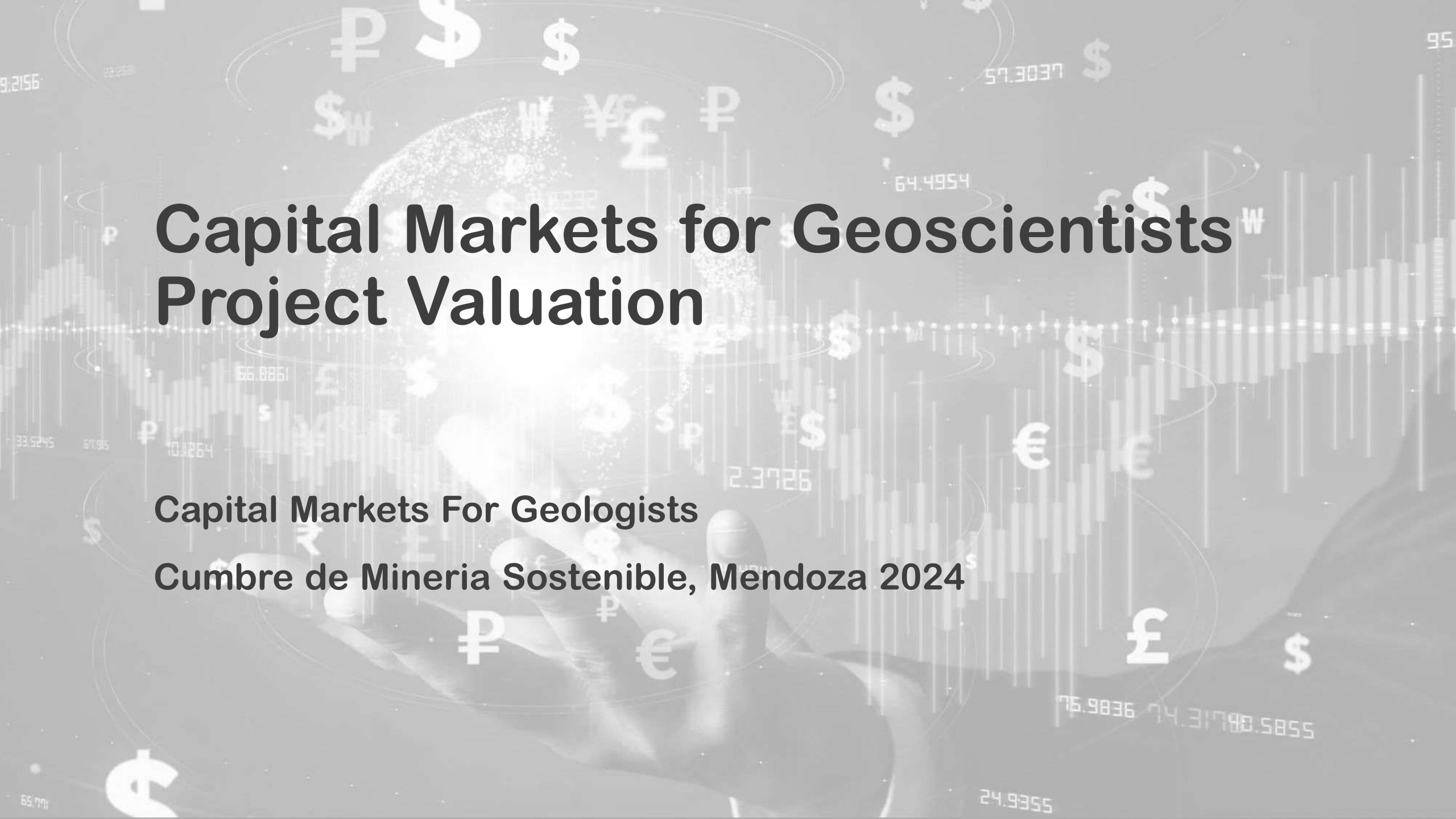

Capital Markets for Geoscientists Project Valuation

Capital Markets For Geologists

Cumbre de Mineria Sostenible, Mendoza 2024

Cash Flow Modeling – Key Inputs

- Mineral Resource Estimate
  - Life of Mine
  - Tonnes
  - Grade
  - Throughput
- Metallurgical Studies
  - Recovery rate
  - Process method (oxide, sulphide, transition)

2

Cash Flow Modeling

Outline

- Comparison of
  - Preliminary Economic Assessments
  - Prefeasibility Studies
  - Feasibility Studies
- Review model inputs / outputs
- Sensitivity

Cash Flow Modeling – Preliminary Economic Assessments

A preliminary economic assessment (PEA) is an early-stage economic analysis that helps determine if a mining project is viable:

What it is

A PEA is a technical report that evaluates a project's potential profitability, risks, and key parameters. It's also known as a scoping study or conceptual study.

