

## CALEDONIA MINING CORPORATION







Blanket Gold Mine
Analyst Visit - 7 February 2014



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- Q3 2013 Results Highlights
- Safety
- A Low Cost African Gold Producer
- Geology
- Mining Method
- Metallurgical Plant
- Exploration and Development
- Outlook

Caledonia – Results Highlights										
		Year 2012	Q1 2013	Q2 2013	Q3 2013	YTD Q3 2013	Q4 2013			
Gold production (oz)	i	45 465	10 472	11 588	12 042	34 102	11 417			
On-Mine Cash Costs (US\$/gold oz)	ii	565	650	584	554	599				
All-in Sustaining Cost (US\$/gold oz)	iii	955	1,007	956	873	942				
Operating Profit after Tax (C\$'m)	iv	8.7	4.6	3.1	3.7	11.4				
Normalised basic earnings per share attrib. to Caledonia shareholders (cents)	٧	41.2	9.0	5.8	7.2	21.9				
Cash Held in Offshore Treasury (C\$'m)		27.9	25.2	22.5	25.0	25.0				
Gross Earnings per Share (C\$/share)	vi	0.54	0.48	0.43	0.48	0.48				

vi. Per share numbers have been adjusted for the 1-10 share consolidation effected on April 12 2013

i. Production relates to 100% of the Blanket Mine in Zimbabwe. Following the implementation of indigenisation in September 2012, Caledonia owns 49% of Blanket

ii. C1 costs per ounce comprising labour, electricity, consumables and on-mine G&A.

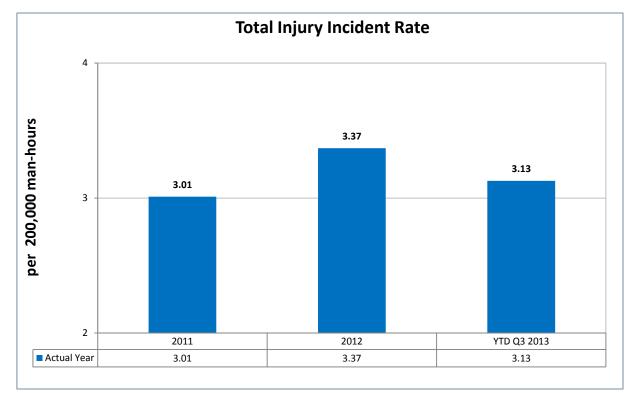
iii. All-in Sustaining Costs includes off-mine G&A and sustaining capital investment

iv. 2012 attributable profit is after \$14.1m non-cash charge in respect of the implementation of indigenisation

v. Normalised profit for 2012 excludes any expenses associated with the implementation of indigenisation and unrealised foreign exchange items.



Blanket's accident and injury rate is low in comparison to Zimbabwean, International and Regional standards.



Total Injury Incident Rate is a measurement of all accidents that have occurred regardless of injury or not, expressed per 200,000 man-hours worked. This includes accidents that could have caused injuries.

- Regrettably, an accident in Q3 2013 resulted in the fatality of one employee.
- Blanket management continues to work at ensuring that safe working procedures are observed and implemented
- All HOD's, Supervisors, Employee Reps and Gang Leaders have been trained by NOSA to improve safety since accident



- Blanket Mine is a relatively shallow mine with the deepest tramming level at 750 metres below surface.
- The mine is dry, with very little water coming from rock strata. All the water which is underground is introduced for drilling purposes. This water is recycled and an excess of 200 cubic metres is pumped to surface daily.
- The ventilation system is mainly dependent on natural ventilation pressure with few booster fans which are located at strategic positions in order to enhance the system. The underground temperatures are moderate and there is no need for refrigeration plants that are common in SA deep mines
- The country/host rock and the mineralised zones are very competent (between 350MPa 380MPa) and require no support throughout the entire life of production stopes. Mined out areas are backfilled with unconsolidated waste mined from development ends. An estimated 34,000t of waste was hoisted through no. 4 shaft in 2013 and backfilled into mined out stopes above 320m level



- Efficient use of well educated labour force and the flexibility to multi-task has effectively reduced the overall cost of labour inputs
- Efficient and productive labour
  - 40 tonnes/employee vs SA average of about 24 tonnes/employee
  - 150 grams Gold/employee vs SA average of about 100 grams Gold/employee
- Beneficial mine environment
  - Moderate depth deepest production level is 750 metres below collar
  - Dry with low humidity
  - No cooling requirement
  - Little need for roof support or pumping
  - Labour is multi skilled
  - Unique and very effective automated skip loading system
- Highly efficient metallurgical plant with 2013 average recovery rate of over 93.4%
- Cost efficient procurement and supply-chain controlled by Greenstone (S.A. subsidiary)
- Excellent Management teams



- Blanket salaries are highly competitive according to Zimbabwean standards
- US\$ 816/employee cost to company per month including all benefits

YTD Q3 2013 Labour Cost by Department									
Department	2013 Labour Cost (US\$)	Cost/Tonne of ore (US\$/t)	Cost/Ounce (US\$/Oz)						
Mining	2 630 690	6.71	57.71						
Engineering	1 866 187	4.76	40.94						
Milling	578 266	1.47	12.68						
Technical	453 434	1.16	9.95						
Safety and Training	223 514	0.57	4.90						
Admin	677 301	1.73	14.39						
HR	176 782	0.45	3.88						
TOTAL	6 606 174	16.84	144.91						



