



Cam and Motor Gold Mine

03-04 August 2017

SAIMM CONFERENCE

Cresta Lodge

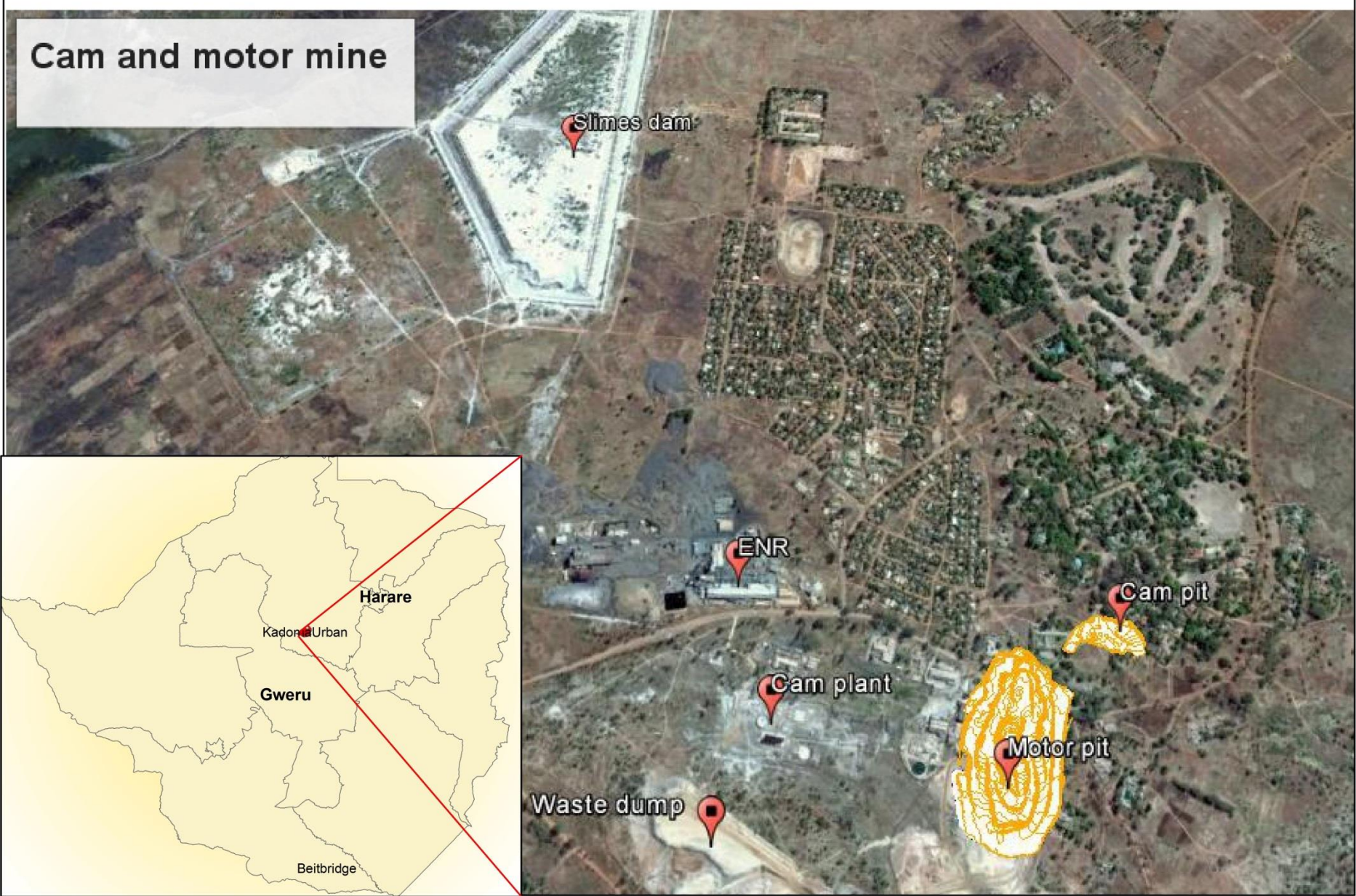
SEQUENCE OF PRESENTATION

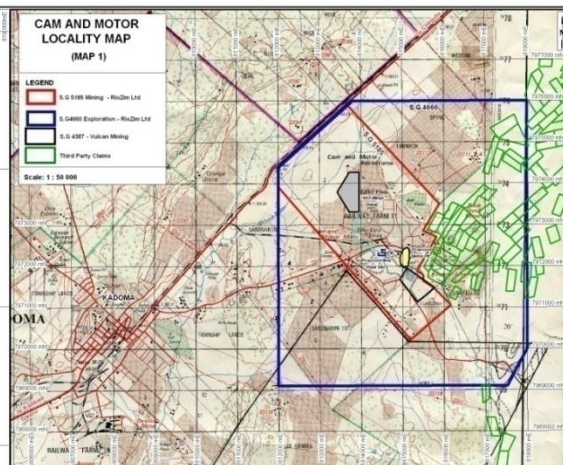


1. Background.
2. Regional Geology and Historical Production
3. Geology and Orebody Modelling
4. Mine design
5. Open Pit Mining
6. Metallurgy

BACKGROUND

Cam and motor mine











LEGEND

RIOZIM LTD

CAM AND MOTOR MINERAL TENURE AND INFRASTRUCTURE MAP (MAP 2)

Date: 31/10/2013
 Author: RM
 Office: Harare
 Drawing: STPL2
 Scale: 1:15000 Projection: UTM Zone 35, Southern Hemisphere (ARC 1950)

0 500 1000
meters

Boundary	No.	Owner	Original Issue Date	Expiry Date	Purpose
	S.G 5188	RioZim Ltd	28/09/2009	17/07/2027	Mining
	S.G 4376	Vulcan Mining	08/12/2007	02/09/2015	Dump Mining
	S.G 4660	RioZim Ltd	10/05/2006	16/05/2013	Exploration
	8 Blocks	T&J Rocks	7/10/2001	?	Mining
	24 Blocks	DCM&R, C Edwards & Sons	02/06/1999	?	Mining
	R Area 745	Kadoma Municipality	13/05/1991	-	Against Prospecting

Cam and Motor Mining History



1. Mining history dates back to early 1900s.
2. Cam and Motor Mining company floated on the London Stock exchange in 1910.
3. Mines produced 150 metric tonnes of gold (4.67 million ounces) from 11.76 million tonnes of ore.
4. Mines developed down to 2063m from surface on a narrow reef.
5. Mines closed down in 1968 when the gold price was USD35 per ounce (currently price is around USD1250.00 per ounce).
6. From 1968 to the late 1990s there was dump treatment of the tailings.

Recent Work done by Rio Zim

1. Compilation of old Exploration data commenced in October 2008.
2. Diamond drilling commenced in August 2009 and ended in March 2011.
3. In-house and Independent resource assessment done by International SRK Mining Consultants (2011-2013)
4. Pit design done following the Resource definition and Metallurgical testwork .
5. Cam & Motor Mine re-opened in April 2015 and processed ore at the rented Dalny Mine Plant.
6. In January-October 2016 Cam and Motor plant was installed and commissioned in November 2016.

**REGIONAL GEOLOGY
&
HISTORICAL PRODUCTION**

Historical Gold Production from Midlands Greenstone Belt

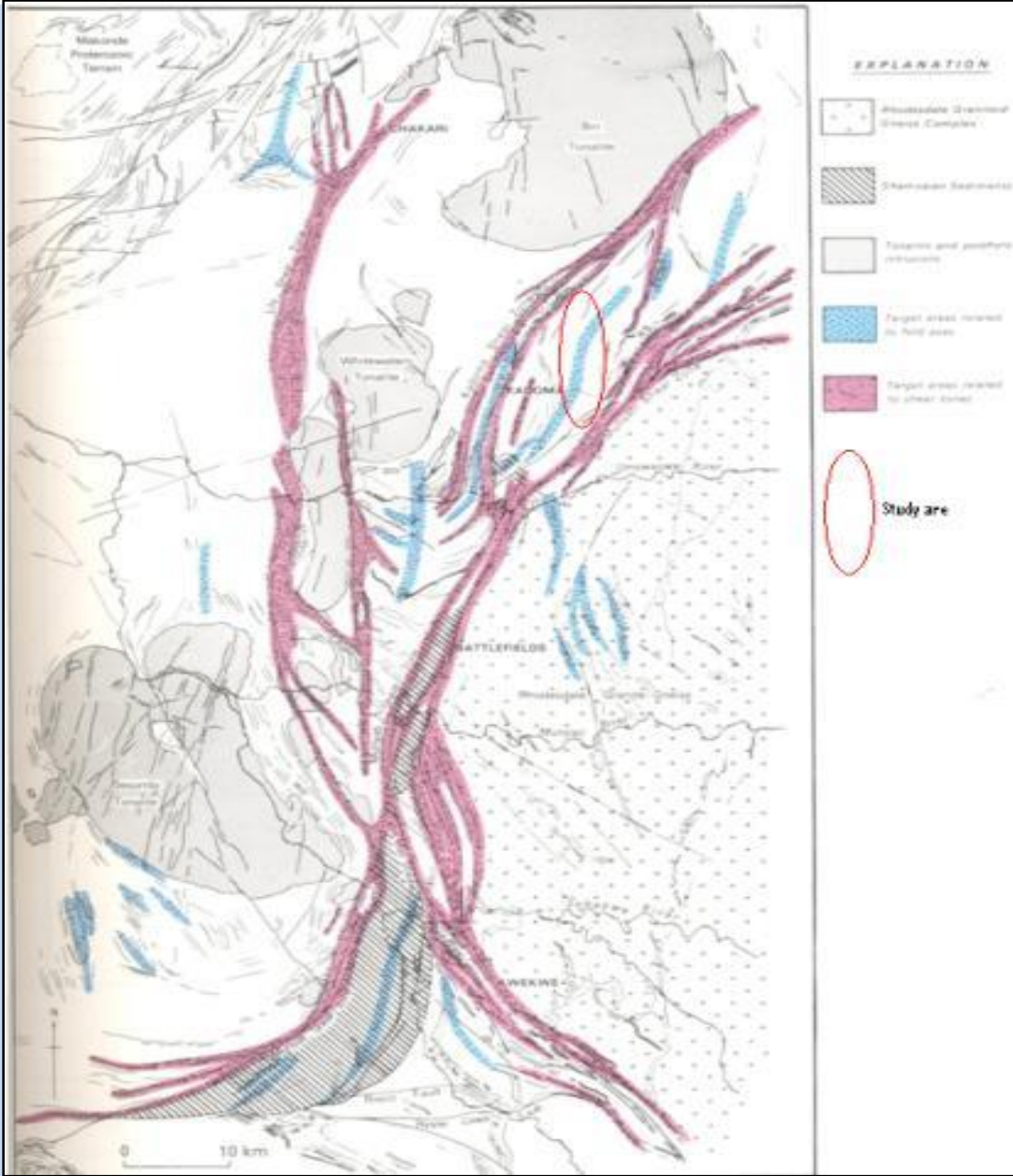


Midlands Greenstone Belt Main Gold Producers



Mine	Historical Gold Produced	Grade
	(tonnes)	(g/t)
Cam and Motor	150.00	12.53
Globe and Phoenix	124.00	27.00
Dalny	53.30	7.80
Golden Valley	31.00	22.00
Gaika	22.00	8.60
Connemara	19.00	4.50
Indarama	15.00	9.40
Venice	4.40	5.70

