

**EXECUTIVE SUMMARY**

**UPDATED SCOPING STUDY ON THE  
OXIDE, TRANSITIONAL AND PRIMARY RESOURCES AT THE UZBOY GOLD  
DEPOSIT,  
AKMOLA OBLAST  
KAZAKHSTAN**

**for**

**ALHAMBRA RESOURCES LTD**

**by**

**ACA HOWE INTERNATIONAL LIMITED**

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**Berkhamsted  
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**Scoping Study on the Oxide, Transitional and Primary Resources at the Uzboy Gold Project, Akmola Oblast, Kazakhstan, for Alhambra Resources Limited.**

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## EXECUTIVE SUMMARY

A scoping study for open pit development upon the oxide, transitional and primary resources at the Uzboy gold project, Akmola oblast, Kazakhstan was undertaken by independent Geological Consultants A C A Howe International Limited.

This report outlines the results of pit optimisation and analysis undertaken in August and September 2008, including preliminary economic assessment, selected preliminary pit design and mineable tonnage estimation based upon recently updated resource block models completed in June 2008 with an effective date December 31<sup>st</sup>, 2007. The Scoping Study, originally dated February 27<sup>th</sup> 2009 for internal use by Alhambra, is now being re-issued on December 10<sup>th</sup> 2009. This re-issued scoping study has no material differences from the February 27<sup>th</sup> 2009 Report. It has clarified ACA Howe's view of the legal status of Alhambra's Kazakhstan mining rights. The re-issued scoping study also contains a letter of no material change written by ACA Howe and dated December 10<sup>th</sup> 2009. This letter is contained in full in Appendix 1 of this report.

The gold deposit resource estimations at Uzboy comprised of:

- The West Zone Uzboy Deposit
- The East Zone Uzboy Deposit

The gold mineralisation in the Uzboy project developed mainly during the Hercynian tectonic-magmatic cycle. Each deposit represents a steeply dipping structurally controlled (shear hosted) hydrothermal (mesothermal) gold deposit.

Mineralisation at West Uzboy is sub-vertical steeply dipping to the north west and occurs within a faulted hydrothermal chlorite-sericite altered andesitic package bounded by hangingwall and footwall sediments. Anomalous gold mineralisation at  $>0.2\text{g/t Au}$  level is currently outlined over an approximate strike length of 800m close to surface and width of approximately 350m. At depth mineralisation is interpreted to extend a strike length of approximately 900m, plunging toward the south west 100m beyond the near surface mineralisation. Currently within the central zone at West Uzboy  $>0.2\text{g/t Au}$  mineralisation reaches a depth of approximately 250 metres below surface (with one hole intercepting mineralisation down to 430 metres below surface in the core zone), and extends to approximately 500 metres below surface in the south west extension.

At East Uzboy gold mineralisation occurs within southeast dipping quartz-pyrite-carbonate-sericite-chlorite altered andesite package, bounded by sediments. Anomalous gold mineralisation at a  $>0.2\text{g/t Au}$  boundary in the Uzboy East zone is currently interpreted to extend over a strike length of approximately 1km, and over a surface width of approximately 300m.

At Uzboy East Zone  $>0.2\text{g/t Au}$  gold intercepts form a series of steep southeast dipping laterally extensive lodes or lenses typical of this style of structurally controlled mineralisation. Current drilling defines up to five parallel laterally extensive sulphide lodes within each zone. Mineralisation within the sulphide zone is interpreted down to between 250-350 metres below surface, based upon current drilling extents.

At both zones, in the upper, oxide part of the profile discreet well defined lenses seen in the sulphide zone have undergone gold remobilisation resulting in the formation of broader  $>0.2\text{g/t Au}$  gold zones near surface.

Recent petrographic and mineralogical studies on the deposit show the gold occurring predominantly as free gold within the primary zone (Le Boutillier, pers.comm.).

