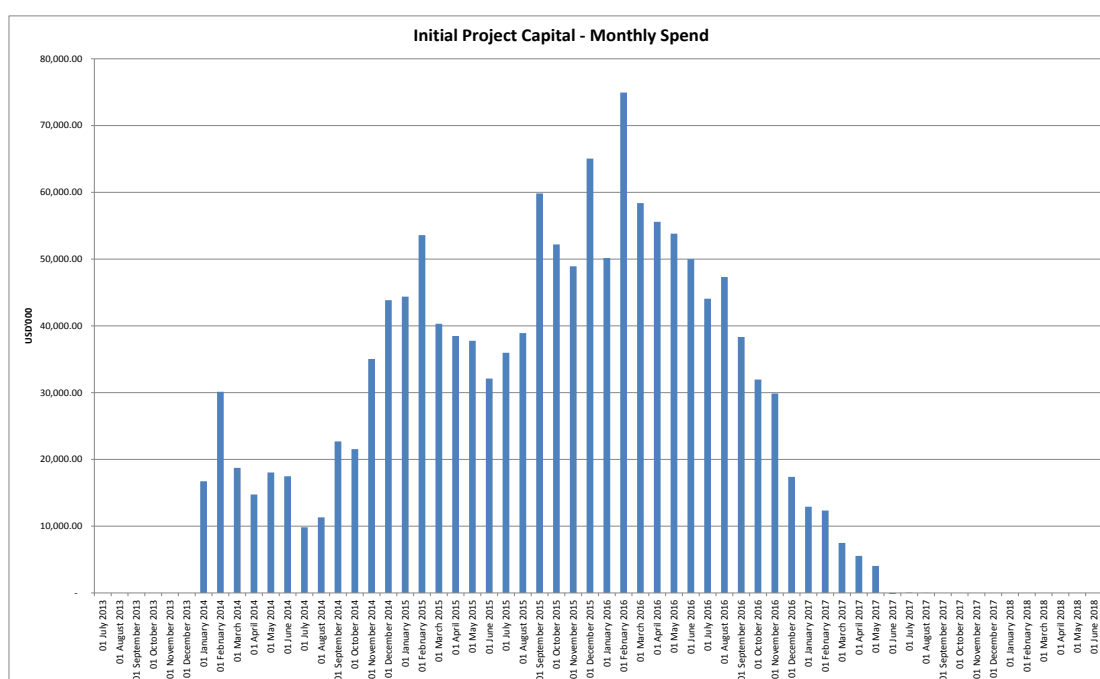
Furthermore, RMGC has included capital costs for additional scope items and allowances for capital growth including costs related to the process plant, EPCM, earthworks, HV infrastructure, mining equipment, cyanide detoxification, patrimony and resettlement and G&A related costs.

Table 21-2 summarises the overall Project capital costs in the updated model as well as the previous Q4 2008 estimate for comparison. Overall the initial capital cost has increased from USD876m to USD1,400m.

**Table 21-2: Estimated Capital Expenditure**

Component	Initial Capital – Q3 2012 (USD'm)	Previous Q4 2008 Estimate (USD'm)
Mining	106	89
Processing	212	115
TMF	137	99
Infrastructure, Utilities	201	137
EPCM and Indirect Costs	254	158
Owners Costs	350	203
Contingency	140	73
<b>Total</b>	<b>1,400</b>	<b>876</b>

Figure 21-1 shows the estimated monthly spend of Project capital over the forecast period of construction and into the first year of production.

**Figure 21-1: Monthly project capital expenditure**

SRK considers the updated initial capital cost estimate to have been developed in a thorough manner, but to be conservative and that cost savings could well be achieved.

## 21.2 Sustaining Capital

Table 21-3 shows the assumed sustaining capital costs of USD571m as reflected in the current economic analysis, along with the previous estimate of USD366m derived in Q4 2008 and reported in 2009 for comparison. Costs have been brought up to Q3 2012 terms through re-estimation from first principles, quotes and escalations of previous estimates.

**Table 21-3: Sustaining Capital**

<b>Component</b>	<b>Updated Sustaining Capital Estimate (USD'm)</b>	<b>Previous Q4 2008 Estimate (USD'm)</b>
Mining	119	89
Processing	39	13
TMF	212	152
Infrastructure, Utilities	53	33
Owners Costs	103	45
Contingency	45	34
<b>Total</b>	<b>571</b>	<b>366</b>

## 21.3 Closure Costs

RMGC has included an adjusted total of USD146m for closure costs in the economic analysis presented below in Section 22. The previous estimate reported in 2009 totalled some USD128m. The difference between the two estimates is solely a function of this being updated to Q3 2012 terms through the application of escalation factors and the utilisation of the updated exchange rates as outlined below in Section 22.

## 21.4 Operating Costs

### 21.4.1 Introduction

Operating costs have been estimated in accordance with standard industry practices and are valid as of Q3 2012.

### 21.4.2 Mining

The cost of diesel accounts for nearly 50% of the LoM mining operating cost and has been estimated as USD1.64/litre as delivered to the mine with a LoM consumption estimated to be some 226 million litres or an average of 14.1 million litres per annum. Mine consumables have been based on manufacturers' recommendations, in-house data and representative unit prices. Labour costs have been based on Project manning charts and salary levels as at Q3 2012.

The LoM unit mining cost per tonne of ore mined and processed is USD3.67/t which is equivalent to USD1.67/t ore and waste mined. By comparison, in Years 1 to 5 of production the average mining cost per tonne of ore mined is USD3.06/t or USD1.51/t ore and waste mined but some USD4.28/t ore processed. The higher unit cost per tonne of ore processed reflects the plan to only process the higher grade material in these early years and to stockpile the lower grade material.

### 21.4.3 Processing

The cost of process reagents and consumables has been based on consumption levels determined through metallurgical testwork and the application of consumption calculations, along with price quotations obtained from Romanian and international suppliers valid as Q3 2012. The cost of power has been estimated as USD0.077/kWh. Labour costs have been based on Project manning charts and salary levels as at Q3 2012. Table 21-4 below shows the unit cost assumptions for the key processing reagents and consumables.

**Table 21-4: Key Processing Consumable Cost Assumptions**

Consumable/Reagent	Units	Cost <sup>1</sup>
SAG mill balls	(USD/t)	1,247
Ball mill balls	(USD/t)	1,221
Cyanide	(USD/t)	3,000
Sodium Metabisulphate	(USD/t)	587
Propane	(USD/l)	0.75
Flocculant	(USD/t)	3,564
Lime (quick)	(USD/t)	117
Lime (hydrated)	(USD/t)	121

1: Including cost of delivery

The LoM unit processing cost per tonne of ore processed is USD9.48/t. By comparison, in Years 1 to 5 of production the average processing cost is USD10.26/t ore processed.

#### 21.4.4 G&A

General and Administration (G&A) costs have been estimated in-house by RMGC from first principles based on RMGC's actual existing cost structure while including growth through the Project construction and operational phases. These costs cover all areas of administration inclusive of environmental, social and health and safety aspects. A fixed cost assumption per annum has been assumed which equates to some USD25m per annum or USD1.87/t ore processed over the LoM or USD1.95/t ore processed for Years 1-5 of production.

#### 21.4.5 Other

Other operating cost assumptions include the following:

- Royalty of 4% payable to the State Budget of Romania based on total gross revenue;
- Refining deduction of 0.2% of total gold produced and 0.75% of total silver produced;
- Refining charge of USD0.80/oz payable gold;
- Transport and treatment charge of USD0.53/oz payable gold and silver.

#### 21.4.6 Summary

In summary, the LoM operating costs, including refining, transport, treatment and royalty equate to some USD16.97 /t processed and some USD19.09/t processed over Years 1 to 5 of production. Table 21-5 presents a summary of the unit operating costs over the LoM and for Years 1 to 5 of production respectively.

**Table 21-5: Average Operating Costs**

Component	Units	Year 1-5	LoM
Mining	(USD/t processed)	4.28	3.67
Processing	(USD/t processed)	10.27	9.48
G&A	(USD/t processed)	1.95	1.87
Other*	(USD/t processed)	2.59	1.95
<b>Total</b>	<b>(USD/t processed)</b>	<b>19.09</b>	<b>16.97</b>

Note: \* Other = Freight, Refining and Royalty.