Blanket Mine: Costs per Ounce of Gold Produced (US\$/oz)										
	Year 2011	Q1 2012	Q2 2012	Q3 2012	Q4 2012	Year 2012	Q1 2013	Q2 2013	Q3 2013	
On-mine costs per ounce										
Production costs	671	540	451	418	484	469	554	480	466	
General and administrative costs	66	88	93	86	120	96	96	104	88	
On-Mine cash cost	737	628	544	504	604	565	650	584	554	
Royalty <sup>(i)</sup>	72	118	112	117	120	116	112	96	93	
Community costs relating to ongoing production	9	14	90	163	12	76	84	-	1	
Permitting costs related to current operations	1	2	3	4	12	5	2	3	3	
3 <sup>rd</sup> party smelting, refining and transport costs	8	6	6	6	8	6	7	7	7	
Operating cost per ounce (ii)	827	769	754	793	755	769	856	689	657	
Corporate general and administrative costs (incl. share based remuneration)	152	94	89	138	146	117	99	116	108	
Reclamation and remediation of operating sites	3	2	2	2	2	2	2	2	2	
Exploration and study costs	-	-	-	-	-	-	1	1	2	
Capital expenditure	183	68	68	53	85	67	51	147	105	
All-in Sustaining Cost per ounce (ii)	1,165	933	912	986	988	955	1,007	956	873	
Costs not related to current production										
Community costs	-	-	98	-	-	25	-	181	8	
Permitting costs	-	9	16	18	26	17	3	3	3	
Exploration and study costs	-	-	_	_	-	_	1	3	3	
Capital expenditure	12	28	20	28	41	29	45	69	112	
All-in Cost per ounce (ii)	1,177	970	1,047	1,033	1,055	1,027	1,056	1,211	999	

<sup>(</sup>i) Blanket pays a royalty to the Zimbabwe government on gross revenues. Since 1 January 2012 the royalty rate has been 7% prior to which it was 4%.

<sup>(</sup>ii) Non-IFRS performance measures such as "operating cost per ounce", "all-in sustaining cost per ounce" and "all-in cost per ounce" throughout this document. Refer to Section 10 for a discussion of non-IFRS measures.



# Reserves and Resources Negligible impact of a Lower Gold Price

#### MINERAL RESERVES as at December 31, 2012

Indicative comparison to show the effect of the lower Gold Price

Based on a Gold Price of US\$1,500/oz				Estimate based of	n a Gold Pric	Difference		
Classification	Tonnes	Grade (Au g/t)	Gold Content (oz)	Tonnes	Grade (Au g/t)	Gold Content (oz)	Tonnes	Gold Content (oz)
Proven Ore								
Total Proven Ore including Pillars*	1 767 000	3.93	223 000	1 681 000	3.98	214 700	-4.9%	-3.7%
Probable Ore								
Operating and Development Areas	2 140 000	3.66	252 000	2 002 000	3.73	240 100	-6.4%	-4.7%
Total Proven + Probable Ore	3 907 000	3.78	475 000	3 683 000	3.84	454 800	-5.7%	-4.3%

#### **MINERAL RESOURCES**

#### Indicative comparison to show the effect of the lower Gold Price

	Estimate based or	n a Gold Pric	Difference					
Classification	Tonnes	Grade (Au g/t)	Gold Content (oz)	Tonnes	Grade (Au g/t)	Gold Content (oz)	Tonnes	Gold Content (oz)
Indicated	448 000	3.81	54 900	400 000	3.95	50 798	-10.7%	-7.5%
Inferred	2 290 000	5.30	**	2 289 000	5.30	**	0.0%	**