The Uzboy deposit is currently producing gold by heap leach processing method, from the oxide mineralisation. Mining commenced in 2002 and according to schedules provided to Howe, total production figures for the operation up to 31 December 2007, at a 70% recovery rate are 75.1koz Au stacked for 49.8koz Au leached for 48.5koz Au stripped.

Micromine Consulting was commissioned by ACA Howe International Limited to run the Pit Optimisation and Analysis study upon the oxide transitional and primary resources using the updated resource model for the Uzboy Gold Deposit during the period August 2008. Micromine Consulting subsequently undertook selected pit design and mineable tonnage estimation as part of the scoping study during the period September to October 2008.

Pit optimisation upon oxide, transitional and primary resource types was carried out using 16 different input block model, operating and mining data input scenarios based on variable parameter inputs.

Variable parameters included the use of Measured and Indicated resource categories only or Measured, Indicated and Inferred resource categories as inputs, use of 1.8Mtpa or 3.6Mtpa production rates for the primary (transitional) processing plant and two associated capital cost inputs of US\$60 million and US\$80 million respectively. Analysis was performed using two gold cut off grades for Au material processing (0.0g/t Au and 0.4g/t Au) and the use of two inter-ramp slope angles for the mining the primary zone (45° and 60°).

A gold price input of US\$850/oz was used for all optimisation scenarios.

Variable parameters for each mining scenario are presented in detail as Table 30 and Figure 14 of the report.

The optimisation of the Uzboy project was carried out using the Mining module of the MICROMINE version 11 software packages, using the Lerch-Grossman algorithm.

The main objective of the pit optimisation study was to define economically mineable tonnes, based on the variable mining parameters and economic constraints provided by Alhambra and audited by ACA Howe, in order to generate a set of wireframes for the optimal pits, for use in selected pit design and improved mineable tonnage estimation.

The Cash Flow method of optimisation was used where the value of each resource block (Revenue - processing cost - mining cost) is compared to the value of waste (i.e. the waste mining cost) for all processing methods. If the production cash flow is greater than the waste cash flow, then the material elements are processed as production. Otherwise, the material elements are processed as waste.

Optimal pit shell analysis which analyses the mineable tonnes and potential financial benefits (financial flow) pit shell by pit shell was done to determine the optimal discounted pit shell.

The optimal pit shells generated using the supplied economic and technical parameters then the analysis of nested pits was completed using the base gold price and discounted cash flow. Maximum NPV values were used to select the optimal discounted pits for each of the 16 scenarios for each deposit zone (Nesterov, 2008).

A total of 16 optimal pits for Uzboy were selected as a result of the optimisation study, one for each operating scenario. A summary of major mining (primary economic) values for each optimal pit is presented in the tables below.

For the purposes of an NI 43-101 preliminary assessment under which the use of inferred resources is permissible, the following scenarios have been chosen as worthy of a more detailed analysis. They all use the results of the block model with a 0.4 g/t gold cut off.

- Scenario 1.2.1, which is based on an engineered pit derived from an optimised pit using the measured and indicated resources estimated by ACA Howe at a 0.4 gram per tonne (g/t) gold cut off. It has pit slopes of 45° in the upper weathered zones and 45° in the lower primary zones (45/45). There are minor differences in the contained gold between the optimised and the engineered pit. This is due to the input of engineering factors such as ramps and burns into the optimal pit shell and is discussed in more detail within the report.
- Scenario 2.2.1 which is based on an optimised pit without engineering factors and using the measured, indicated and inferred resources. The optimised pit has slopes of 45° and 45° as in Scenario 1.2.1.
- Scenario 2.2.2 which is based on an optimised pit without engineering factors and using measured, indicated and inferred resources estimated by ACA Howe at a 0.4 g/t gold cut off. The optimised pit has pit slopes of 45° in the upper weathered zone and 60° in the lower primary zones

These scenarios are summarised as follows:

Scenario	Life of mine	Total mineable tonnes (Mt)	Gold grade (g/t)	Contained Gold ('000 oz)	NPV (US\$M)
1.2.1	4	9.5	1.76	538	90
2.2.1	6	16.9	1.50	813	130
2.2.2	8	23.7	1.50	1,143	203

While acknowledging that 2.2.1 contains inferred resources and therefore any financial assessment can only be preliminary in nature, and that 2.2.2 incorporates pit slopes that are not currently verified by geotechnical testwork, Alhambra have requested that a Preliminary Assessment of these scenarios be undertaken in the near future. It should also be understood that the numbers in the table above are initial and may vary when a more detailed preliminary assessment is undertaken.