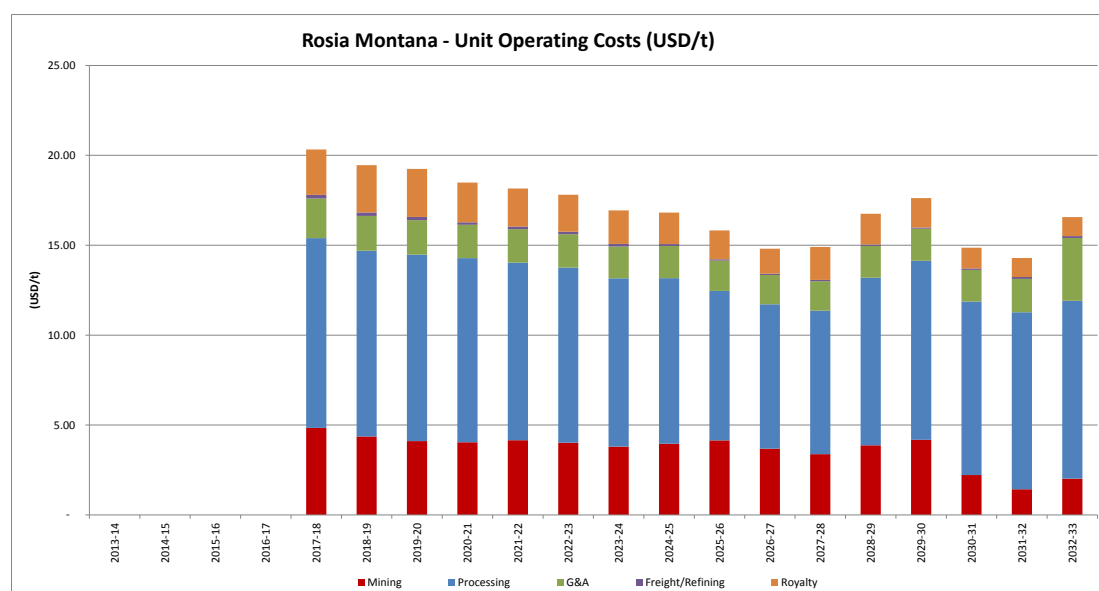
Table 21-6 presents a summary of the unit cash cost of gold production over the LoM and Years 1 to 5 of production respectively. Note that these numbers exclude corporation tax, working capital and VAT movements.

**Table 21-6: Unit Cash Costs of Gold Production**

Component	Units	Year 1-5	LoM
Mining	(USD/oz)	91	102
Processing	(USD/oz)	218	263
G&A	(USD/oz)	41	52
Freight/Refining	(USD/oz)	4	3
Royalty	(USD/oz)	51	51
Silver Credit	(USD/oz)	(85)	(72)
<b>Total*</b>	<b>(USD/oz)</b>	<b>320</b>	<b>399</b>

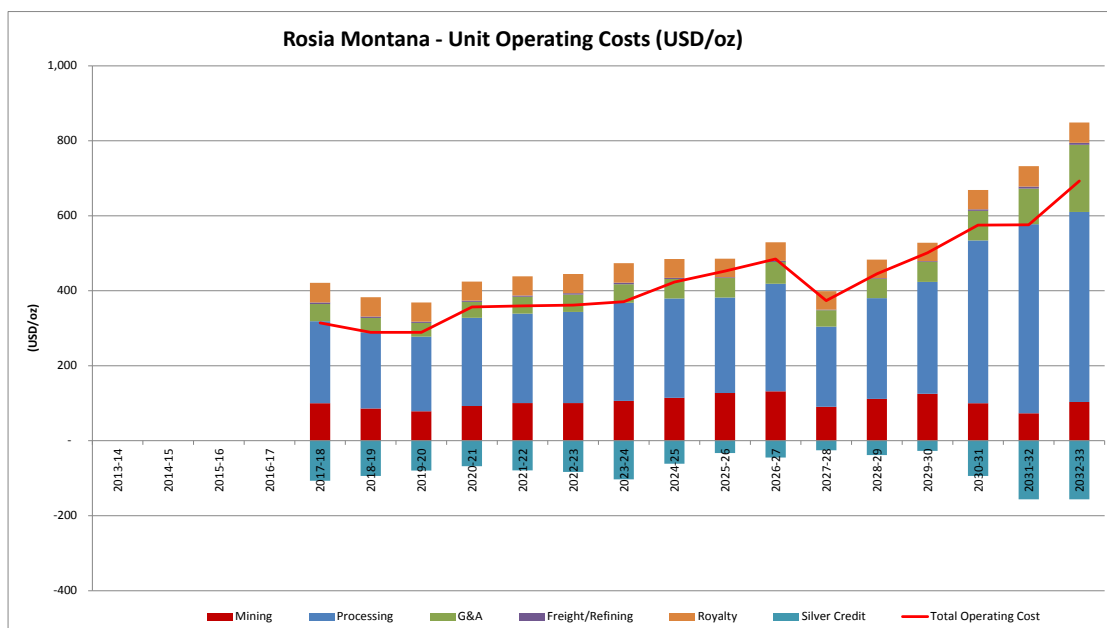
Note: \* Excludes corporation tax, working capital & VAT movements.

Figure 21-2 and Figure 21-3 show the breakdown by year of the unit operating costs per tonne processed and per oz payable gold respectively.



**Figure 21-2: Unit operating costs per tonne processed**





**Figure 21-3: Unit operating costs per oz payable gold**

#### 21.4.7 Comparison to 2009 Technical Report

Table 21-7 presents a comparison of the LoM unit operating costs, excluding royalty, assumed for the valuation presented in this report with that assumed by the previously published report on the Project in 2009. There has been an approximate 20% increase in the estimated unit operating costs which is largely due to the increases seen in the assumed diesel price, major reagents and consumables and G&A costs. Table 21-8 presents a comparison of the key consumable unit cost assumptions between those assumed now and those used for the 2009 Technical Report.

**Table 21-7: Operating Cost Comparison with 2009 Technical Report**

Component	Units	2012	2009	% Variance
Mining	(USD/t processed)	3.67	2.88	27%
Processing	(USD/t processed)	9.48	8.23	15%
G&A and offsite*	(USD/t processed)	1.98	1.46	36%
<b>Total</b>	<b>(USD/t processed)</b>	<b>15.14</b>	<b>12.57</b>	<b>20%</b>

Note: \* Excludes royalty

**Table 21-8: Key Consumable Unit Cost Comparison with 2009 Technical Report**

Component	Units	2012	2009	% Variance
Diesel	(USD/l)	1.64	0.89	85%
SAG mill balls	(USD/t)	1,247	1,160	7%
Ball mill balls	(USD/t)	1,221	1,160	5%
Cyanide	(USD/t)	3,000	2,303	30%
Sodium Metabisulphate	(USD/t)	587	678	(13%)
Propane	(USD/t)	0.75	0.48	55%
Flocculant	(USD/t)	3,564	3,618	(1%)
Lime (quick)	(USD/t)	117	107	9%
Lime (hydrated)	(USD/t)	121	125	(4%)

## 22 ECONOMIC ANALYSIS

### 22.1 Base Case

The economic analysis presented here is based on the Rosia Montana Project Business Plan provided to SRK by the Company, but incorporates SRK adjustments where considered appropriate.

SRK's analysis considers the proven and probable Mineral Reserve planned to be mined and processed over a 16 year period at the Project and not the Company, or the Company's share in this, and as such takes no account of loan and interest assumptions and any residual value in the plant and facilities at the end of the mine life. The key forecast Technical Economic Parameters (TEP) assumed for SRK's valuation are shown below in Table 22-1. Section 21 of this report provides further details on the operating and capital cost assumptions used in the economic model. Figure 22-1 to Figure 22-12 show the profiles for mining and processing, recovered gold and silver, revenue and operating costs over the LoM. Note that while the model is based on the same mineral reserve and mining schedule as the 2009 Technical Report the mined grades have been adjusted in the financial model to incorporate SRK's comments on mining selectivity discussed in Section 16 above.