Regional Structural Deformation Zones



Midlands Greenstone Belt



1. It's the largest of all the Archean Greenstone Belts in Zimbabwe (located at the Centre of Zimbabwe)
2. Most productive gold belt (>400 tonnes Au mined to date) in Zimbabwe and stretches for 150km with average width of 50km (altitude varies from 900-1300m above sea level).
3. Stretches from Kwekwe to Kadoma, touching the Gweru greenstone belt to the south and the Chegutu greenstone belt to the north.

Midlands Greenstone Belt General Geology

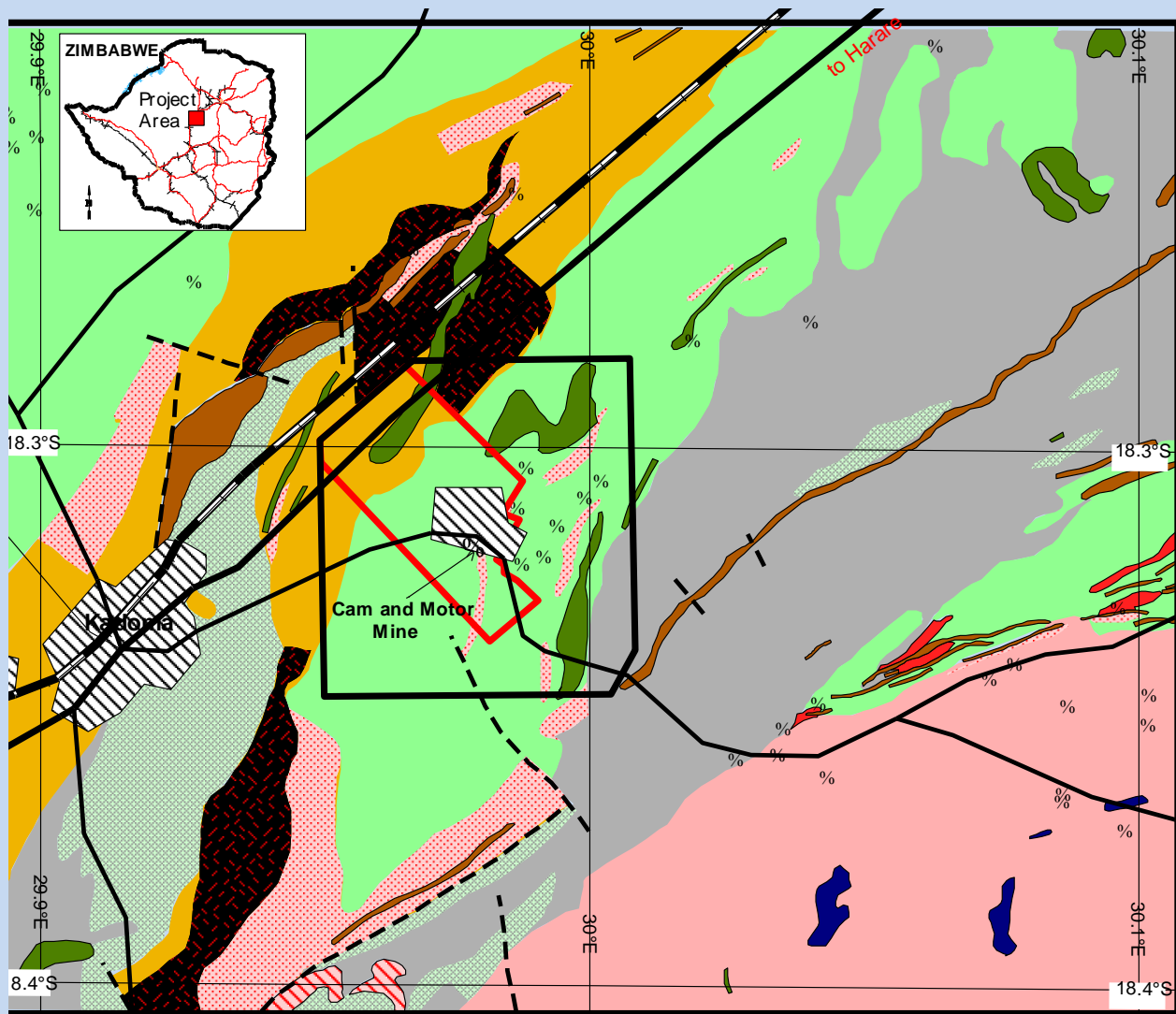


Comprises of the following Litho-stratigraphic units

- a) Rhodesdale Granitoid Gneiss Complex
- b) Greenstone Belt Metavolcanics lithologies(Bulawayan)
- c) Shamvaian Sediments
- d) Tonalitic granitoid plutons and other major felsic intrusions.

GEOLOGY & OREBODY MODELLING

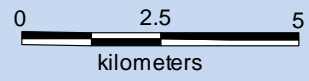
Regional Geology of the Cam and Motor Project



CAM & MOTOR PROJECT REGIONAL GEOLOGY MAP

LEGEND

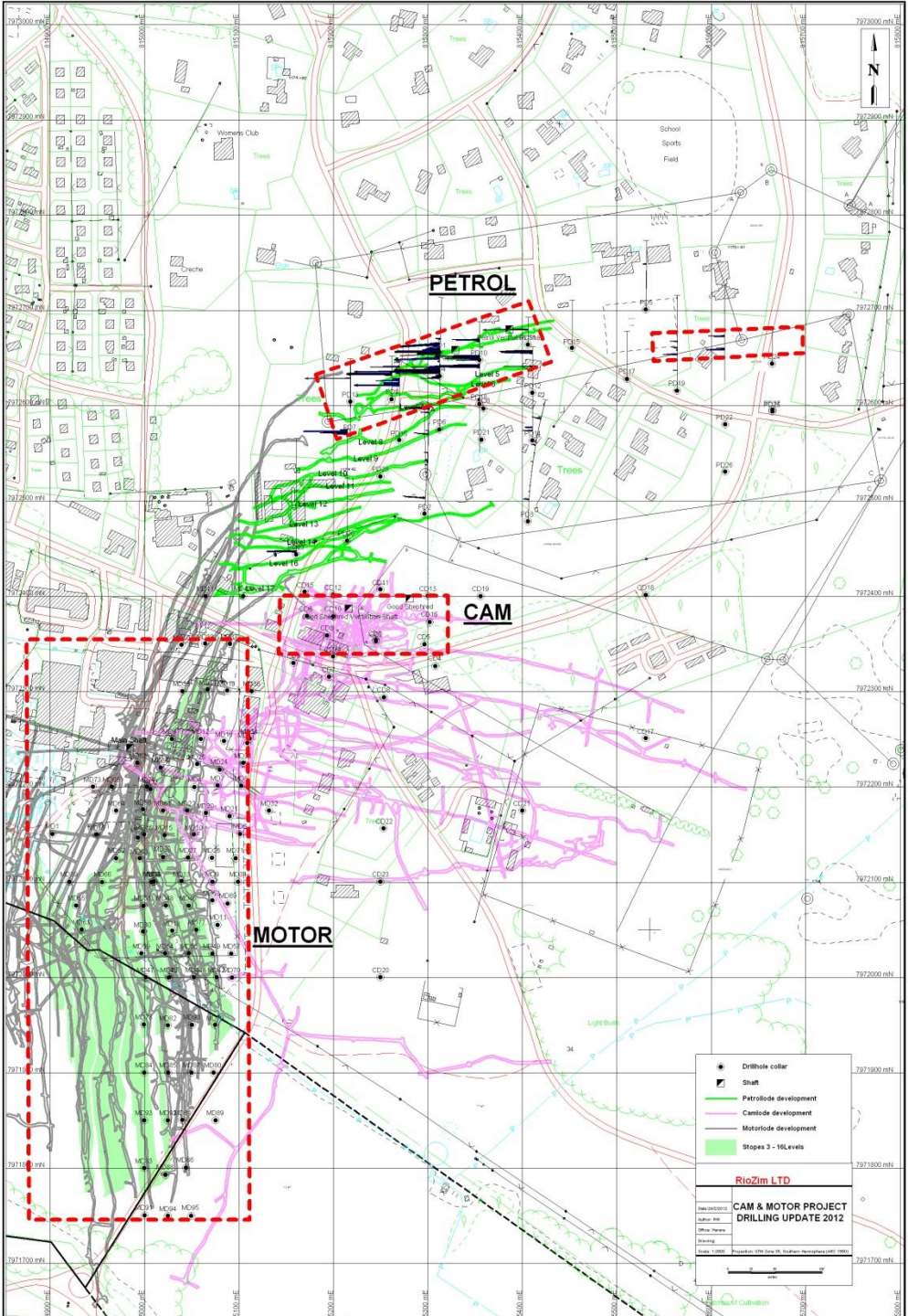
- Mine
- Mining Grant
- Prospecting Grant
- Fault line
- serpentine rock*
- Ironstone*
- Felsite*
- Syenite porphyry*
- Dolerite/Gabbro*
- Rhyolitic quartz mica schist*
- Arkosic quartz mica schist*
- Granite*
- Felsic sediments*
- Andesitic greenstone*
- Basaltic greenstone*
- Greywack, argillite*