A summary of major mining values for the selected discounted optimal pits for 8 scenarios without cut off are presented in the table below.

Summary of major parameters for Uzboy optimal pits without cut off								
Scenario	Pit #	Approx. LOM, years	Total pit tonnage (mln t)	Mineable tonnage (mln t)	Grade (g/t)	Metal in mineable tonnes (000' oz)	Recovered metal (000' oz)	NPV (mln \$)
1.1.1	33	6 - 7	63.5	11.8	1.47	555	432	82
1.1.2	33	8 - 9	90.2	15.4	1.46	721	572	116
1.2.1	35	5	71.4	13.2	1.39	588	459	81
1.2.2	35	7	135.2	20.2	1.33	865	691	130
2.1.1	33	12	103.8	22.1	1.21	865	668	96
2.1.2	32	15 - 16	162.4	29.5	1.26	1198	954	140
2.2.1	32	9	111.4	24.0	1.16	894	697	105
2.2.2	31	10 - 11	173.9	31.6	1.21	1232	982	170

A summary of major mining values for the selected discounted optimal pits for 8 scenarios with a cut-off grade of 0.4 g/t are shown in the table below.

Summary of major parameters for Uzboy optimal pits with 0.4g/t Au cut off								
Scenario	Pit #	LOM (years)	Total pit tonnage (mln t)	Mineable tonnes (mln t)	Gold Grade (g/t)	Metal in mineable tonnes (000' oz)	Recovered metal (000' oz)	NPV (mln \$)
1.1.1	33	5	62.9	9.13	1.79	525	410	90
1.1.2	34	7	91.5	12.37	1.74	690	549	126
1.2.1	35	3-4	71.0	9.79	1.75	550	431	90
1.2.2	35	5	134.6	15.47	1.63	812	651	143
2.1.1	34	9	105.2	16.53	1.50	800	625	113
2.1.2	32	12-13	161.3	22.99	1.52	1,122	896	165
2.2.1	32	6	109.8	16.87	1.50	813	636	130
2.2.2	31	8	173.3	23.69	1.50	1,143	914	203

The results of optimal pit analysis show that contained gold in mineable tonnages and recovered metal are lower in optimal pit shells for scenarios using the 0.4g/t gold cut off but generate a greater NPV.

From the suite of optimal pits with 0.4g/t Au cut off, two from scenarios 1.x.x using Measured and Indicated resources only were selected for preliminary pit design and improved scoping study mineable tonnage estimation. Pits for scenario 1.2.1 and 1.2.2 were chosen, and highlighted above.

Preliminary pit design on optimal pit #35 for both scenario 1.2.1 and 1.2.2 was carried out using the main engineering parameters provided by the client and audited by Howe.

The results of the pit design for scenario 1.2.1 were acceptable with relative difference in values between the optimal and designed pit being within 7-8%. Results for scenario 1.2.2 with steeper pit slope angle in the primary zone proved unacceptable with greater than 20% difference in pit volume between optimal and designed pits.

A summary of mining values and the mineable tonnages for the designed pit #35, scenario 1.2.1 are presented in the table below.