- Figure 22-1: Mining production (ore and waste tonnage, strip ratio);
- Figure 22-2: Mining production (ore tonnage, gold grade);
- Figure 22-3: Mining production (ore tonnage, silver grade);
- Figure 22-4: Processing production (ore feed tonnage, gold grade);
- Figure 22-5: Processing production (ore feed tonnage, silver grade);
- Figure 22-6: Processing production (gold recovery v gold grade);
- Figure 22-7: Processing production (silver recovery v silver grade);
- Figure 22-8: Gold recovered;
- Figure 22-9: Silver recovered;

- Figure 22-10: Gross revenue;
- Figure 22-11: Operating costs (pre-tax);
- Figure 22-12: Operating margin (revenue v operating costs pre tax);

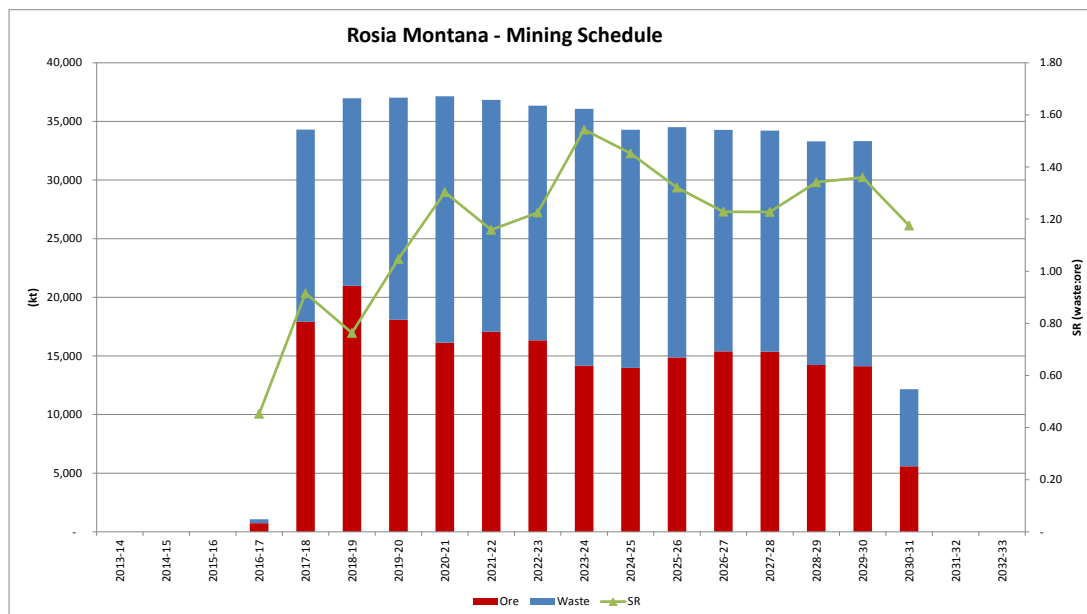
In addition to the assumptions outlined in Section 21 of this report with regards to capital and operating costs, for the purposes of the economic analysis presented herein the following assumptions have been made for the base case economic model:

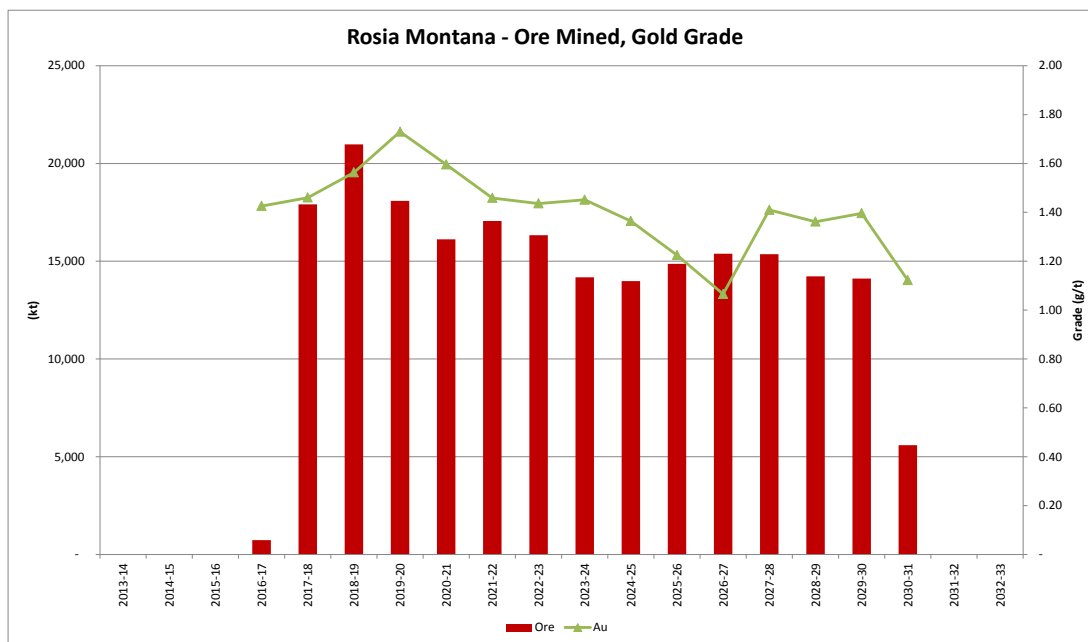
- Long term gold price: USD1,200/oz;
- Long term silver price: USD20/oz;
- Long term exchange rates to the US Dollar as follows:
  - RON – 3.25
  - EUR – 0.78
  - AUD – 1.05
  - CAD – 1.00
  - GBP – 0.61

**Table 22-1: Forecasted TEPs**

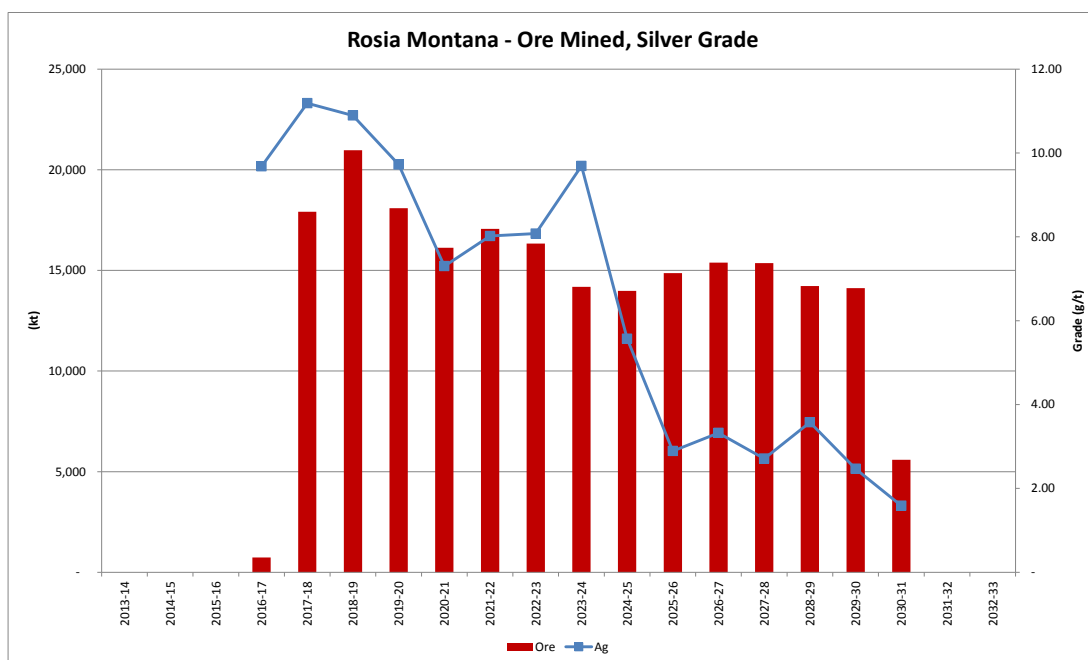
Year	Gross Revenue (USDm)	Mining (USDm)	Processing (USDm)	Operating Costs (USDm)				Capital Costs (USDm)		Closure (USDm)
				G&A	Royalty	Other*	Taxation	Project	Sustaining	
2013-14	-	-	-	-	-	-	-	115	-	-
2014-15	-	-	-	-	-	-	-	387	-	-
2015-16	-	-	-	-	-	-	-	645	-	-
2016-17	-	-	-	-	-	-	-	253	-	36
2017-18	718	55	120	25	29	2	37	0	81	-
2018-19	851	57	134	25	34	3	73	-	40	-
2019-20	872	54	135	25	35	2	-	-	51	-
2020-21	744	54	138	25	30	2	26	-	27	-
2021-22	711	56	133	25	28	2	46	-	42	-
2022-23	695	54	132	25	28	2	48	-	33	1
2023-24	661	54	133	25	26	2	44	-	55	1
2024-25	612	55	129	25	24	1	36	-	31	1
2025-26	597	62	124	25	24	1	33	-	27	1
2026-27	536	57	123	25	21	1	24	-	45	3
2027-28	703	52	123	25	28	1	49	-	28	3
2028-29	611	55	133	25	24	1	33	-	29	3
2029-30	578	59	141	25	23	1	25	-	24	3
2030-31	410	32	138	25	16	1	3	-	28	4
2031-32	358	19	133	25	14	1	-	-	12	4
2032-33	190	14	71	25	8	1	-	-	2	4
2033-34	-	-	-	-	-	-	-	-	7	26
2034-35	-	-	-	-	-	-	-	-	-	29
2035-36	-	-	-	-	-	-	-	-	5	5
2036-37	-	-	-	-	-	-	-	-	-	3
2037-38	-	-	-	-	-	-	-	-	3	3
2038-39	-	-	-	-	-	-	-	-	-	3
2039-40	-	-	-	-	-	-	-	-	-	3
2040-41	-	-	-	-	-	-	-	-	-	3
2041-42	-	-	-	-	-	-	-	-	-	3
2042-43	-	-	-	-	-	-	-	-	-	6
2043-44	-	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>9,847</b>	<b>789</b>	<b>2,038</b>	<b>401</b>	<b>394</b>	<b>25</b>	<b>477</b>	<b>1,400</b>	<b>571</b>	<b>146</b>