Note \* Pillar tonnages are discounted by 50%

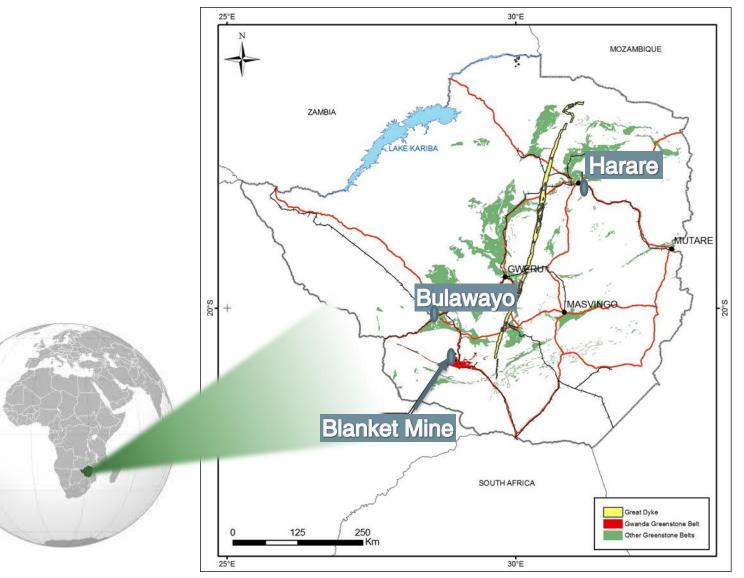


## **Geological Setting**

- Situated on the NW limb of the Gwanda Greenstone Belt
- Occurs in N-S striking sequence of Greenstones
- Mineralisation occurs in 50m wide shear zone in metabasalts
- Shear zone and ore bodies have a near vertical attitude
- Two styles of mineralisation occur:
  - Disseminated Sulphide Replacement (DSR) type mineralisation
  - Quartz Reef Mineralisation
  - About 75% of Blanket's production comes from the DSR deposits
  - Eroica and Lima make up the balance of the production
- Blanket Section will become a major source of production when the 6 Winze Project is commissioned in 2016

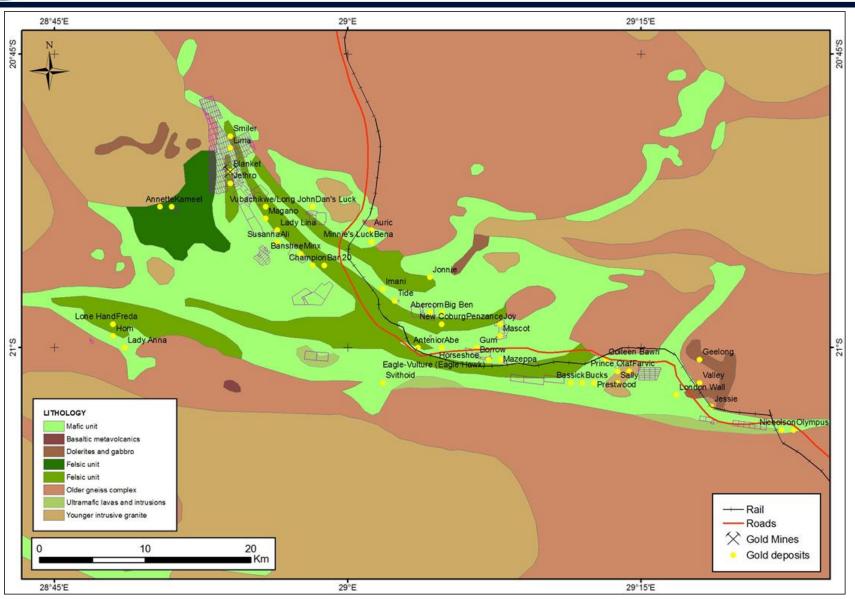


# Simplified Geological Map of Zimbabwe showing the location of the Blanket Mine



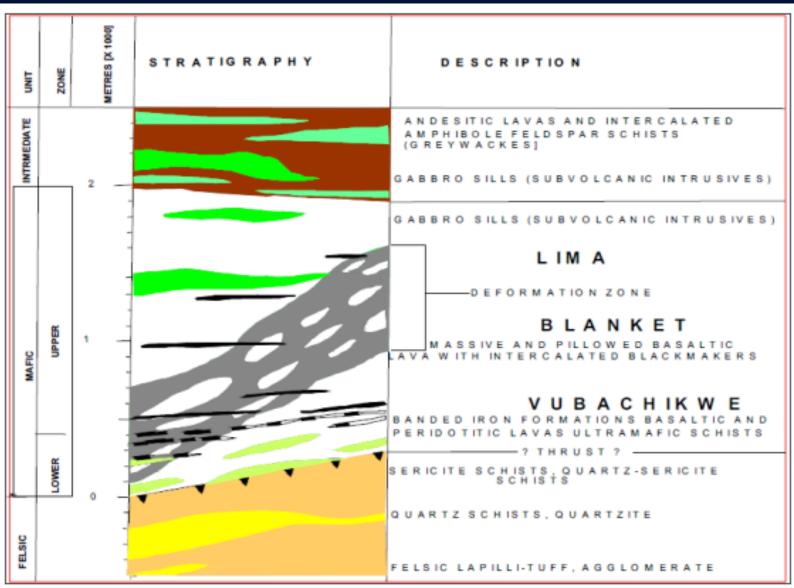


## Regional geology of the Gwanda Greenstone Belt and location of the Blanket Mine Claims





## **Geology - Stratigraphy**





#### **Development and Styles of Mineralisation**

- Disseminated Sulphide Replacement (DSR) Type Mineralisation
  - AR Orebodies
    - AR Main
    - AR South
  - Blanket Ore Bodies No's 1 to 5
  - Lima
- Quartz Reef Mineralisation
  - Blanket Quartz Reef
  - Eroica
  - Jethro



#### **Reef Characteristics**

#### Disseminated Sulphide Replacement (DSR) type mineralisation

- Silicified core zone with biotite and chlorite schist, with fine-grained arsenopyrite on the periphery
- Marginal zones more chlorite and carbonate rich but lower gold grades
- Most of the gold is associated with the fine arsenopyrite (not coarse)
- Bodies range in width up to 50m (AR ore bodies which are lensoid in cross section and have a strike to width ratio of about 1.5 to 1).
- The remaining DSR bodies have widths up the 10m with a strike length of between 60m and 90m