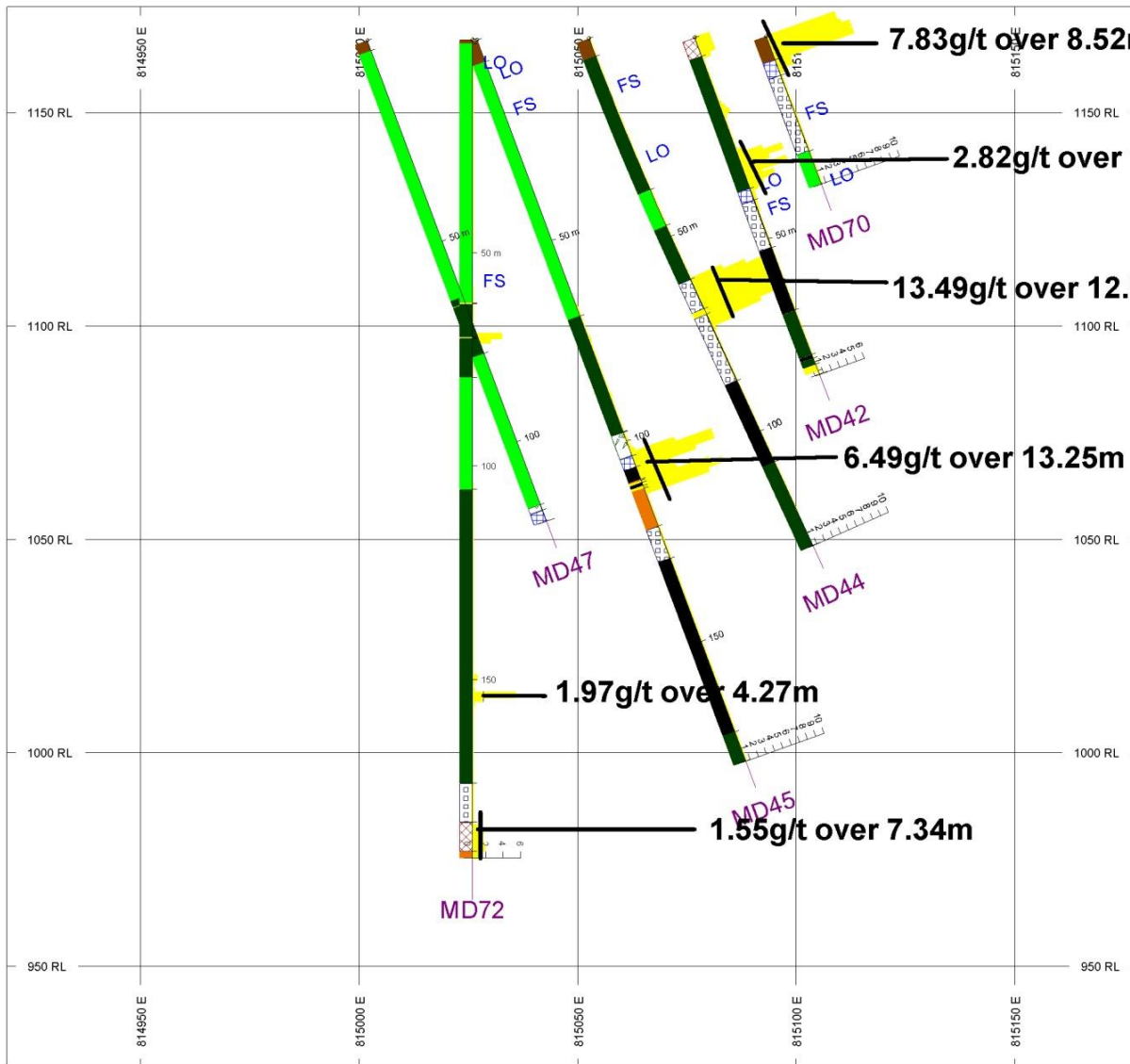




Diamond Drilling (August 2009 -31 March 2011)

Section	No. of Holes	Meters Drilled
Motor	95	12,317
Petrol	28	4,054
Cam	23	3,113
TOTAL	146	19,484



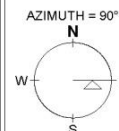
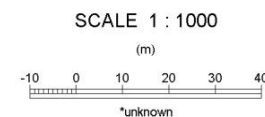


BAR GRAPHS	L/R	COL	RANGE
Rio Au (g/t)	R	Yellow	0.5

ROCK CODES	PAT	LABEL	DESCRIPTION
Code	SST	Sandstone	Sandstone
	S	Soil	Soil
	DM	Dumped Material	Dumped Material
	MOV	Mined Out Void	Mined Out Void
	DL	Dolerite	Dolerite
	MDL	Meta dolerite	Meta dolerite
	MDHA	Sericitised/silicified/mineralised metadolerite	Sericitised/silicified/mineralised metadolerite
	QV	Quartz Vein	Quartz Vein
	STB	Intercalations of sandstone and black shale	Intercalations of sandstone and black shale
	BS	Blackshale	Blackshale

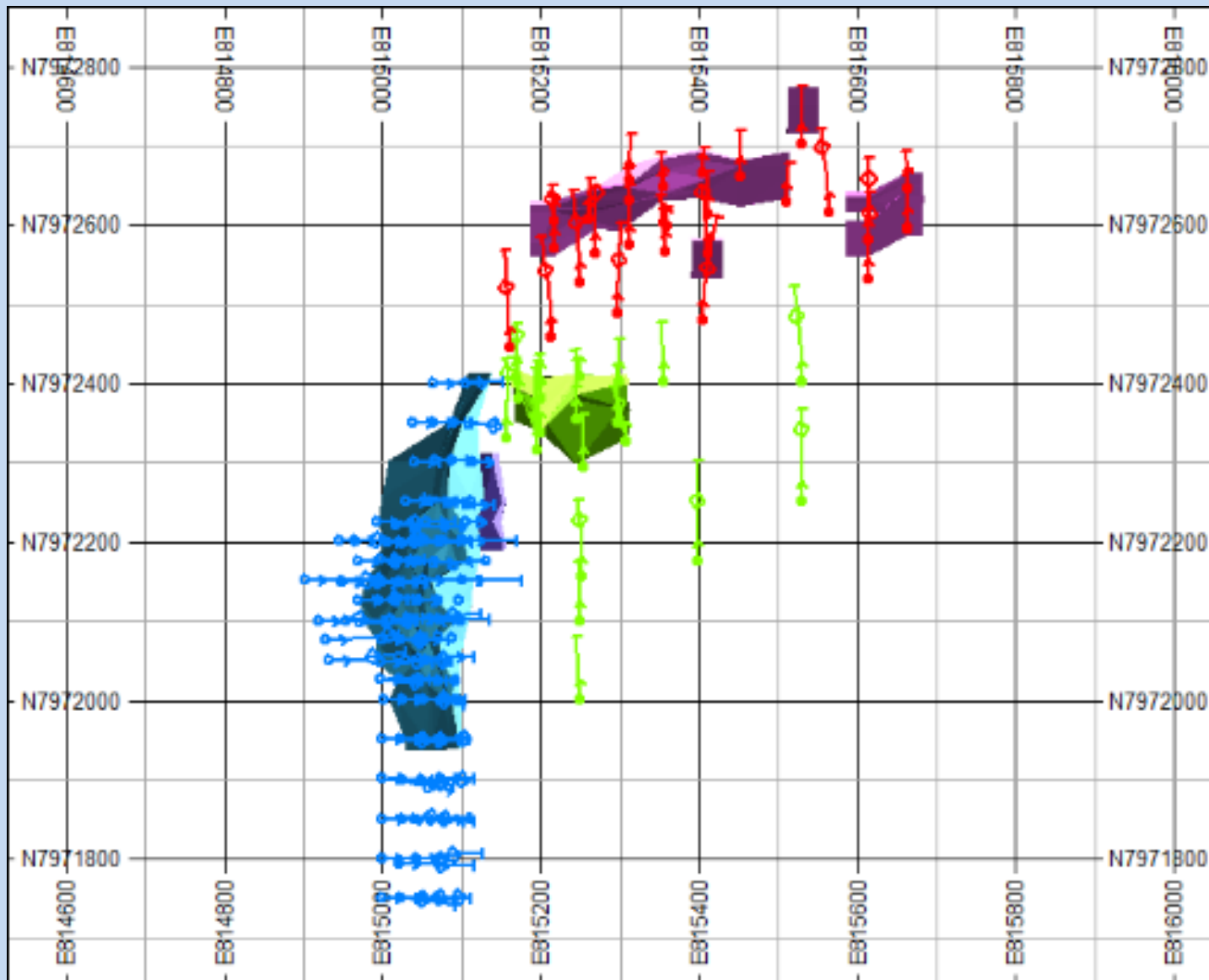
POSTED TEXT	L/R	TEXT	ITEMS
Codes	R	All	

SECTION SPECS:
 REF. PT. E, N 815049 m 7972000 m
 EXTENTS 259.4 m 248.5 m
 SECTION TOP, BOT 1175 m 926.3 m
 TOLERANCE +/- 11.35 m