Note: \* Other = Freight and Refining

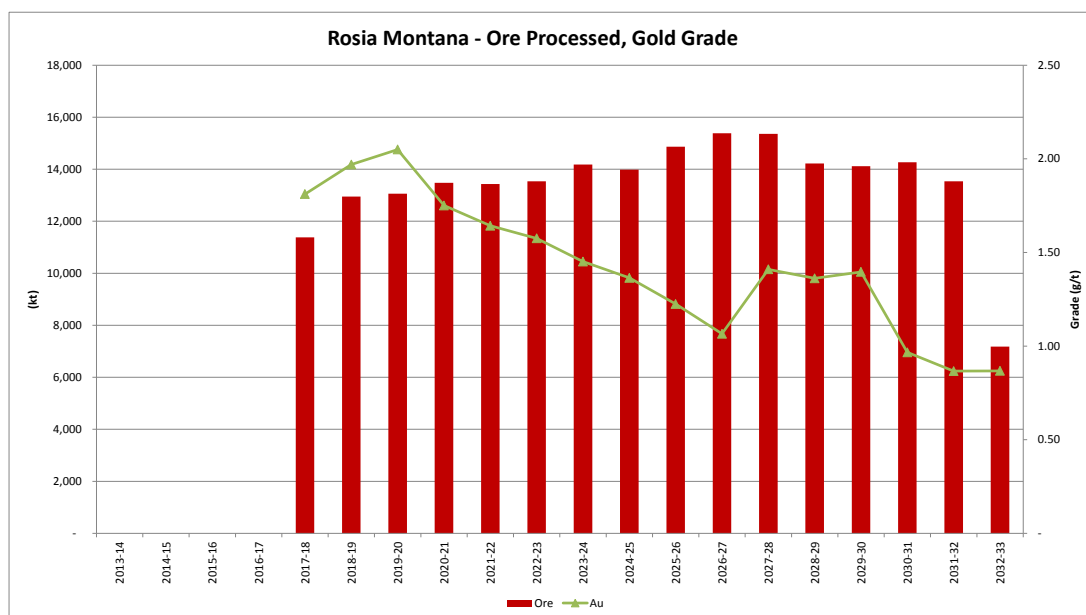
**Figure 22-1: Mining production (ore and waste tonnage, strip ratio)**



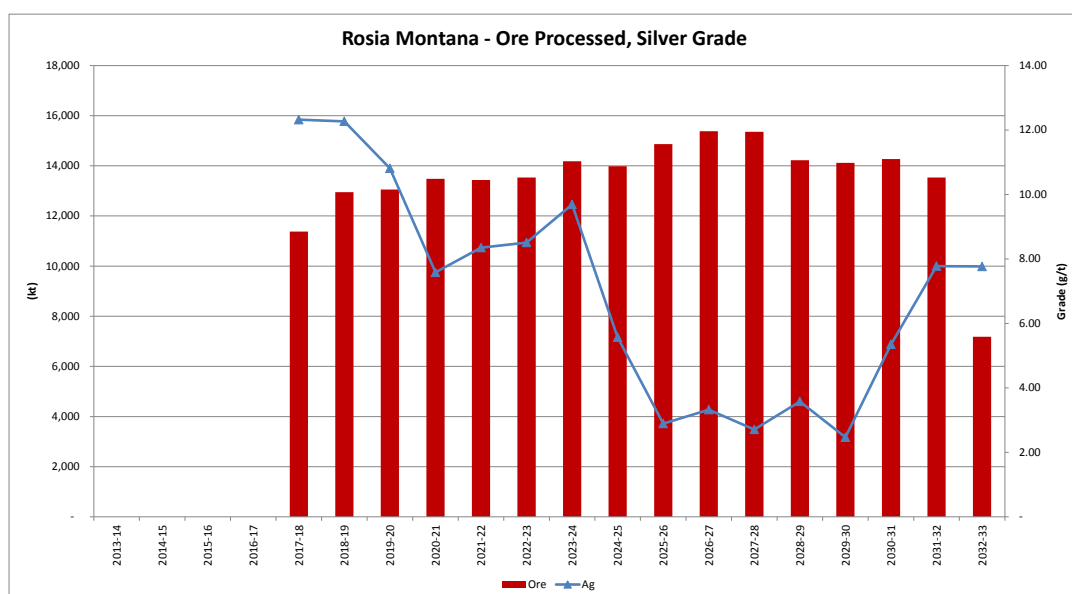
**Figure 22-2: Mining production (ore tonnage, gold grade)**



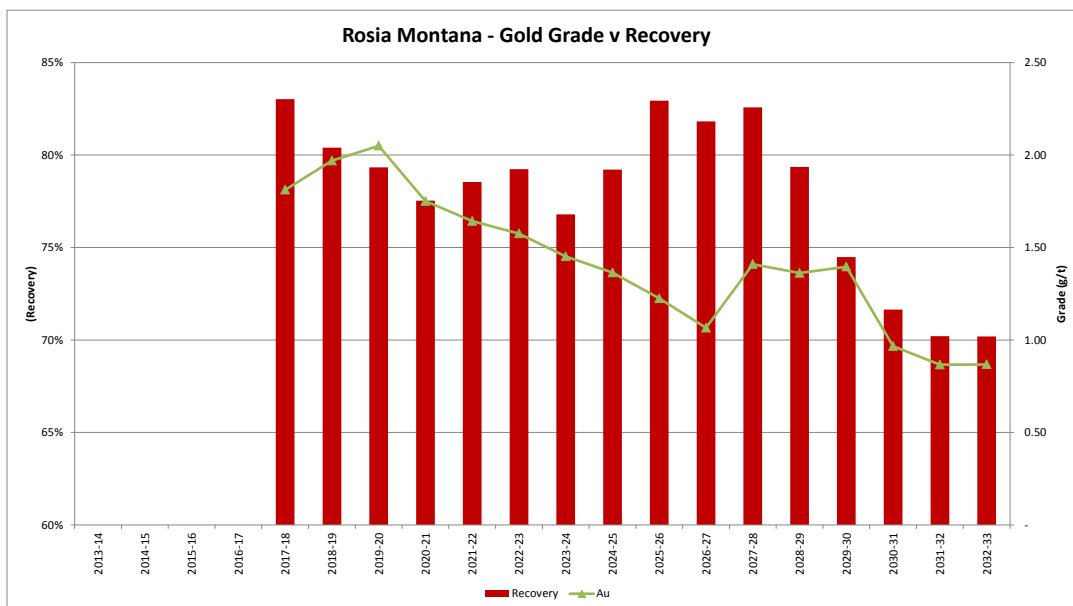
**Figure 22-3: Mining production (ore tonnage, silver grade)**



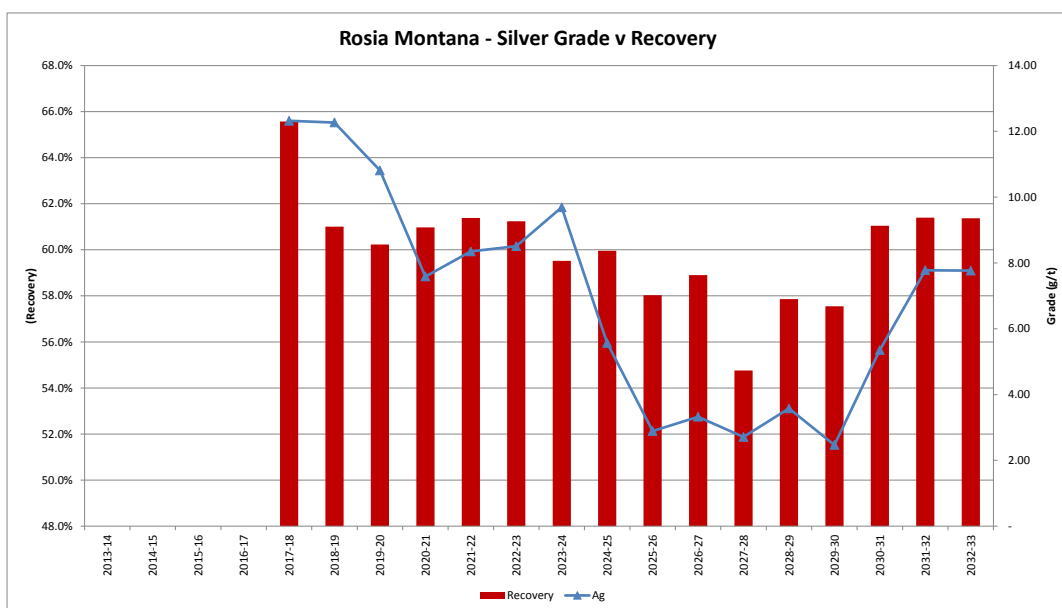
**Figure 22-4: Processing production (ore feed tonnage, gold grade)**