#### Quartz Reef Mineralisation

- Quartz filled shear zones have long strikes but are not uniformly mineralised
- Clean quartz to sheeted quartz-carbonate veins
- Gold grades higher and therefore used as grade sweeteners
- Gold occurs mainly in free form and sulphide content is low



## **Geology – AR South and AR Main Ore**



- Siliceous core zone with arsenopyrite and biotite stringers
- Higher grade zone
- DSR type ore

- Black siliceous ore with fine-grained arsenopyrite stringers
- Medium grade ore
- DSR type ore



## **Geology – Eroica Ore**

- Sheeted quartz-carbonate vein with disseminated arsenopyrite
- High grade quartz reef ore





## **Geology – Lima Ore**

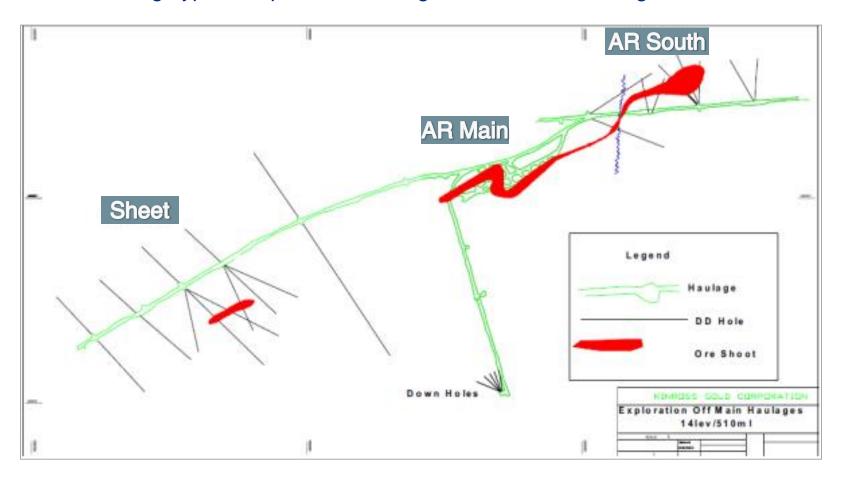
- Stringers of medium-grained arsenopyrite in carbonate replacement reef
- DSR type mineralisation
- Medium grade ore





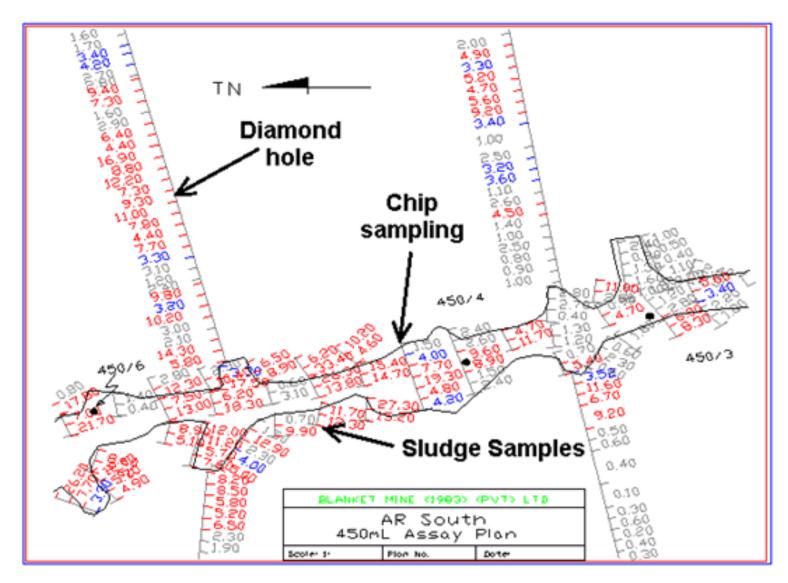
## **Geology – Exploration Drilling**

#### Plan Showing Typical Exploration Drilling from the Main Haulage





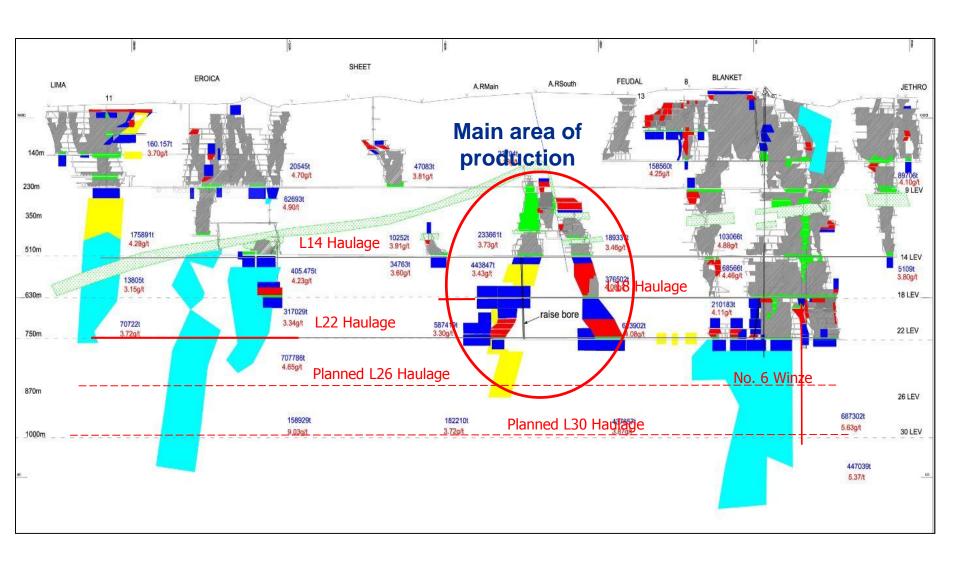
# Location of diamond core, chip and sludge sampling at Blanket Mine