Material	Type zone	Volume, (mln m <sup>3</sup> )	Tonnage, (mln t)	Gold grade (g/t)	Metal (Kg)	Metal (oz)
Mineable tonnes	East	1.0	2.6	1.09	2,800	91,000
	West	2.6	6.9	2.00	13,900	447,500
	<b>Sum</b>	<b>3.6</b>	<b>9.5</b>	<b>1.76</b>	<b>16,800</b>	<b>538,500</b>
Waste	East	4.9	12.8			
	West	17.6	46.1			
	<b>Sum</b>	<b>22.8</b>	<b>59.7</b>			
Total material	East	5.9	15.4			
	West	20.2	53.0			
	<b>Sum</b>	<b>26.4</b>	<b>69.2</b>			
Strip ratio	East	1.9	5.0			
	West	2.5	6.6			
	<b>Sum</b>	<b>2.4</b>	<b>6.3</b>			

A breakdown of mineable tonnages by oxide, transitional and primary material type based upon the selected input block model, operating and mine design scenario 1.2.1 (0.4g/t cut off) for the Uzboy gold deposit as at 31 December 2007 are provided below.

Class	Type	SG	Volume (K m3)	Mineable tonnage, (K t)	Grade Au, (g/t)	Contained Au, (kg)	Contained Au, (oz)
East Uzboy Total	OX	2.54	500	1,300	0.93	1,200	39,500
	TR	2.67	100	300	1.21	400	11,500
	PR	2.73	400	1,000	1.27	1,200	40,000
West Uzboy Total	OX	2.54	600	1,500	1.55	2,300	74,500
	TR	2.61	400	1,200	1.62	1,900	60,000
	PR	2.72	1,600	4,300	2.27	9,700	312,500
East and West Total	OX	2.54	1,100	2,800	1.26	3,600	114,500
	TR	2.62	600	1,400	1.54	2,200	71,500
	PR	2.72	1,900	5,300	2.08	11,000	352,500
<b>Total</b>	<b>Mineable tonnage</b>	<b>2.65</b>	<b>3,600</b>	<b>9,500</b>	<b>1.76</b>	<b>16,800</b>	<b>538,500</b>

\*Scoping study mineable tonnage classification is based upon CIM/JORC compliant resource classification categories. Measured and indicated resource blocks which are situated within the pit design are classified as mineable. Inferred blocks are classified along with waste.

\*Tables in this section were prepared in excel which results in some minor variations between the input and the total figures, due to rounding performed.

The volume of scenario 1.2.1 designed Pit#35 for Uzboy West and East zones is equal to 26.4M m<sup>3</sup>, containing a total of 9.5M tonnes of economically mineable material. Waste material totals 22.8M m<sup>3</sup>, which represents 59.7 M tonnes of material. The common mineable tonnes to waste strip ratio is 6.3 tonne per tonne.

**Total oxide, transitional and primary mineable tonnages divided as to Class 1 and Class 2 (instead of proven and probable) at West and East Uzboy, for operating scenario 1.2.1 designed pit #35 as of 31 December 2007 are 9.5Mt @ 1.76g/t Au for 538,500oz Au.**

**Total recoverable ounces of gold after mining losses and processing recoveries have been factored in, are estimated at 352.6k oz Au and 68.1k oz Au for West and East Uzboy respectively. Total recoverable gold for the Uzboy project based upon operating scenario 1.2.1 equals approximately 420.7k ounces Au.**

In ACA Howe's opinion the results of the 16 scenario optimisation scoping study are encouraging, with positive net present values being generated for all input and operating scenarios to optimisation.

**The study found scenario 1.2.1 using CIM compliant block model inputs to optimisation (Measured and Indicated blocks only) most feasible, with positive and acceptable results returned from an operating scenario using an annual production rate of 1.2Mtpa for oxide (currently in place) and 3.6Mtpa for transitional and primary mineable tonnes, overall inter-ramp pit slopes of 45° for all zones and 0.4g/t gold processing cut off. This operating scenario generates an NPV for the project of approximately US\$90M over a 3-4 year mine life.**

Open pit designs for scenario 1.2.1 generate pits to a maximum depth of -12mRL at west Uzboy and 84mRL at East Uzboy. Pits extend from an approximate surface level of 230mRL. Alternate selected optimal pit #35 for scenario 1.2.2, using same inputs as scenario 1.2.1 with steeper inter-ramp pit slope angle of 60° for the primary zone does generate an even greater net present value of approximately US\$143M. However it was impossible to design a valid pit for the optimal shell based upon the inter-ramp pit slope input of 60 degrees for the primary as inclusion of the haul road using this slope angle increased the overall pit volume too much.