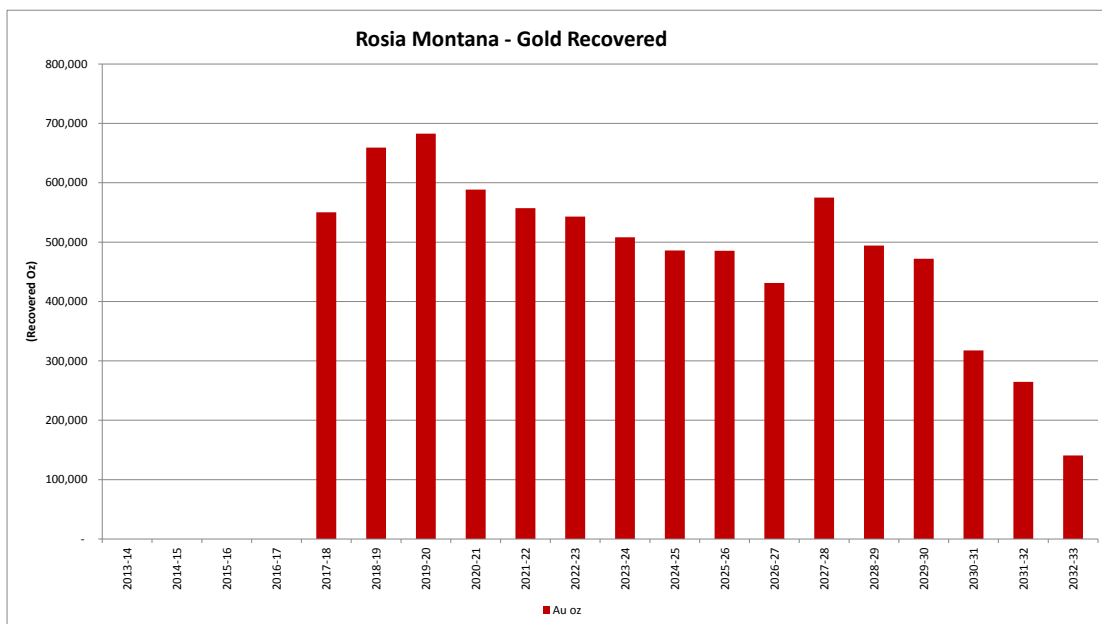
**Figure 22-5: Processing production (ore feed tonnage, silver grade)**



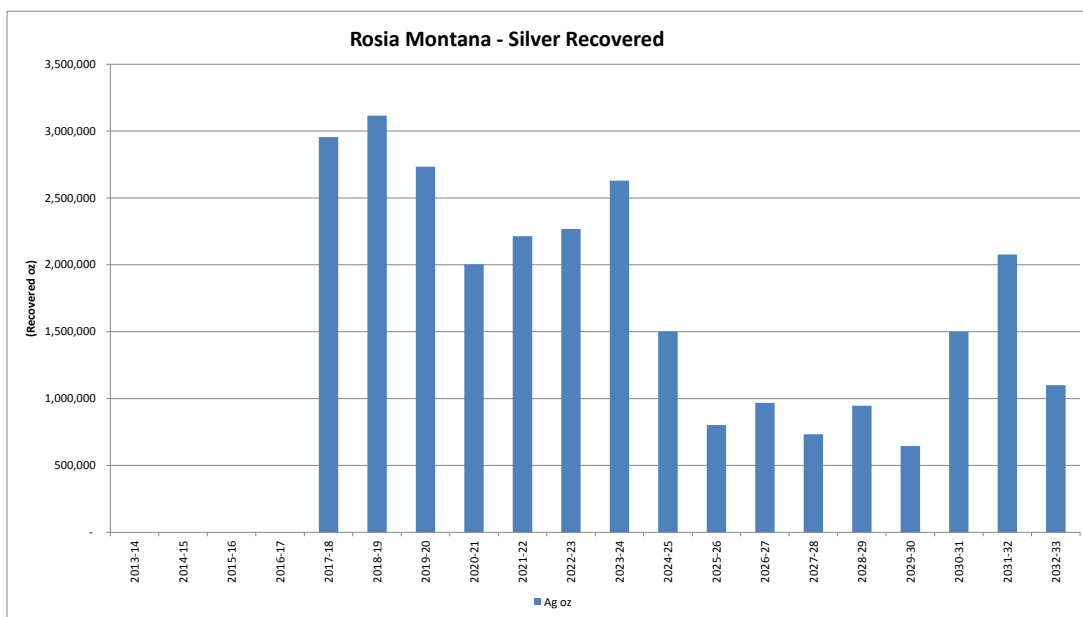
**Figure 22-6: Processing production (gold recovery v gold grade)**