# Assay plot with development showing the manually constructed outline of a mineralised domain





Blanket's first gold production was recorded in 1906. Two mining variants of sublevel open stoping (Underhand and Long-hole stoping) are currently being employed. The application/choice of these two mining methods is dependent mainly on the orebody width, with orebodies less than 3m wide favouring Underhand stoping while Long-hole open stoping is employed to those which are more than 3m wide. The preparatory development work for these mining methods involves the following:

- Shaft sinking and mining successive main haulages at 120 metres vertical depth intervals followed by footwall development with cross-cuts to the mineralised zones.
- Subsequently sub-levels are mined at 15m vertical intervals above with muck being lashed by hand into wheel-barrows and passed down a common rock pass to the loading chutes.
- Stoping preparations in narrow ore bodies (<3.0m) begin by mining box raises sited at 15m intervals along the haulage. These are usually mined from the foot wall ("f/w") of the ore body to 15 metres above the haulage drive. The extreme end raises are equipped as ladder ways while the rest have loading boxes constructed under them.

- On wider ore bodies (>3.0m), air loader operated draw points are mined instead of boxes. This is because wider ore bodies are mined using Long-hole open stoping methods which generates larger rock sizes, than jackhammers do. For ore bodies up to 20m in width, the haulage is centrally located within the ore body with 8-10m long draw point crosscuts, spaced 15m apart, mined either side of the haulage.
- At the end of these crosscuts, draw point raises are pushed 15m to the conning level above. For ore bodies less than 12m wide, haulages are mined on the f/w of the ore body with draw point crosscuts spaced 15m apart, pushed to the hanging wall ("h/w") contact.
- For ore bodies less than 12m wide, haulages are mined on the f/w of the ore body with draw point crosscuts spaced 15m apart, pushed to the h/w contact. Raises are then mined from these draw points to the conning level above. These draw points are mined 3.0m x 3.0m with rail mounted LM56/57 pneumatic loader, which muck the ore into 2.3m³ side tipping Granby cars.



## Mining Method – Underhand Stoping

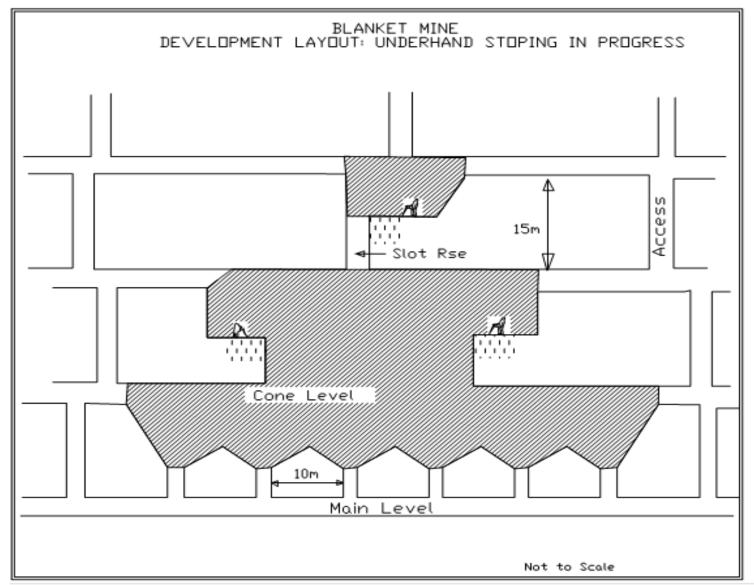
#### **Underhand stoping**

Stoping commences by slyping around the central raise on the cone level to expose both the h/w and f/w assay contacts and will continue in retreat fashion for 5m either side of this raise. Conning then commences by blasting into the slot taking the full width of the ore body. The cone progresses down to about 3m above the main level. Conning starts from the slot retreating in both directions on strike. As soon as the conning retreats a sufficient distance from the slot (such that men are safe from the rocks falling from above) a new stope is commenced at the central raise on the next level above. This process will be repeated on the sublevels above until a sufficient number of stope faces are in production above the cones to give the required tonnage.

Holes are drilled at 0.80m burdens by 0.80m spacing. The staggered hole-pattern goes to a 2m depth. The holes, drilled at 70 to 80 degrees towards the open stope, average 34mm in diameter. Only one bench, about 7m long, is mined at a time until it holes through to the level below. Holes are charged with Anfo packaged in plastic paper tubes about 0.60m long by 25mm diameter or simply pumped into the blast holes with a compressed air Anfo loader if the holes are not wet. Hole initiation is by 2.1m capped fuses primed by 28 by 280 Emulite cartridges. The average stope width is about 2.0m



## Mining Method - Typical Underhand Stoping Method (Not to scale)





#### Long-hole stoping

The preparatory development for this mining method is as described above.