Riozim
 Cam & Motor Mine
 Cam Grid
 Section 0

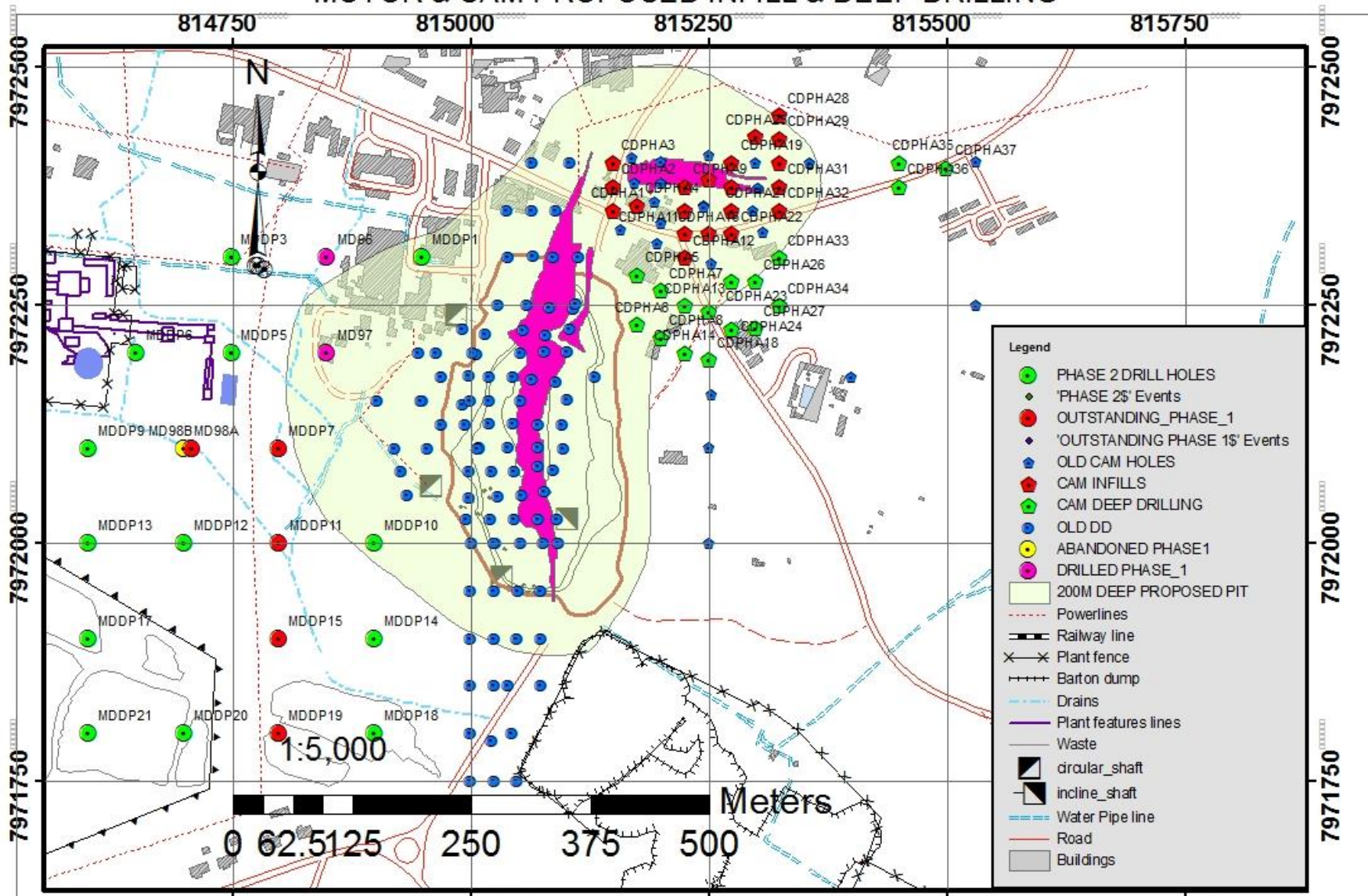
Cam and Motor Orebody modelling





Deep Mine Exploration & Evaluation

CAM & MOTOR MINE MOTOR & CAM PROPOSED INFILL & DEEP DRILLING



Motor Deposit Orebody Characteristics

- General North-South trending
- Dip 70 degrees west
- Plunges 65 degrees south west
- Average width 15-20m
- Orebody structurally and lithologically controlled.
- Gold mineralised units include meta-basalts, sandstones, black shale and quartz veins