**Figure 22-7: Processing production (silver recovery v silver grade)**

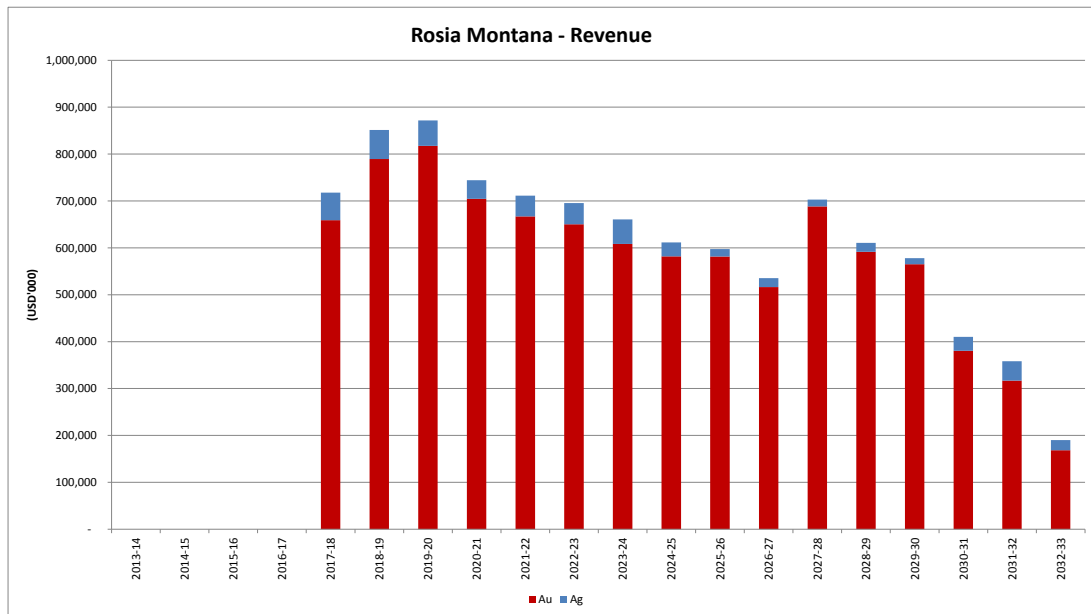


**Figure 22-8: Gold recovered**

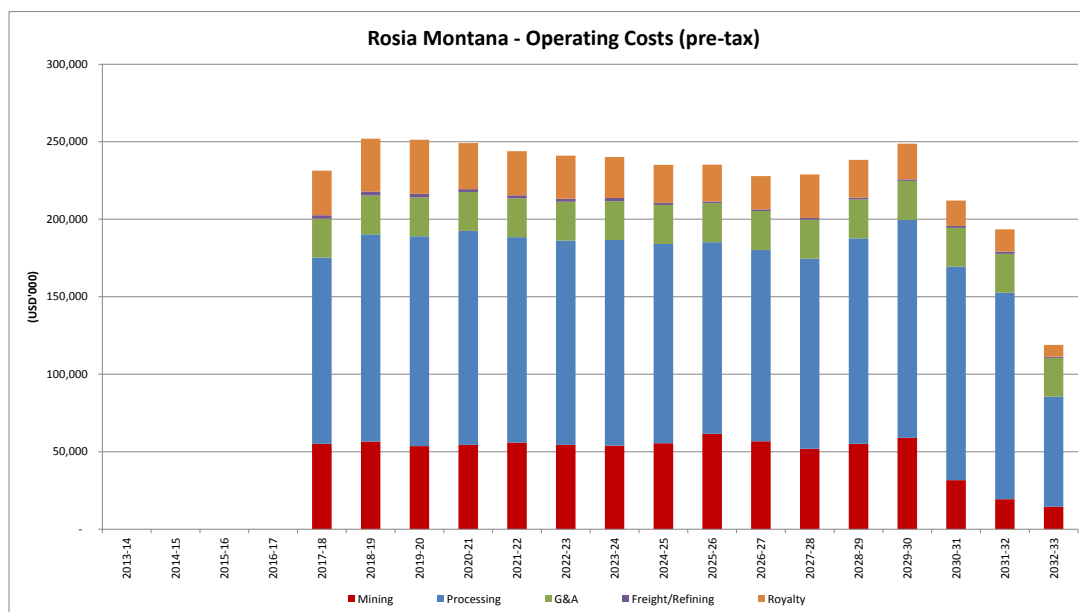


**Figure 22-9: Silver recovered**

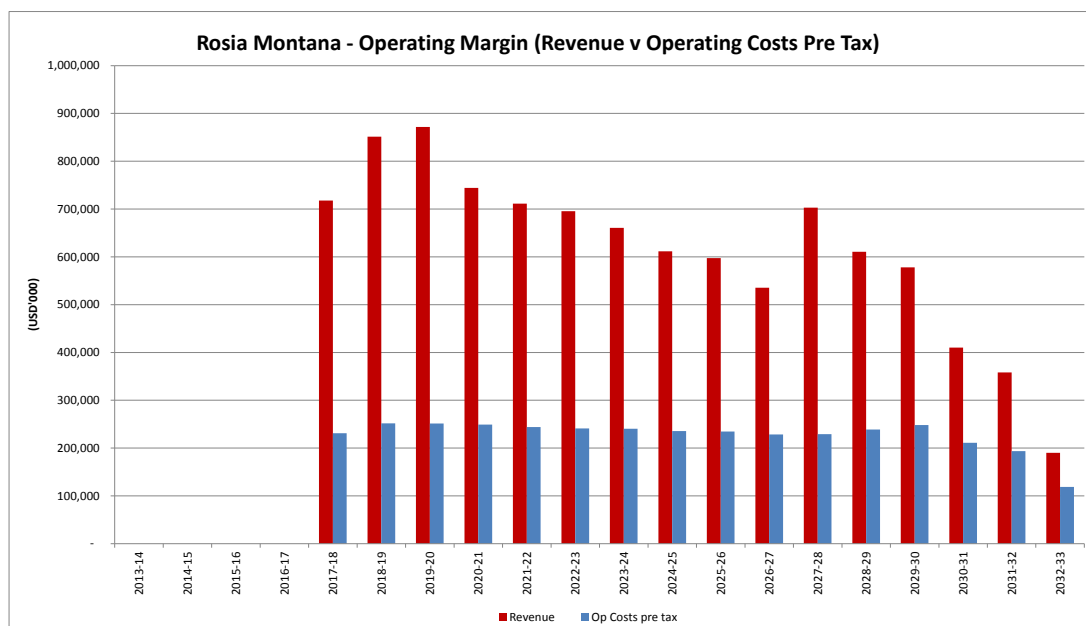




**Figure 22-10: Gross revenue**



**Figure 22-11: Operating costs (pre-tax)**



**Figure 22-12: Operating margin (revenue v operating costs pre tax)**

## 22.2 Economic Analysis Process

The economic analysis as presented applies discounted cash flow (DCF) techniques to the post-tax pre-finance (assumed 100% equity basis) Project cash flow based on the Business Plan summarised above. Construction is assumed to start in Q4 2014 with Owners pre-construction costs commencing from January 2014. All figures are presented in Q3 2012 real terms.

In generating the cash flow model and deriving the Net Present Value (NPV) of the Project, SRK has:

- Incorporated the commodity price forecasts noted above.
- Made adjustments to the production and cost forecasts provided by the Company to reflect SRK observations and considerations presented in this report;
- Used a Weighted Average Cost of Capital (WACC) which reflects the fact that the Project is located in Romania and has been the subject of a feasibility study. SRK has assumed 10% for the purposes of the Base Case valuation presented herein;
- Relied upon the Company for all accounting inputs as required for the generation of the cash flow model in respect of depreciation and taxation, assumed at 6 years on a straight line basis for mining equipment and over the life of the project for other assets and 16% on all taxable profits in Romania respectively.
- Relied upon the Company for all working capital and VAT movements which have been modelled as 45 days for both debtors and creditors and the assumption that all VAT paid at a rate of 24% is recovered 12 months following expenditure.
- Relied upon the Company for the assumption that 25% of the total estimated closure cost will be placed into a bond at the end of construction (prior to production commencing).

- Reported a NPV for the Project as at January 2014 which is based on a DCF valuation of the post-tax pre-finance cash flow projections.
- Performed sensitivity analyses to ascertain the impact of discount factors, commodity prices, operating costs and capital expenditures.

SRK considers that the valuation of the plant and equipment is included within the overall Project NPV valuation and a separate valuation of these items has not therefore been included.

Table 22-2 presents a summary technical financial analysis for both the LoM and Years 1-5 of the Business Plan. This table is not a financial statement (Income Statement; Cash Flow Statement; and Balance Sheet Statement) and no account has been taken of movements in working capital at the Company level, or deferrals of tax liabilities between accounting periods, as may be the case in the generation of such financial statements.

**Table 22-2: Summary Technical and Financial Analysis**

Description	Units	Year 1-5	LoM
<b>PHYSICALS</b>			
<b>Mining</b>			
Waste Tonnage	(Mt)	92.1	256.9
Ore Tonnage	(Mt)	90.2	214.9
Au grade	(g/t)	1.61	1.46
Ag grade	(g/t)	9.83	6.88
Contained Au	(Moz)	4.7	10.1
Contained Ag	(Moz)	28.5	47.6
<b>CASHFLOW</b>			
Au Price	(USD/oz)	1,200.0	1,200.0
Ag Price	(USD/oz)	20.0	20.0
<b>Revenue</b>			
Au	(USD'm)	3,638.0	9,287.5
Ag	(USD'm)	258.5	559.7
<b>Total</b>	(USD'm)	<b>3,896.5</b>	<b>9,847.2</b>
<b>Operating Costs</b>			
Mining	(USD'm)	275.5	789.1
Processing	(USD'm)	659.9	2,037.7
G&A	(USD'm)	125.4	401.4
Freight/Refining	(USD'm)	10.9	25.1
Royalty	(USD'm)	155.9	393.9
<b>Total</b>	(USD'm)	<b>1,227.6</b>	<b>3,647.2</b>
<b>Capital Costs</b>			
Project	(USD'm)	0.0	1,400.2
Sustaining	(USD'm)	241.2	571.2
Closure	(USD'm)	0.0	145.5
<b>Total</b>	(USD'm)	<b>241.2</b>	<b>2,117.0</b>
<b>Project Cashflow</b>	(USD'm)	<b>2,427.7</b>	<b>4,083.0</b>
Corporation Tax	(USD'm)	182.0	477.5
Working Capital Movements	(USD'm)	57.6	(0.0)
VAT Movements	(USD'm)	(0.3)	0.0
<b>Net Project Cashflow</b>	(USD'm)	<b>2,188.4</b>	<b>3,605.5</b>
<b>ANALYSIS</b>			
Mining cost	(USD/t)	1.51	1.67
Mining cost (per t ore mined)	(USD/t)	3.06	3.67
Mining cost (per t ore processed)	(USD/t)	4.28	3.67
Processing cost	(USD/t)	10.27	9.48
G&A	(USD/t)	1.95	1.87
Refining, Transport&Treatment, Royalty	(USD/t)	2.59	1.95
Total Operating Costs	(USD/t)	19.09	16.97
Operating Cash Cost	(USD/oz)	405	471
Operating Cash Cost (net of silver credits)	(USD/oz)	320	399

In summary and using the estimates and assumptions for the Base Case as outlined above and in Section 21 of this report, SRK has derived the following key financial LoM results:

- Operating cash cost (including royalty but excluding corporation tax), net of silver credits: USD399/oz;
- Undiscounted cash flow after tax: USD3,606m;
- Post tax NPV at a 10% discount rate: USD865m;
- Post tax IRR of 19.6%; and
- Post tax payback of initial capital outlay in Year 4 of production.