On the conning level the ore body is slashed out to assay limits from the h/w to the f/w. CH123 and Konkolas (Seco36) are used to drill long holes of 51-57mm diameter. The metres drilled per shift vary from 25 to 40 depending on the drilling pattern with a maximum burden of 1.3m by 1.5m spacing.

Charging is by 12 metre long nonel handidets primed by 45mm x 560mm ammonium based Emulite cartridges. Anfex is pneumatically pumped to half way up the hole with a booster cartridge of 45mm x 560mm Emulite placed into the hole before Anfex pumping resumes.

Nonel handidets have a bottom delay period of 500 milliseconds and a top delay of 25 milliseconds. Where two to three rings are blasted a chevron-timing pattern is used.

In 2010 the No4 Shaft Expansion Project included the installation & commissioning of the three grizzlies on 22 level, which feed into the underground silos which feed the underground crushing station and automated skip loading system for the 6 tonne ore skips. This system has a capacity of 3,000 tonnes per day.

No 4 Shaft has a 500kW DC Double Winder with a RECTIREG Control System installed, and is equipped with two 6 tonne capacity ore skips. The winder drums are being fitted with Lebus Sleeves and have sufficient rope capacity for a 1350m Winder. When required Inspection Cages with an Ecam can be fitted below the skips.

The main haulage levels below shaft collar (BSC) are at:

7 Level which is 230m BSC

14 Level which is 510m BSC

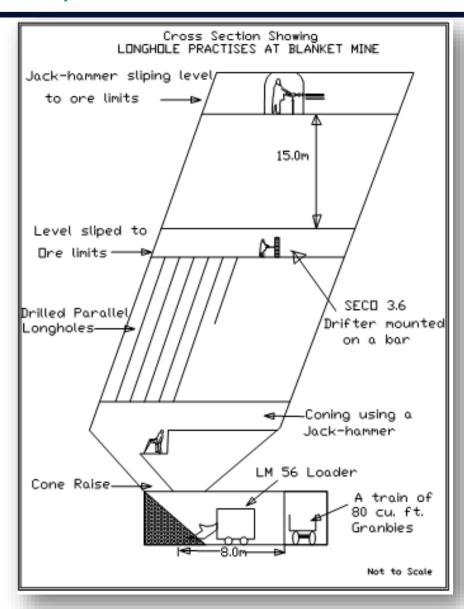
18 Level which is 630m BSC

22 Level which is 750m BSC

26 Level - 870m BSC and 30 Level 990m BSC will initially be developed from No 6 Winze. Current shaft bottom is 825m BSC and is equipped with Pumping and Spillage Handling Stations