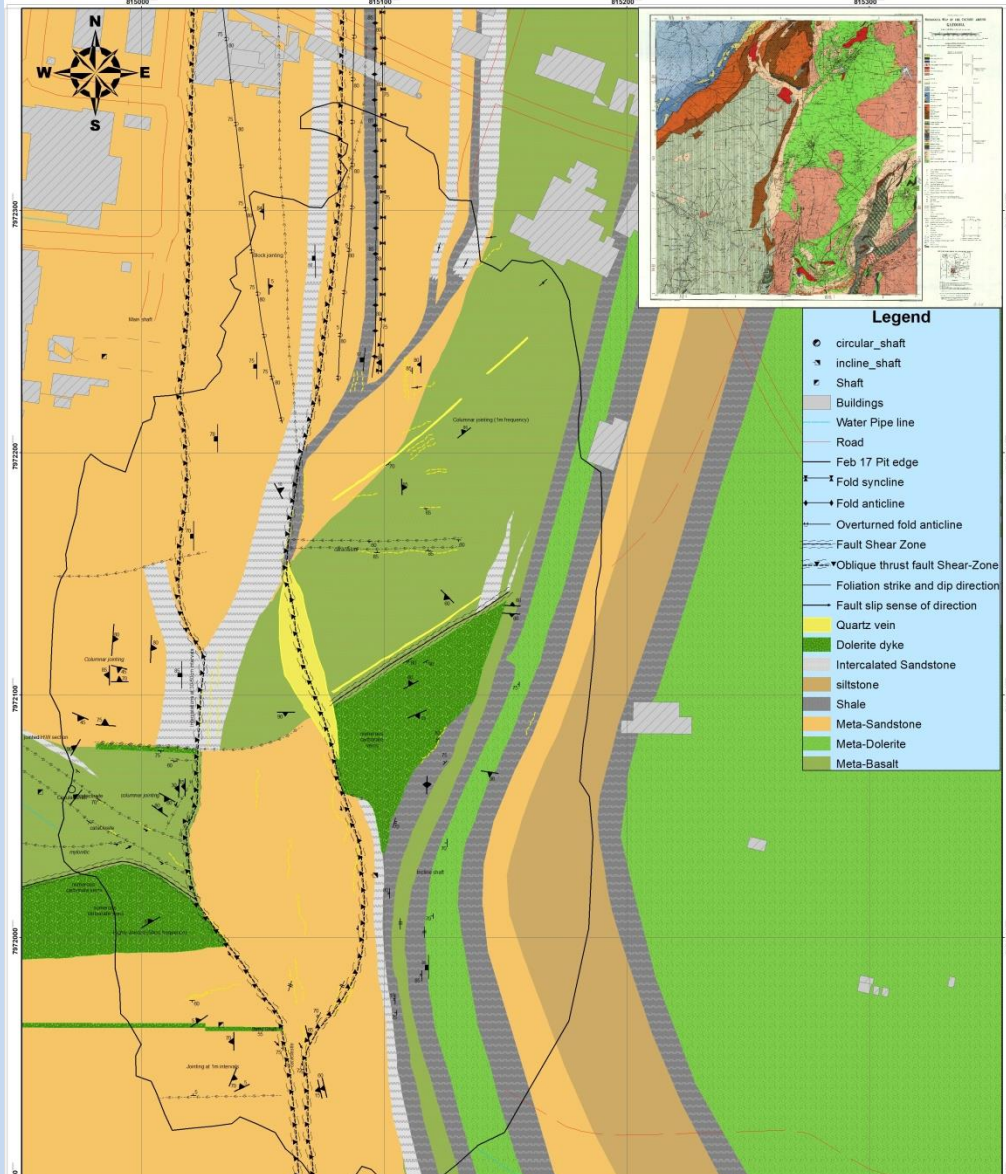
Cam and Motor Main Lithological Units

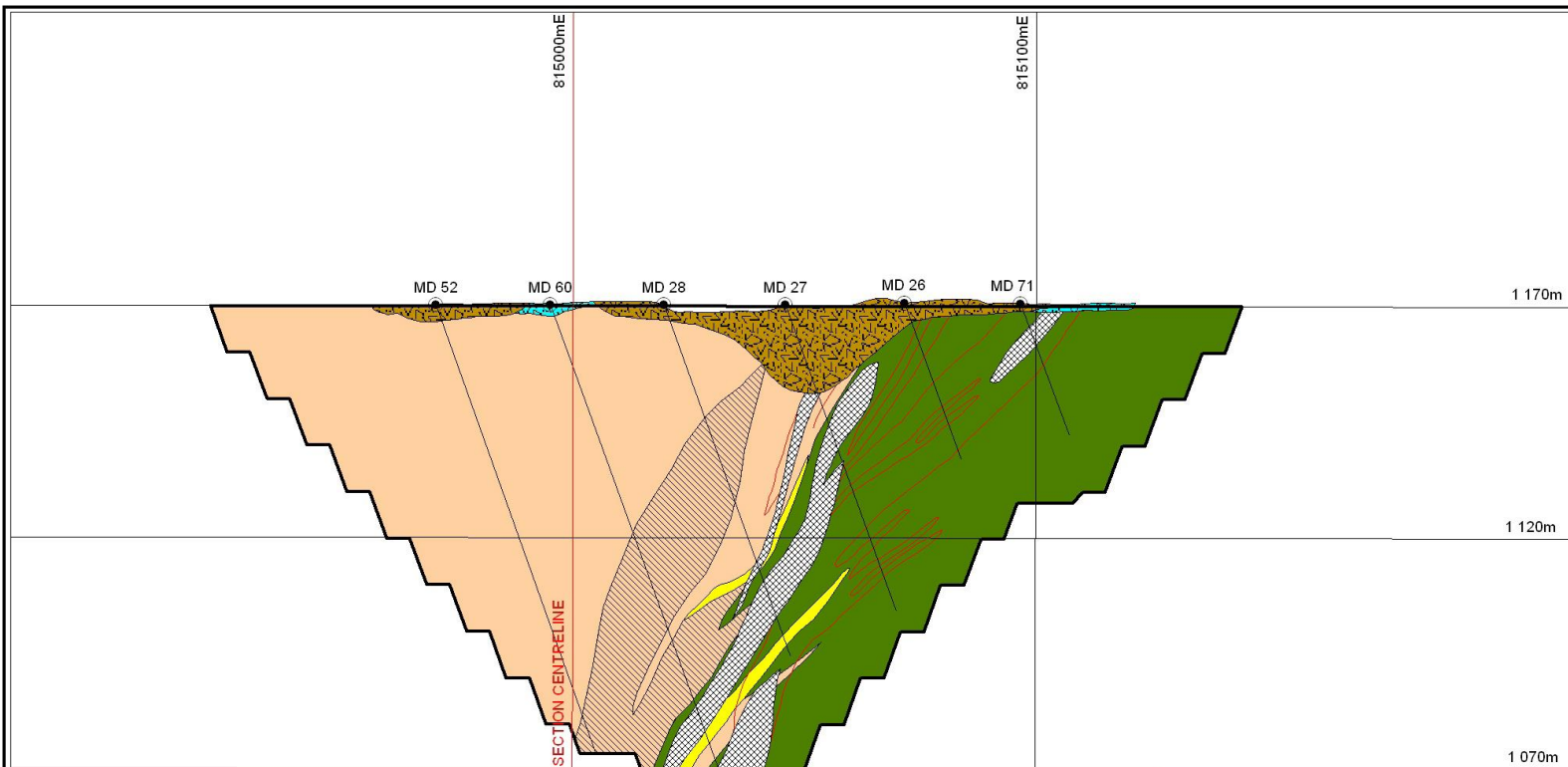


1. Metavolcanics (Metabasalts, Metadolerites)
2. Metasediments (Sandstones, greywacke, arkose)
3. Black shale sediments with intercalations of sandstone in places
4. Quartz veins.
5. Ferricretes (grits)
6. Conglomerates




Pit Geological Mapping


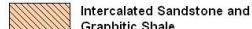


Cam & Motor mine
Motor Pit Geological Map (Bench 1170-1135m)
February 2017

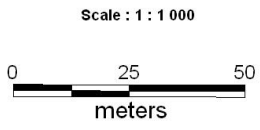




LEGEND

- Drillhole collar
- Orebody outline
-  Dumped Material > 0.5g/t Au.
-  Dumped Material < 0.5g/t Au.
-  Underground workings (with or without infill)

-  Sandstone
-  Intercalated Sandstone and Graphitic Shale
-  Quartz vein
-  Metadolomite



DRAWN	J.N/J.Nye/S.B
DATE	22 - 06 - 2012
DRAUGHTED	R.M
CHECKED	CGAC
REVISION	
DATE	

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**CAM AND MOTOR
MOTOR DEPOSIT
LITHOLOGY
SECTION 2 125
(FACING NORTH)**

Sulphides Mineralisation



Main Sulphides

- Pyrite - FeS
- Arsenopyrite (Mispickel)- FeAsS
- Stibnite- Sb₂S₃

Minor Sulphides

- Galena- PbS
- Sphalerite-(Zn,Fe)S
- Chalcopyrite-(CuFeS₂)
- Tennantite-(Cu,Fe)₁₂(Sb,As)₄S₁₃

MINE DESIGN



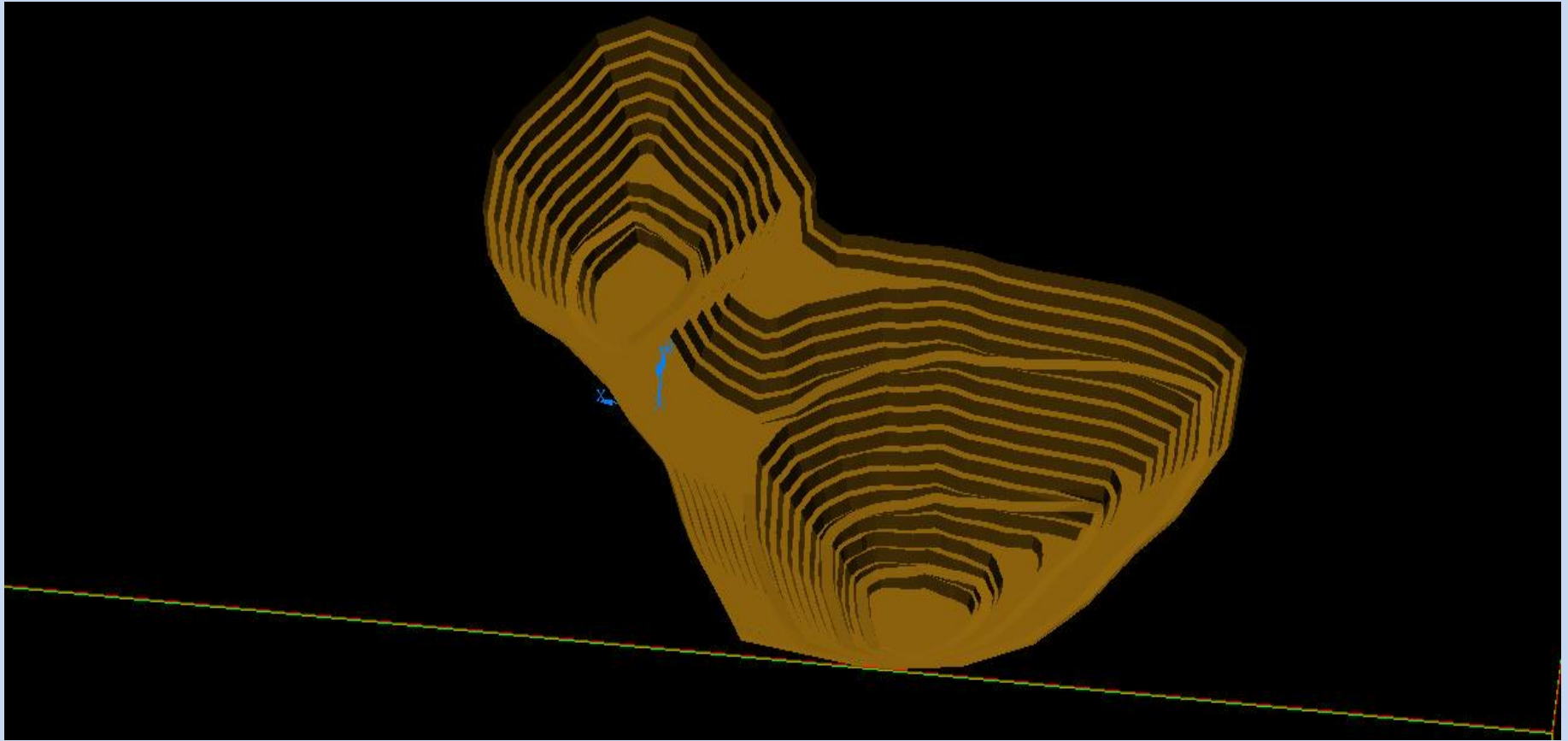
Mine Softwares

- Leica GeoOffice
- Vulcan 10
- Surpac for Surveying (Keith & Young)
- Map Info 6.5
- Datamine Studio 3
- ArcGis
- Autocad

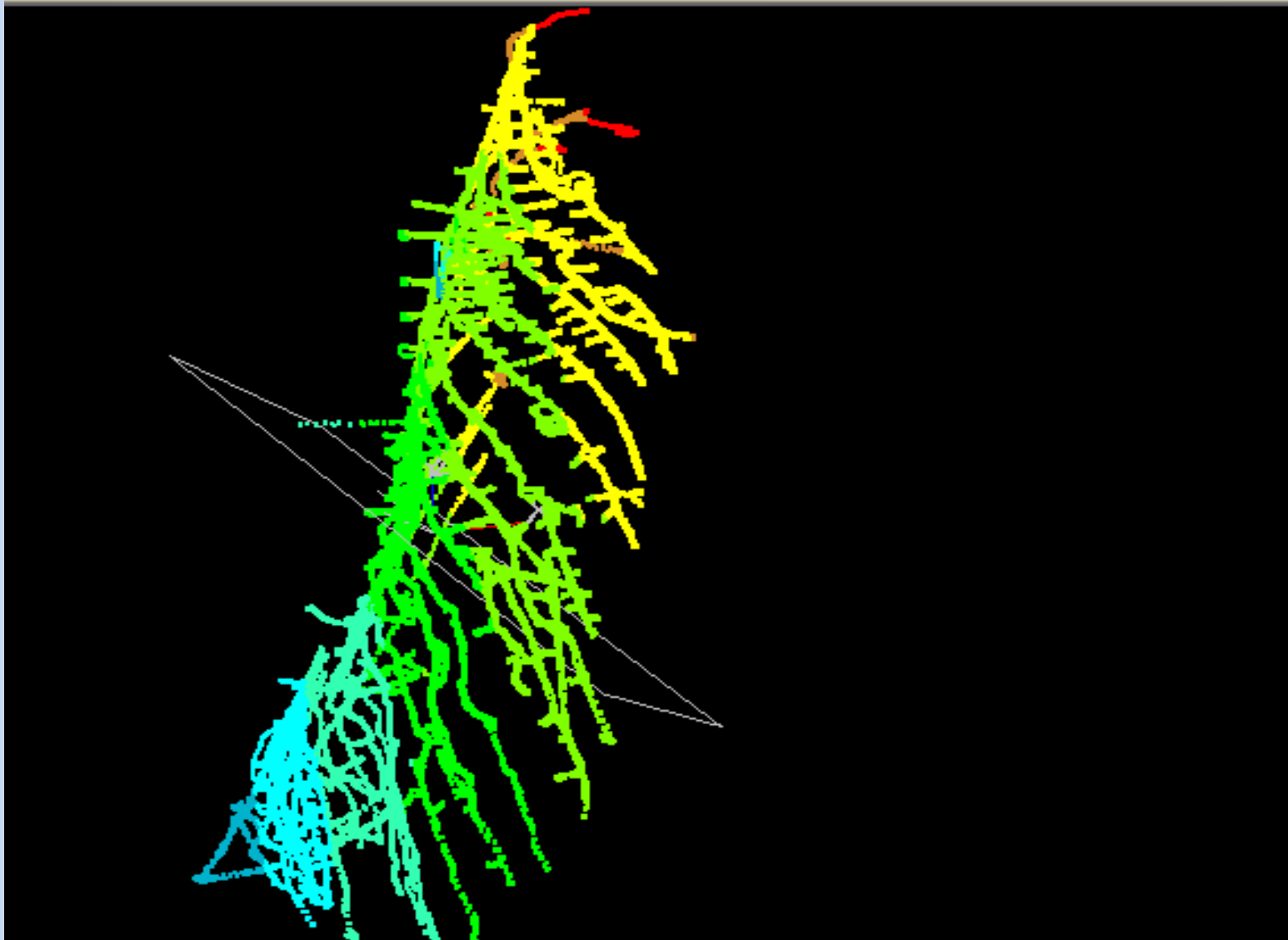
Mining Design Parameters

- Mine Designs done following the Pit Optimisation using Whittle software
- Bench height – 10m
- Benches mined in 5m flitches
- Ramp width – 12m
- Ramp gradient – 1: 10
- Bench face angle -70 degrees
- Berm width – 5m
- Mine Call Factor (MCF)- 85%