## 22.3 Sensitivity Analysis

This section presents a sensitivity analysis of the Project to changes in various parameters as follows:

- Table 22-3: Project NPV at a range of discount factors;
- Table 22-4: Sensitivity to gold price;
- Table 22-5: Sensitivity to operating costs;
- Table 22-6: Sensitivity to capital costs;
- Table 22-6: Sensitivity to exchange rates; and
- Table 26-7: Sensitivity at a 10% discount rate for operating costs, capital costs and exchange rates.

**Table 22-3: Rosia Montana Project post-tax NPV in USD at Various Real Discount Rates**

Discount Rate	NPV (USDm)
6%	1,594
8%	1,188
10%	865
12%	606
14%	397

**Table 22-4: Gold Price Sensitivity**

		Gold Price (USD/oz)						
Discount Rate	NPV (USDm)	800	1,000	1,200	1,400	1,600	1,800	2,000
	0.0%	953	2,352	3,606	4,858	6,107	7,358	8,610
	5.0%	211	1,068	1,836	2,598	3,363	4,125	4,888
	7.5%	(21)	665	1,281	1,891	2,504	3,113	3,723
	10.0%	(193)	364	865	1,360	1,858	2,352	2,846
	12.5%	(321)	136	550	956	1,366	1,772	2,178

**Table 22-5: Operating Cost Sensitivity**

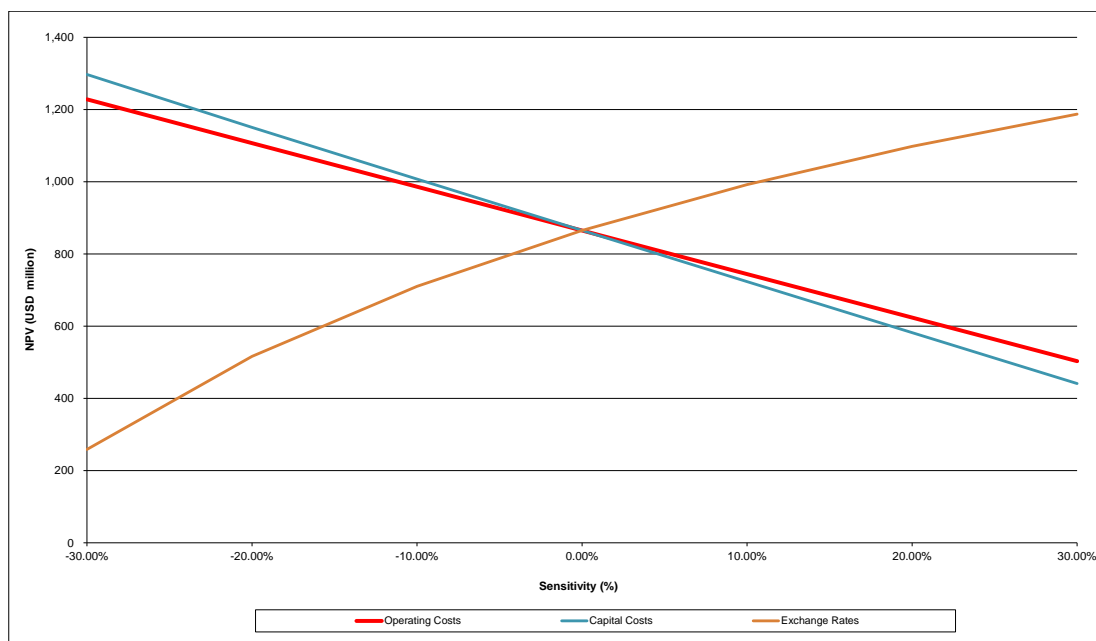
		% Variable of Operating Cost						
Discount Rate	NPV (USDm)	-30%	-20%	-10%	0%	10%	20%	30%
	0.0%	4,578	4,253	3,929	3,606	3,282	2,959	2,637
	5.0%	2,410	2,219	2,027	1,836	1,645	1,454	1,263
	7.5%	1,735	1,583	1,432	1,281	1,130	980	830
	10.0%	1,228	1,107	986	865	744	624	503
	12.5%	845	746	648	550	452	354	256

**Table 22-6: Capital Cost Sensitivity**

		% Variable of Capital Cost						
Discount Rate	NPV (USDm)	-30%	-20%	-10%	0%	10%	20%	30%
	0.0%	4,213	4,010	3,807	3,606	3,405	3,206	3,008
	5.0%	2,334	2,166	2,000	1,836	1,672	1,509	1,346
	7.5%	1,743	1,587	1,433	1,281	1,129	978	828
	10.0%	1,297	1,150	1,007	865	723	582	441
	12.5%	957	818	684	550	416	283	150

**Table 22-7: Exchange Rate Sensitivity**

		% Variable of Exchange Rates						
Discount Rate	NPV (USDm)	-30%	-20%	-10%	0%	10%	20%	30%
	0.0%	2,465	2,937	3,309	3,606	3,848	4,050	4,219
	5.0%	1,039	1,374	1,631	1,836	2,004	2,144	2,262
	7.5%	592	884	1,105	1,281	1,426	1,546	1,648
	10.0%	259	516	710	865	992	1,098	1,187
	12.5%	7	239	412	550	663	757	837



**Figure 22-13: Sensitivity at a 10% Discount Rate**

Notably, assuming recent spot prices of USD1,800/oz for gold and USD35/oz for silver results in the following key financial LoM results:

- Operating cash cost (including royalty but excluding corporation tax), net of silver credits of USD371/oz
- Undiscounted cash flow after tax: USD7,699m;
- Post tax NPV at a 10% discount rate: USD2,494m;
- Post tax IRR of 32.5%; and
- Post tax payback of initial capital outlay in Year 2 of production.

## 22.4 Comparison to 2009 Technical Report

Table 22-8 presents a summary comparison of the LoM results of the Base Case financial evaluation of the Project as presented in this report with that presented in the previous 2009 Technical Report.

**Table 22-8: Summary Financial Analysis – Comparison with 2009 Technical Report**

Description	Units	This Report	2009
Gold price	(USD/oz)	1,200	750
Silver price	(USD/oz)	20	10.5
Cash cost	(USD/oz)	399	335
Pre-production capital	(USD'm)	1,400	876
Sustaining capital	(USD'm)	571	366
Closure cost	(USD'm)	146	128
Undiscounted cashflow after tax	(USD'm)	3,606	1,662
NPV after tax (5% discount rate*)	(USD'm)	1,836	997
IRR after tax	%	19.6	20.4
Payback	Years	3.3	3.5

Note: \* For comparative purposes, Table 22-8 shows the NPV for this report at a 5% discount rate as the 2009 43-101 reported the NPV in this way. The Base Case discount rate used in this report is 10%.

## 22.5 Summary

In summary, SRK has derived a post tax, pre finance NPV for the Project (on a 100% basis) of some USD865m assuming a discount rate of 10% and gold price of USD1,200/oz and silver price of USD20/oz. At a discount rate of 5% the NPV would increase to some USD1,836m, while at a discount rate of 14% it would reduce to USD397m.

## 23 ADJACENT PROPERTIES

RMGC currently holds the Bucium property, adjacent to the Rosia Montana Project, within a permitting process of upgrading the exploration license into an exploitation license. An exploration concession may be obtained for a maximum period of five years, with a renewal right of three years. As originally drafted, the regulations called for a 50% reduction in the concession after two years, and a further 50% reduction after four years. The Bucium property was reduced in size in May 2002. This provision was rescinded in the revisions in the mining law that took place as of March 2003, and further reductions are no longer required. The holder of an exploration concession must provide NAMR with annual reports of all exploration activities conducted on an exploration concession. Exploration concessions confer on the holder the exclusive right to explore for all mineral substances lying within the perimeter of the concession. All commitments relating to the Bucium exploration licence have been fully completed.



## 24 OTHER RELVANT DATA & INFORMATION

A comprehensive Environmental Impact Assessment was completed early in 2006 and was submitted to the Romanian authorities for review. The review process was suspended by the Romanian government in September 2007, but recommenced in September 2010. The timing at which construction will commence therefore remains dependent upon approval of the EIA and issuance of an EP.

In the interim, RMGC has taken delivery of major equipment items costing approximately USD44m at the time of purchase for major equipment items with long lead times, including the primary crusher, the SAG mill, two ball mills, and mill drive systems. A number of families remain to be relocated before construction can commence.