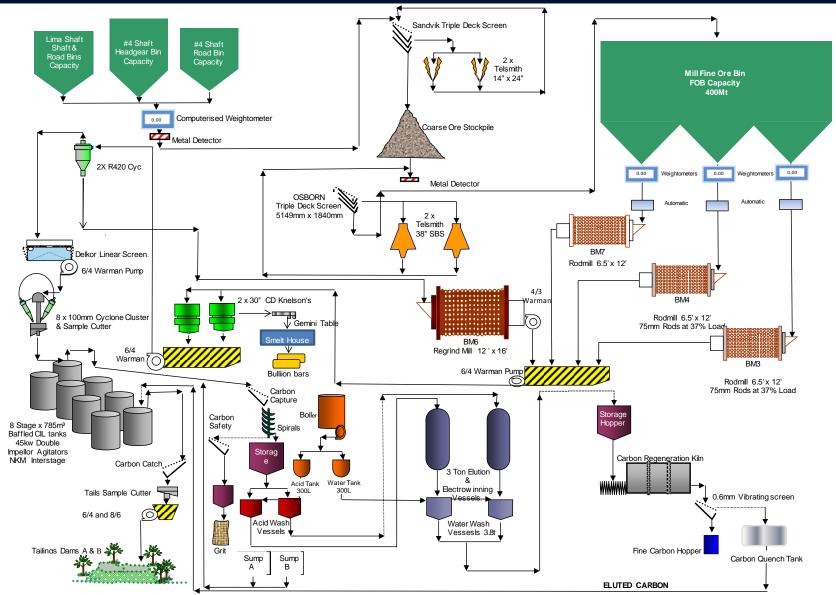


## Mining Method - Typical Long-hole Stoping Method (Not to scale)



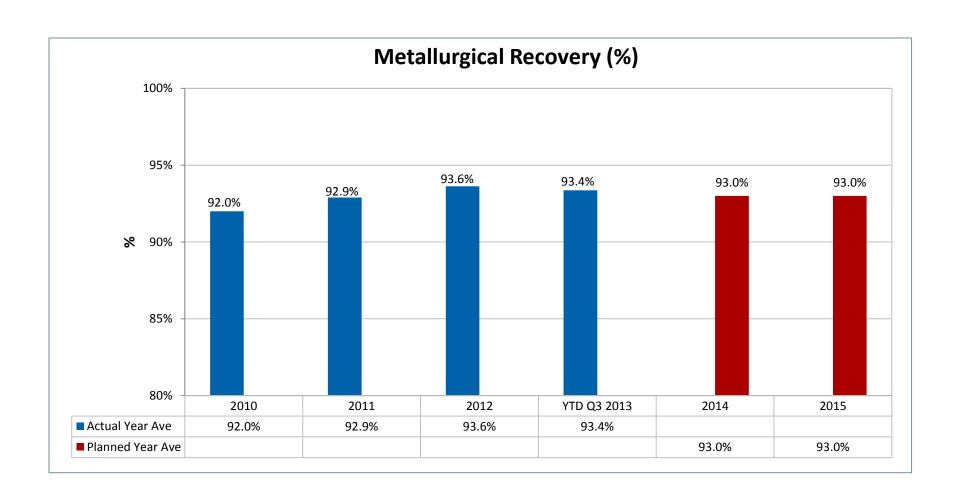


## **Metallurgical Plant**





## **Metallurgical Recovery**



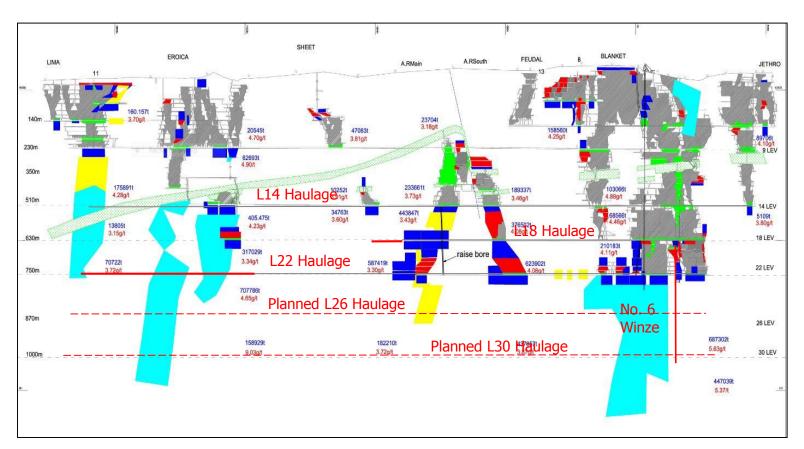


### **Metallurgical Plant Improvements**

- Caledonia undertook extensive diagnostic leach test work when it purchased the mine from Kinross in 2006. Metallurgical test programs continue to be run on an ongoing basis, with a view to optimising the metallurgical recoveries from Blanket's satellite properties.
- As a result of this test work new down-pumping CIL Agitators and tank baffles were designed and installed along with the liquid cyanide storage facility, the ring-main type cyanide delivery system and an automatic cyanide dosing & monitoring system.
   Metallurgical recoveries improved from +-70% to over 92% and cyanide consumption dropped from 3kg/tonne to the current +-700 grams/tonne.
- In order to improve the feed size and throughputs of the rod mills an Osborn 5149mm x 1840mm Triple deck screen and two Telsmith 38H Gyratory crushers were installed to replace the then secondary and tertiary crushing circuits, and a third rod mill was added to the primary regrind circuit.
- In order to ensure the improvements made to the underground and metallurgical plants were realised, a 10MW Cat diesel power station was installed with a SCADA control system which monitors and accommodates any interruption in grid power, and allows both the plant and underground to operate with only a minor interruption of minutes when the grid power fails.



## **Exploration and Development: Blanket on-mine activity**



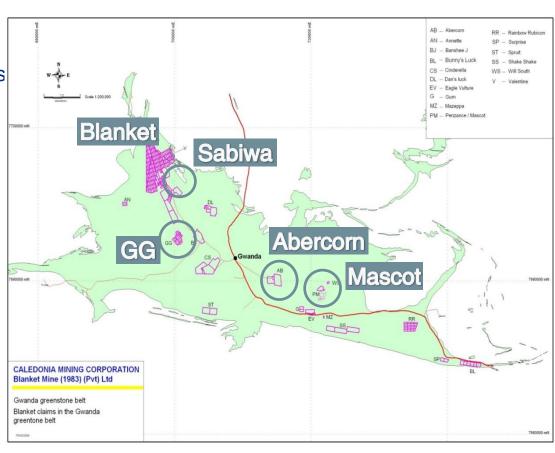
- Extensions to the 14 and 18 Level Haulages will open up new mining areas
- No. 6 Winze Project (sinking to 1080m) and develop new 26 and 30 Level Haulages
- Cross-cuts from the 18 and 22 Level Haulages provide platforms for the ongoing resource exploration drilling program below 750m



## **Exploration and Development: Satellite Projects**

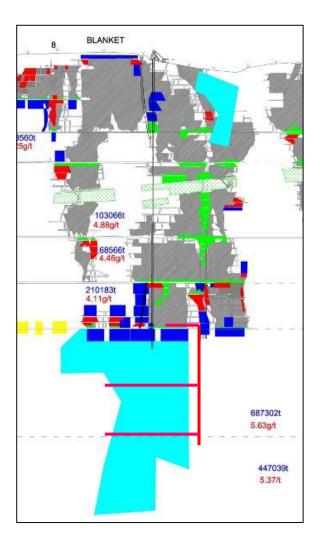
#### 18 exploration projects located on the Gwanda greenstone belt