To further investigate the option of increased pit slope angle for the primary zone it is recommended optimisation is undertaken using pit slope angles of 50-52 degrees for the primary zone and 40-42 degrees for the oxide and transitional zones, as these will better take into consideration the inclusion of the haul road as part of the preliminary pit design (Nesterov, pers. comm.).

Optimisation using scenarios 2.x.x (which include Inferred resource blocks) proved extremely useful in highlighting the potential to increase measured and indicated resources and, ultimately, mineable tonnage at Uzboy.

Using the same feasible technical-economic scheme as scenario 1.2.1 which accommodates an acceptable pit design, but including Inferred resource blocks, the optimal pit returns an increased NPV of US\$130M. This represents a US\$40M increase on NPV generated by optimisation using Measured and Indicated blocks only.

Significant scope remains for conversion of inferred material to indicated and measured, and from waste to mineable tonnes at both East and West Uzboy.

Future work should involve the conversion of Inferred resources to Measured and Indicated resources for inclusion in mineable tonnage estimation. Optimum pit shell #32 for operating scenario 2.2.1 should be used in plan, cross sections and long sections for effective resource and mineable tonnage upgrade drill targeting.

ACA Howe recommends future work to advance the open pit project study towards Prefeasibility including improved definition and inclusion of:

- Mining parameters and geotechnical data
- Test based hydrogeological parameters
- Equipment, consumables and personnel lists for mining, processing, infrastructure and administration
- Final pit and dump outlines
- Annual pit and dump outlines
- Detailed annual production and waste tonnage and grade schedules
- Detailed flow diagrams for primary processing methods
- Plant site plans
- Inclusion of Financial Status Report costs
- Infrastructure facilities list
- Detailed power and water parameters
- Detailed environmental permit/regulatory framework reports
- Environmental Impact Analysis and environmental impact mitigation plan
- Mine waste management plan
- Provision of solid and hazardous material handling methods
- Provision of spill prevention and emergency response plans
- Environmental capital and operating cost estimates
- Environmental closure costs and accounting methods



- Development schedule chart
- Principle economic parameters including IRR and ROI
- Royalties and cash flows
- Detailed operating parameter sensitivity analysis

In addition, recommendations for further and improved practices, data collection, analyses, sample recovery, domain modelling and geotechnical listed in the ACA Howe report (Hogg, 2008) must be considered prior to moving forward. This work should include the improvement of geotechnical core logging, QAQC sample input practices to include field duplicates, blanks and insertion of CRMs at the sample collection stage.

Significant quantities and grade of primary resources exist below the optimised pit#35 designed pit shell, particularly along the plunge to the southwest at West Uzboy. CIM classified Measured, Indicated and Inferred primary resources below pit shell #35, are presented in the tables 68 to 71.

West Uzboy below pit measured and indicated resources reported at a greater than 0.4g/t Au cut off are 8.16 million tonnes at 1.28 g/t Au for 335,900 oz Au. Inferred resources reported at a greater than 0.4g/t Au cut off are 2.761 million tonnes at 1.36 g/t amounting to 121,100 oz Au.

East Uzboy below pit measured and indicated resources reported at a greater than 0.4g/t Au cut off are 2.659 million tonnes at 0.99 g/t for 84,700 oz Au. Inferred resources reported at a greater than 0.4g/t Au cut off are 4.087 million tonnes at 1.15 g/t for 151,500 oz Au.

Based upon the above pit resource figures ACA Howe also recommends further investigation and definition of primary resources to scope potential economic underground mining operations at Uzboy.