Open Pit Optimisation & Design -200m dip



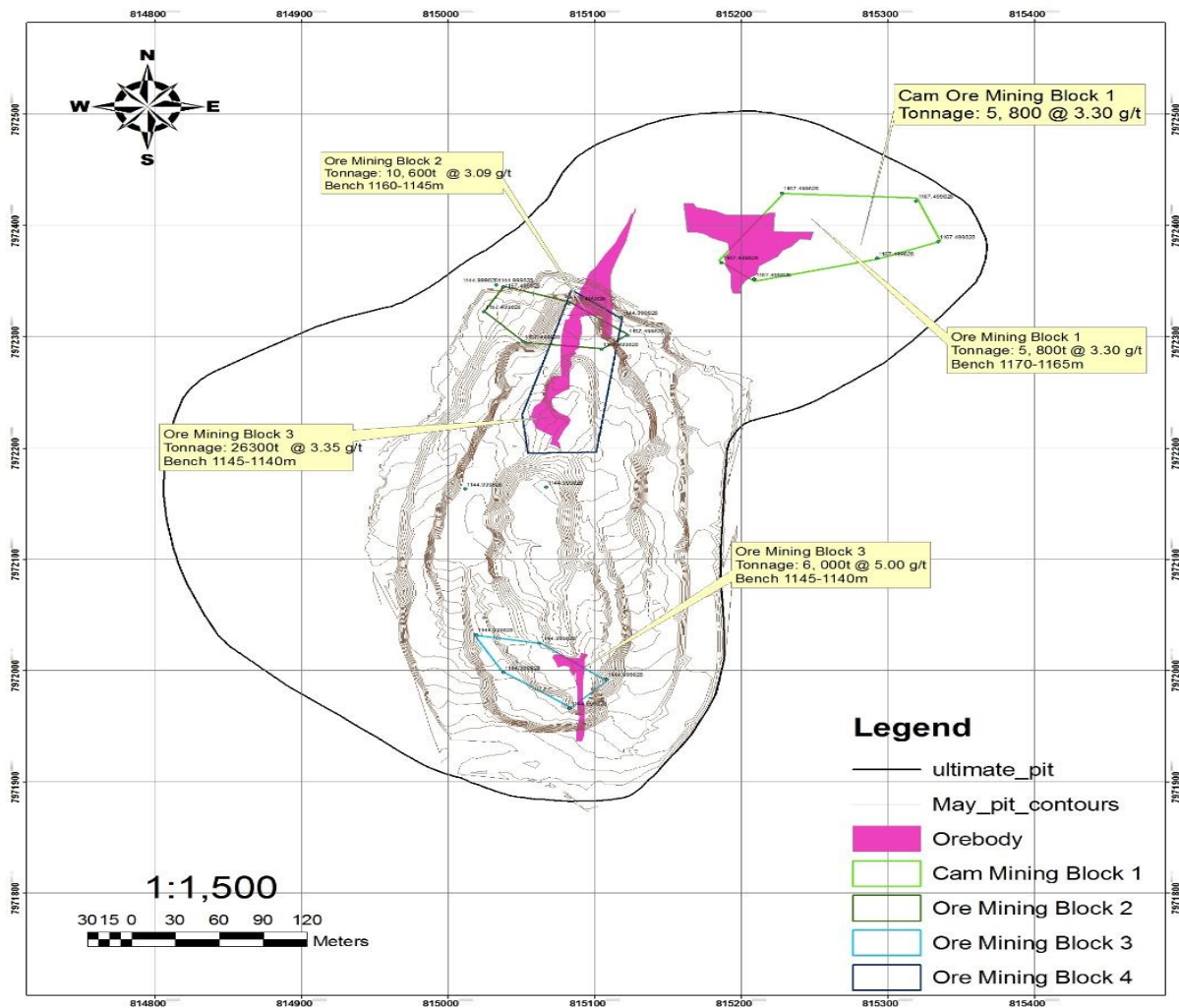
Motor Underground Workings



OPEN PIT MINING

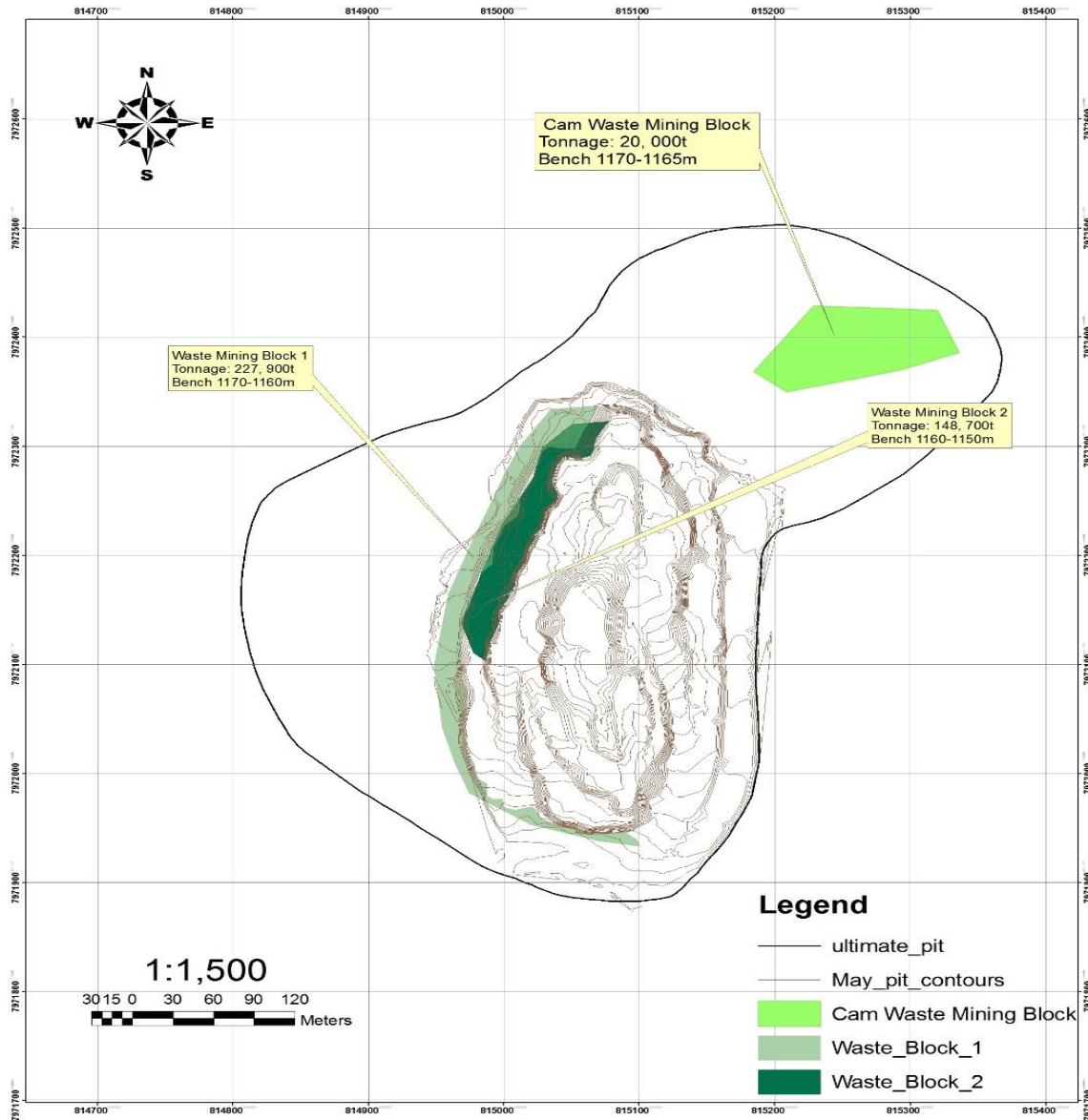
Cam & Motor Mine

June 2017 Production Plan: Ore Mining Blocks

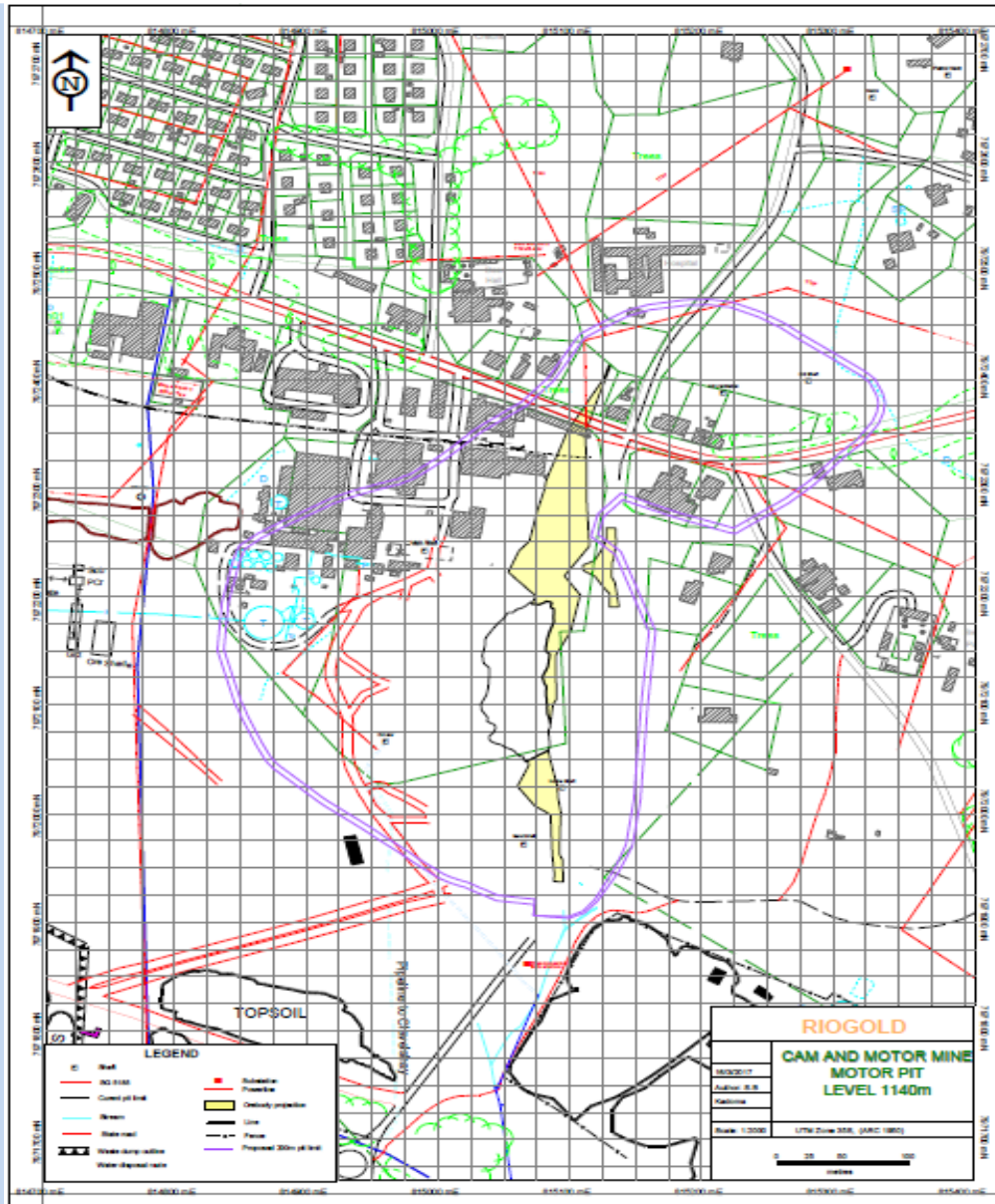


Cam & Motor Mine

June 2017 Production Plan: Waste Mining Blocks



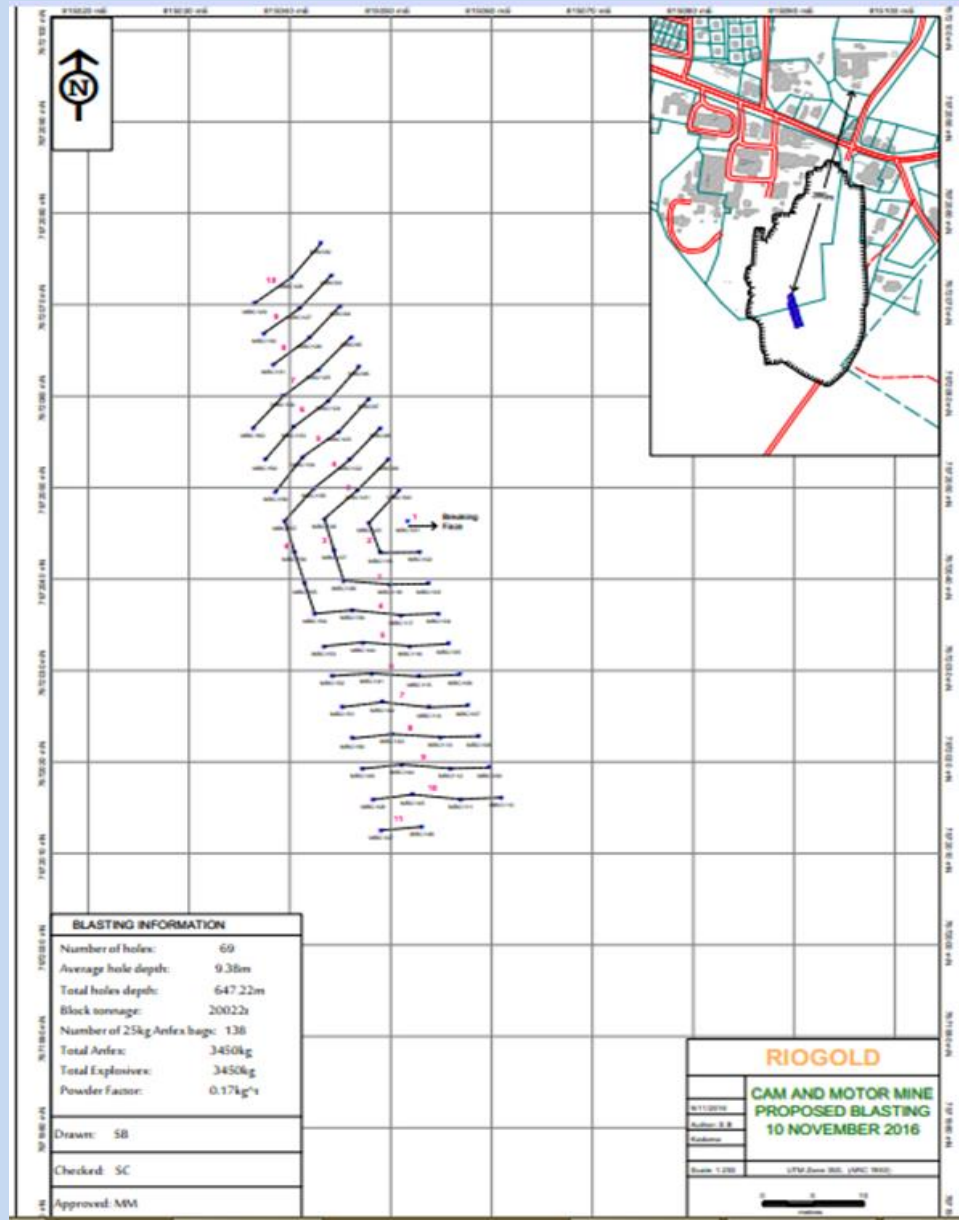
Pit at level 1140m