- GG Project (7km from Blanket)
  - Shaft sunk to 120m.
  - Underground development continues on 60m, 90m and 120m levels
  - Lateral drilling to define resources
  - Metallurgical test work in progress
- Mascot Project (42km from Blanket)
  - Shaft infrastructure refurbished
  - Underground development and exploration on 4 levels
  - Lateral drilling to define resources
  - Metallurgical test work in progress
- Sabiwa and Abercorn
  - Next projects to be addressed





## **Exploration and Development: No.6 Winze Project**



- Exploration to improve our understanding of the inferred Blanket ore bodies below 750m
- Shaft sinking to access the existing inferred resource on the Blanket ore body below 750m has commenced
- Deepen the existing No.6 Winze from 750m to 1,060m
- Two new haulage developments at 870m (28 Level) and 990m (30 Level)
- Ore hoisted up No.6 Winze will be transferred into the No 4 shaft crushing and loading system for hoisting to surface using existing surplus hoisting capacity
- No6 Winze Target production: 600tpd (24Koz pa)
- Preproduction Capital of US\$4 million



**AFTER** 

Collar level for Stage Winches before installation

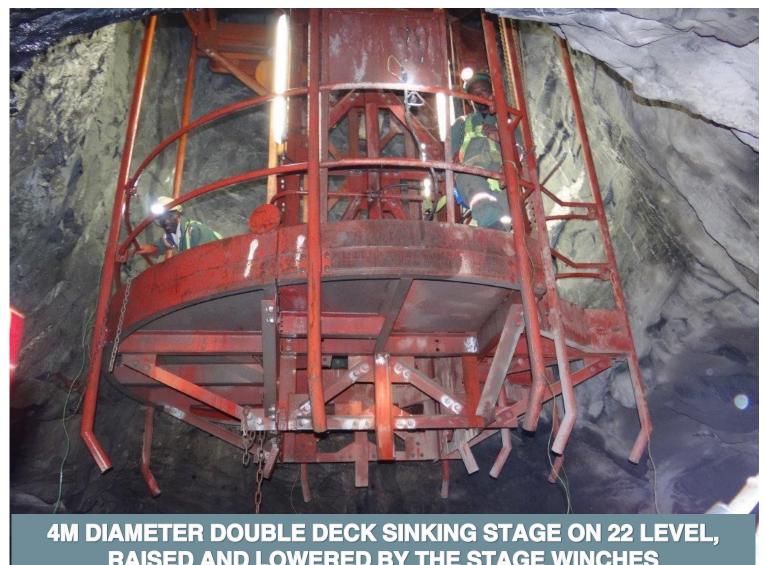


Collar level completed installation

BEFORE



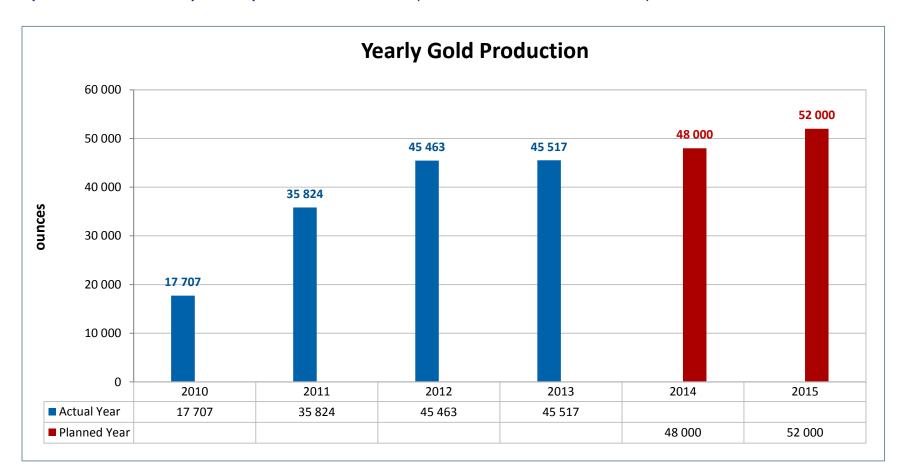
## Stage on 22 Level



**RAISED AND LOWERED BY THE STAGE WINCHES** 



#### Gold production has quadrupled since 2009 (11,027 oz for 9 months)



Source: Caledonia MD&A's

- Continued strong operational performance at Blanket
  - Operational production and costs well under control
- Continued progress as planned on development and exploration at Blanket
  - Target 2014 production of 48,000 oz.
  - Target 2015 production of 52,000 oz
- Caledonia's financial position remains robust: \$25m of external cash (September 30, 2013)
- Expansion program progressing well with sinking of 6 Winze gaining momentum
- Blanket is fully compliant with Zimbabwe's indigenisation requirements and its indigenisation arrangements are working as envisaged
- Note: The production targets will depend on the future gold price and the resultant rate of capital spend



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## QUESTIONS