Preliminary Economical Analysis of the Gold Deposit on the Castle Mine Co. Property

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Introduction

Castle Mine Co. performed a pre-feasibility study design on data from the Abitibi-Témiscamingue region of Quebec. An area known for gold and silver deposits. Initial drill hole data showed the potential for a gold and silver deposit and a mining method was determined throughout the design process.

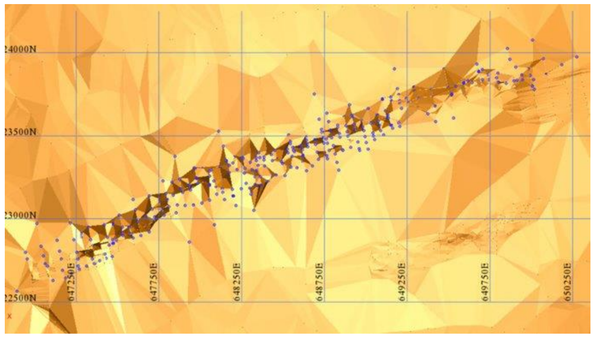

Figure 1 – Locations of Initial Drill Holes

Design Process

Design began with drillhole data that was assayed into three separate composites.
Using drill composite data, a solid of a potential orebody was formed,
This was used to form a block model and general economic block volume.
Using the BM and Vulcan Maptek pit optimizer, a pit shell and production schedule were formed.
Using the pit optimizer and a production rate of 5 million tonnes/year, a generalized pit was formed, and a ramp was added.

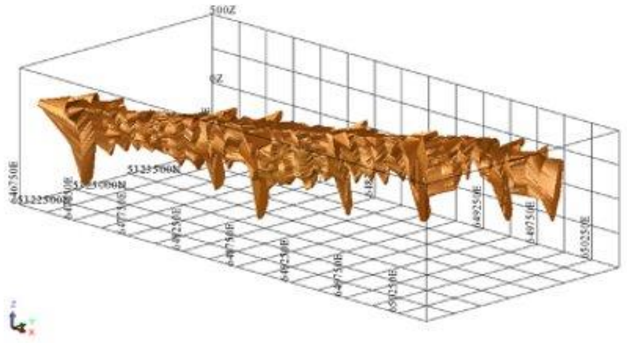

Figure 2 – Orebody generated from cross sections

Results: Details of Design

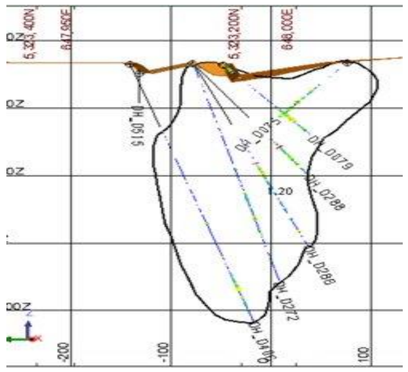

Figure 3 – Drill data cross section

Figure 4 – Final Pit with Ramp

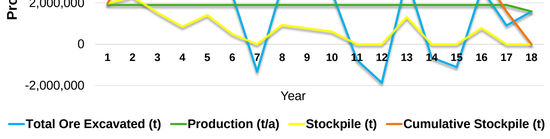

Figure 5 – Mineral Extraction Production of Gold from Ore

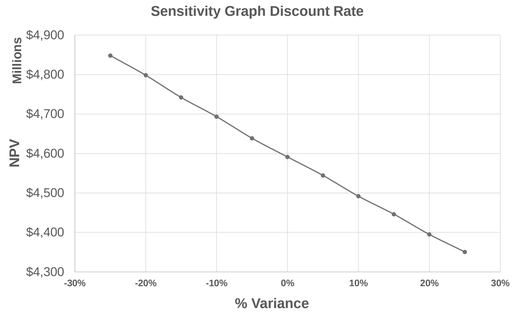

Figure 6 – Sensitivity Analysis 25% Price Variance

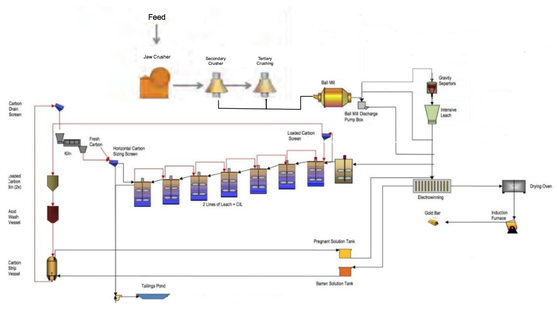

Figure 7 –Mill flow chart for Gold Extraction

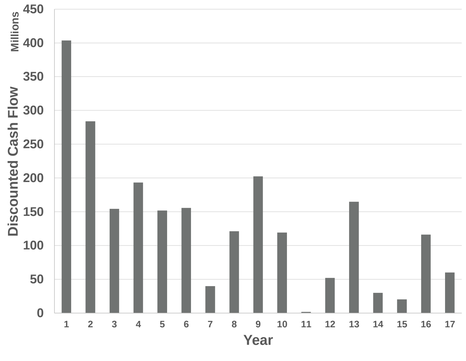

Figure 8 – Net Present Value - $2.3 Billion

Results: Reclamation Plan

Mine Closure – There is potential for ARD at the mine site. Waste rock will be separated based on ARD potential and co - deposited with the tailings for stability. A dry cover will be utilized to prevent ARD generation. The closure plan follows the guidelines set out by the ministry of energy and natural resources for Quebec.

A more detailed analysis is recommended to better characterize the site conditions.

Results: Equipment Plan and Capital Costs

Equipment Requirements	Total # Units	Per Unit Capital Cost
Drilling		
Rotary Drill (2.43mm)	1	N/A
Rotary Drill (1.78mm)	1	N/A
Loading		
Shovel (CAT6015) 8.1 m3 bucket	3	$ 2,282,200.00
Shovel (CAT395) 5 m3 bucket	1	$ 1,110,300.00
Wheel Loader (WA800-8) 15 m3 bucket	2	$ 1,836,000.00
Hauling		
Rigid Haul Truck (CAT773G) 55 t payload	8	$ 952,700.00
Articulated Haul Truck (CAT730EJ) 30 t payload	2	$ 517,900.00
Support		
Track Dozer (D65EX-18) 162 kW	5	$ 456,900.00
Grader (GD655-6) 4.2 m blade	1	$ 492,000.00
Water/gravel truck	1	$ 93,700.00
Fuel and Lube Truck	1	$ 89,800.00
Shuttle Bus	2	$ 50,000.00
Pickup Truck (1/4 ton)	12	$ 49,400.00
Water Pumps (150 m3/hr)	2	$ 15,500.00
Forklift (3 t capacity)	2	$ 47,900.00
Mobile crane (36 t capacity)	1	$ 430,000.00
Side by Side ATV	2	$ 13,999.00
Total Capital Cost	**$**	**24,523,898.00**

Table 1 – Equipment Plan

Conclusion and Future Work

Pit design – it is recommended that third party investigations be conducted regarding the hydrology of the pit. There is also a potential for further ramp installments to maximize the productivity of the mine.

Economic - Positive NPV ($2.3 Billion) with 1.49% discount rate, unfavourable years are supported by stockpile revenue. Sensitivity analysis are based on previous 10 years of maximum and minimum gold prices.

References

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