## 25 INTERPRETATION AND CONCLUSIONS

The exploration activities undertaken by RMGC since 1998 have delineated a significant gold deposit, with by-product silver, on the Rosia Montana Project property. Updated estimates of capital expenditure and operating costs, recently completed, have confirmed the technical feasibility and economic viability of the Project and the Proven and Probable Mineral Reserve of 215 million tonnes at an average grade of 1.46 g/t Au and 6.88 g/t Ag. This reserve is contained in four open pits which will be mined conventionally by shovels and trucks. The process plant feed will be ground to 80% minus 150 µm and gold and silver will be recovered as doré bars by conventional gravity concentration, CIL processing, electrowinning and smelting techniques.

On the basis of the discussion contained within the body of this report, it is concluded that the Project is both technically feasible and economically viable, and that the main challenge to be overcome before the Project can be brought to fruition lies in the area of permitting. While RMGC is considered to have appropriate plans and strategies in place to deal with this challenge, the outcome of the permitting process is not fully within its control.

## 26 RECOMMENDATIONS

The principal conclusion arising from this review of the Project is that its implementation remains contingent on obtaining all of the permits necessary to enable construction to commence. It is recommended, therefore, that RMGC maintain its focus on the permitting process. It is recommended, also, that the resettlement and relocation process be advanced to the extent consistent with maintaining the support of the local community for the Project. For this reason SRK is not making any further recommendations for further technical work at this stage.

## 27 REFERENCES

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**Micon International Limited,** 2009. Technical report on the Rosia Montana Gold Project, Transylvania, Romania.

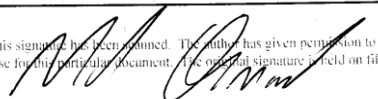
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**For and on behalf of SRK Consulting (UK) Limited**

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Corporate Consultant & Chairman  
(Mining Geology),  
SRK Consulting (UK) Limited  
7<sup>th</sup> November 2012

## **APPENDIX**

### **A RESOURCE SENSITIVITY DOCUMENT**

Deposit	Cutoff (g/t)	Measured					Indicated					Sub-Total Measured and Indicated					Inferred				
		Tonnes	Au	Ag	Au Metal	Ag Metal	Tonnes	Au	Ag	Au Metal	Ag Metal	Tonnes	Au	Ag	Au Metal	Ag Metal	Tonnes	Au	Ag	Au Metal	Ag Metal
		(kt)	(g/t)	(g/t)	(koz)	(koz)	(kt)	(g/t)	(g/t)	(koz)	(koz)	(kt)	(g/t)	(g/t)	(koz)	(koz)	(kt)	(g/t)	(g/t)	(koz)	(koz)
Orlea	0.4	9,661	1.50	2	466	665	79,349	0.82	2	2,103	5,199	89,010	0.90	2	2,568	5,865	25,168	1.15	2	929	1,548
	0.6	8,524	1.63	2	447	601	46,917	1.06	2	1,592	3,253	55,440	1.14	2	2,038	3,854	19,589	1.34	2	841	1,236
	0.8	7,505	1.76	2	424	532	29,021	1.28	2	1,192	2,058	36,526	1.38	2	1,616	2,589	16,316	1.47	2	768	1,034
	1.0	6,284	1.92	2	388	445	18,306	1.50	2	885	1,320	24,590	1.61	2	1,273	1,764	13,762	1.57	2	695	874
Carpeni	0.4	15	0.57	2	0	1	32,137	0.85	2	882	1,888	32,151	0.85	2	882	1,889	837	1.56	2	42	57
	0.6	5	0.60	2	0	0	19,916	1.08	2	689	1,287	19,921	1.08	2	689	1,287	831	1.57	2	42	57
	0.8	0	0.00	0	0	0	12,417	1.31	2	522	846	12,417	1.31	2	522	846	828	1.57	2	42	56
	1.0	0	0.00	0	0	0	8,206	1.52	2	401	577	8,206	1.52	2	401	577	828	1.57	2	42	56
Cetate	0.4	49,486	1.26	6	2,007	9,948	73,160	0.87	3	2,039	7,475	122,646	1.03	4	4,046	17,422	2,032	0.63	2	41	130
	0.6	37,020	1.52	7	1,808	8,412	44,214	1.11	4	1,582	5,185	81,234	1.30	5	3,390	13,598	981	0.77	2	24	70
	0.8	28,521	1.77	8	1,619	7,142	28,107	1.35	4	1,223	3,685	56,628	1.56	6	2,842	10,828	287	0.97	2	9	21
	1.0	22,665	1.99	8	1,450	6,127	19,001	1.57	4	961	2,741	41,666	1.80	7	2,412	8,868	65	1.20	3	3	5
Carnicel	0.4	7,314	1.01	10	236	2,449	9,894	0.99	10	314	3,285	17,208	0.99	10	550	5,735	658	1.17	14	25	295
	0.6	5,427	1.18	11	206	1,981	7,079	1.18	12	269	2,634	12,507	1.18	11	474	4,614	523	1.34	16	23	262
	0.8	3,917	1.36	12	172	1,509	4,886	1.40	13	219	2,054	8,803	1.38	13	391	3,563	370	1.60	18	19	210
	1.0	2,759	1.56	12	139	1,105	3,368	1.62	15	176	1,617	6,127	1.60	14	314	2,722	326	1.70	19	18	197
Carnic	0.4	103,268	1.32	9	4,397	28,662	90,494	0.92	4	2,684	13,011	193,762	1.14	7	7,082	41,672	8,328	0.70	3	188	813
	0.6	87,082	1.48	9	4,136	25,658	52,651	1.23	5	2,086	9,247	139,732	1.39	8	6,222	34,905	3,332	1.02	4	109	422
	0.8	71,408	1.65	10	3,783	22,234	34,048	1.53	6	1,676	6,800	105,456	1.61	9	5,459	29,034	1,738	1.33	5	74	253
	1.0	57,252	1.83	10	3,375	18,719	23,808	1.81	7	1,382	5,167	81,059	1.83	9	4,757	23,885	1,164	1.55	5	58	178
Cos	0.4	0	0.00	0	0	0	4,838	0.71	7	110	1,061	4,838	0.71	7	110	1,061	2,941	0.74	7	70	673
	0.6	0	0.00	0	0	0	2,747	0.86	8	76	669	2,747	0.86	8	76	669	1,978	0.85	8	54	490
	0.8	0	0.00	0	0	0	1,515	1.01	8	49	385	1,515	1.01	8	49	385	1,081	0.99	8	34	278
	1.0	0	0.00	0	0	0	573	1.20	9	22	158	573	1.20	9	22	158	354	1.18	9	13	104
Jig	0.4	1,771	2.63	25	150	1,433	4,545	1.14	6	167	930	6,316	1.56	12	316	2,362	1,986	0.85	5	54	295
	0.6	1,769	2.63	25	150	1,432	3,419	1.35	8	148	829	5,189	1.79	14	298	2,262	1,544	0.95	5	47	251
	0.8	1,761	2.64	25	150	1,432	2,530	1.59	9	129	746	4,291	2.02	16	279	2,177	848	1.16	7	32	181
	1.0	1,740	2.66	26	149	1,429	2,191	1.69	10	119	695	3,931	2.12	17	268	2,124	547	1.29	7	23	126
Igre	0.4	0	0.00	0	0	0	46,591	1.06	3	1,584	5,087	46,591	1.06	3	1,584	5,087	2,227	0.77	3	55	179
	0.6	0	0.00	0	0	0	33,468	1.28	3	1,374	3,727	33,468	1.28	3	1,374	3,727	1,132	1.04	4	38	129
	0.8	0	0.00	0	0	0	25,113	1.47	4	1,188	2,894	25,113	1.47	4	1,188	2,894	650	1.30	4	27	93
	1.0	0	0.00	0	0	0	18,946	1.66	4	1,011	2,314	18,946	1.66	4	1,011	2,314	487	1.44	5	23	76
Total	0.4	171,513	1.32	8	7,256	43,157	341,215	0.90	3	9,886	37,960	512,729	1.04	5	17,142	81,117	44,810	0.98	3	1,416	4,100
	0.6	139,827	1.50	8	6,746	38,084	210,521	1.16	4	7,818	26,845	350,348	1.29	6	14,565	64,929	30,285	1.22	3	1,187	2,985
	0.8	113,112	1.69	9	6,147	32,848	137,650	1.40	4	6,199	19,470	250,762	1.53	6	12,346	52,318	22,199	1.41	3	1,008	2,142
	1.0	90,701	1.89	10	5,501	27,825	94,399	1.63	5	4,957	14,587	185,100	1.76	7	10,458	42,413	17,533	1.55	3	873	1,617