Mining Equipment

- 5 Excavators (45 -60 tonner)
- 16 Dump Trucks (20-40t sizes)
- 3 Front End Loaders
- Backhoe Excavator x 1
- Grader x 1
- Dozer x 1
- Water Bowser x 3

Blasting plan



Motor pit

Charging at Motor



Loading and Hauling at Motor

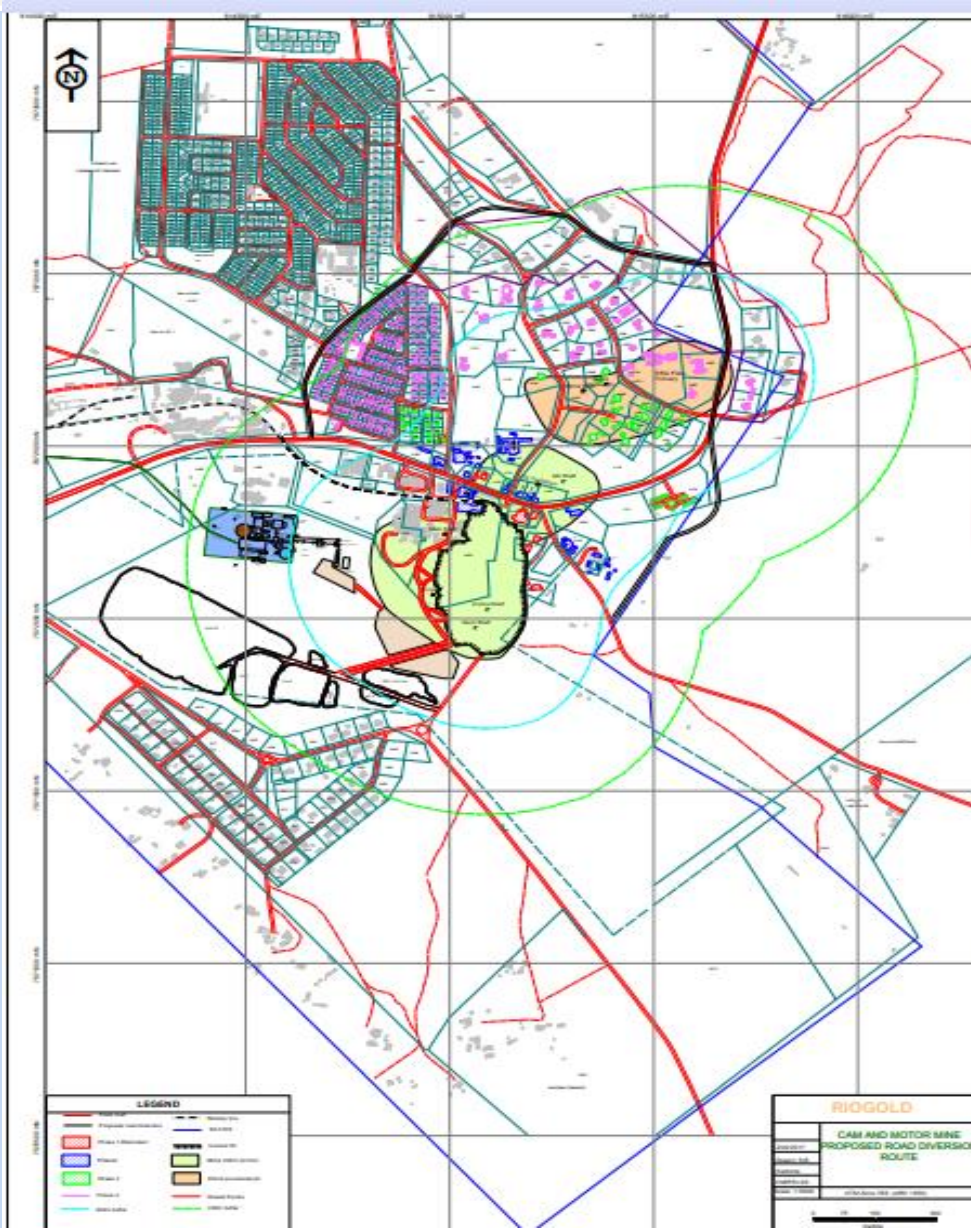




Typical Mining Plan

KPI	
Daily ROM (t)	1620
Monthly ROM (t)	50220
Daily Waste (t)	11760
Monthly Waste (t)	380000
Strip Ratio	7.57

Future Mining Plan



METALLURGY

Ore types

- Three forms of ore exist in the Ore at Cam and Motor.
 - 1) Oxides ore – surface to 30m depth (treatment is straight CIL)
 - 2) Transition ore – 30 to 70m depth (treatment is CIL and Flotation)
 - 3) Sulphides ore- Deeper than 70m (treatment is CIL, Flotation and Roasting or Autoclave technology)



PROCESSING PLANT PHASES

- 1) Phase 1- Direct Carbon In Leach
- 2) Phase 2 - CIL and Flotation
- 3) Phase 3 – CIL & Flotation,
Roasting/Autoclave Technology

Processing Plant Equipment

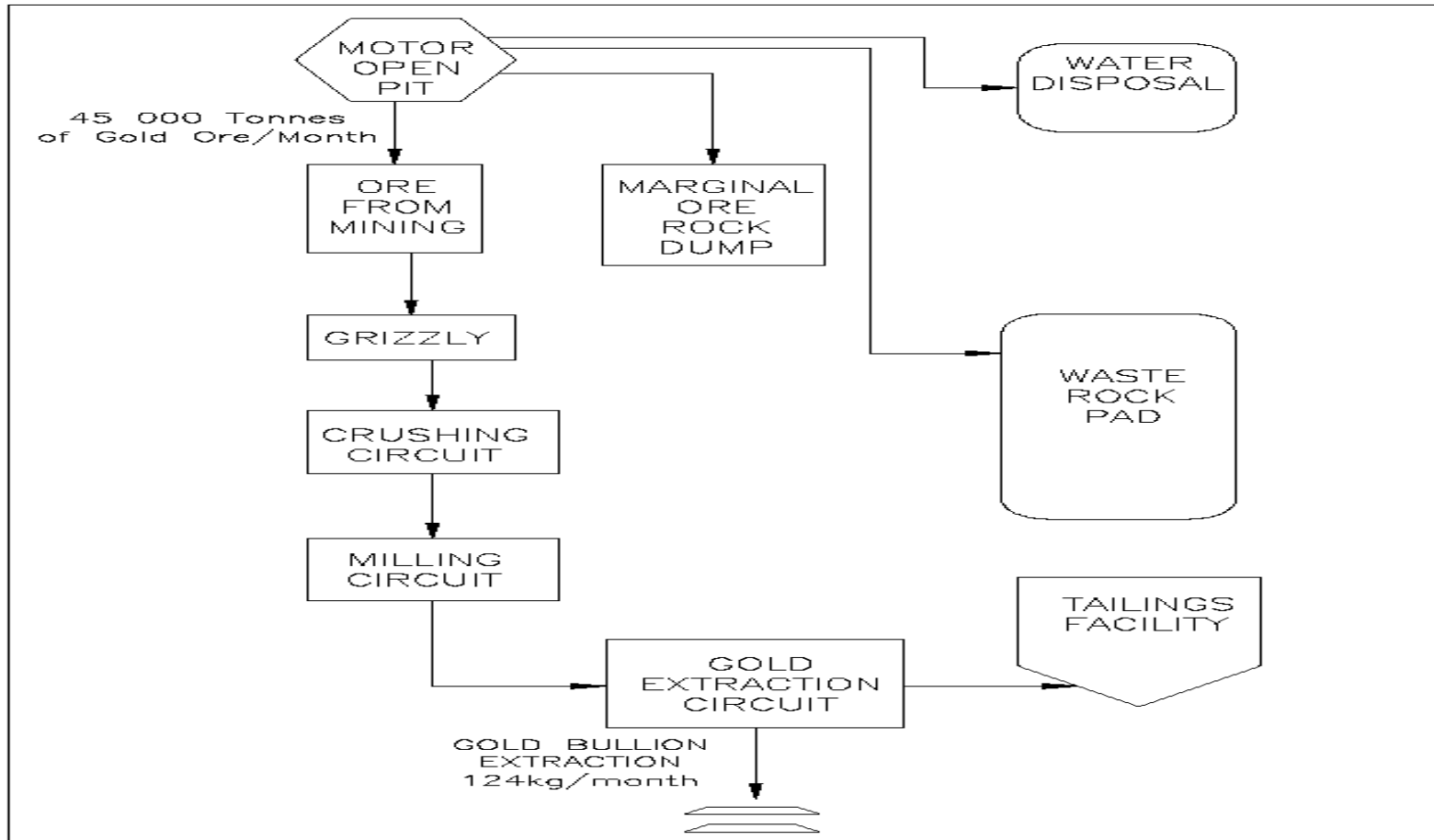
- 1) Plant Supplied by Hongxing from China.
- 2) Primary Jaw Crusher with a capacity to crush 300tph.
- 3) Secondary crushers with a 2 Cone Crushers with Capacity to do 349tph and 227tph respectively
- 4) Two Ball Mills (12x 15 feet) with a capacity to mill 1250tpd each
- 5) Thickener with a capacity to hold 1500tpd
- 6) 10 CIL tanks with 385m³ Capacity each
- 7) Elution Plant Capacity is 3t every 18hrs.



Metallurgical Testwork

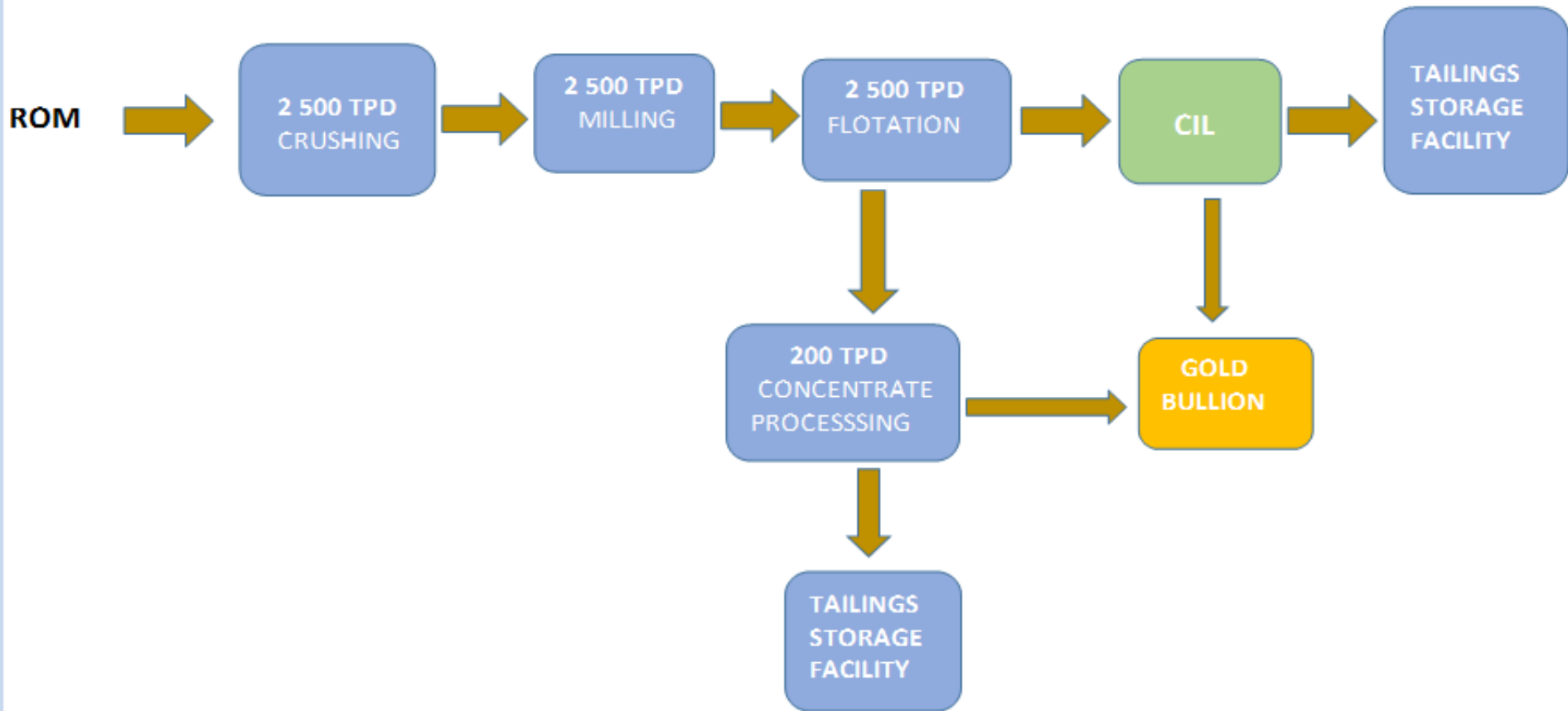
- Metallurgical Testwork was done in-house as well as other local and Chinese companies.
- The testworks confirmed the existence of refractory ores especially fresh ores at depth.
- Gold department study indicated that the gold occurs as fine grained discrete particles or as gold locked up in sulphides, particularly arsenopyrite and pyrite and some stibnite.
- More testworks being done as the mine is developing deeper.

Motor Mine Generalised Material Flow Diagram



	TITLE	MOTOR DEPOSIT GENERAL FLOW DIAGRAM					
	SCALE	NTS	DRAWN	M.C	DATE	2014-01-22	PLAN No A4-04/003-P035

Cam and Motor Metallurgical Flowsheet



Cam and Motor Plant

Milling Section



Crushing Section





THANK YOU