What it includes

A PEA includes information about the project's location, minerals, geology, mining type, production estimates, and operating costs.

When it's used

A PEA is a crucial step in the evaluation process for mining companies and investors. It helps them understand the project's economic potential and whether it's worth spending more capital on.

How long it takes

A PEA can take up to a year to complete.

What to consider

When evaluating a PEA, investors should be cautious of speculative nature, incomplete or vague information, and whether the PEA adheres to industry standards.

Cash Flow Modeling – Prefeasibility Study

Differences when compared to a PEA

Level of Detail and Accuracy

PFS goes into much greater detail. It uses more accurate data, including measured or indicated resources, and provides refined estimates of mining methods, processing techniques, and operating costs.

Resource Estimate

Utilizes more detailed and higher-confidence resource estimates, often based on indicated or measured resources. The resource estimation methods are more advanced and consider additional drilling, geotechnical data, and other critical geological analyses.

Mining and Processing Plan

The mining method is thoroughly analyzed and refined based on detailed geological and geotechnical studies. A more robust mine plan and process flow are developed, including detailed infrastructure requirements, equipment specifications, and production schedules. The process flow design is tested through more rigorous metallurgical testing and pilot studies.

Cash Flow Modeling – Prefeasibility Study

Differences when compared to a PEA

Capital and Operating Costs

Provides much more precise capital and operating cost estimates. These are based on more detailed engineering work, supplier quotations, and input from specialists. Costs are broken down by specific areas (e.g., capital expenditure for mine construction, processing plant, infrastructure) with greater accuracy.

Economic Analysis

More robust and refined. It includes more accurate financial projections, detailed cash flow models, and a more thorough evaluation of risks, including sensitivity analyses based on different market scenarios.

Typically includes more detailed environmental and social studies, risk assessments, more accurate timelines (rather than conceptual) including construction and ramp-up schedules

Cash Flow Modeling – Prefeasibility Study

Differences when compared to a PEA

Level of Confidence and Investment Decision

Provides much more confidence and clarity, offering detailed insights that make it possible for investors and stakeholders to make more informed decisions about moving forward with the project. It is typically seen as the final step before a full feasibility study, offering a solid basis for securing financing or making other substantial investment decisions.

Cash Flow Modeling – Feasibility Study

Differences when compared to a PFS

Detailed Resource and Reserve Estimate

Contains Proven and Probable Reserves based on further drilling, geotechnical analysis, and resource modeling. The study uses advanced geostatistical techniques and drilling results to define the resource with much higher confidence.

Complete Mine Design and Detailed Engineering

Provides finalized mine design, including detailed engineering for mine development, pit design, waste dumps, tailings storage facilities, and ore processing plants. It includes thorough geotechnical and geological evaluations that refine the mine plan, infrastructure design, and equipment selection.

Detailed Processing and Metallurgical Studies

Full-scale metallurgical testing, pilot plant studies, and thorough process optimization. Detailed process flow diagrams (PFDs) and process design criteria (PDC) are established. The FS specifies the complete processing method and technologies for the project, including recovery rates, reagent requirements, energy consumption, and water use.

Cash Flow Modeling – Feasibility Study

Differences when compared to a PFS

Capital and Operating Costs

Precise and detailed cost estimates for all aspects of the project. These include front-end engineering design (FEED), detailed breakdowns for construction, procurement, equipment, infrastructure, labor, utilities, and operating costs. The capital costs are more accurately defined, with detailed quotes from suppliers, contractors, and engineers. The operating costs are broken down into various categories (e.g., labor, energy, consumables, maintenance) and are based on refined assumptions.

Contains in-depth risk assessments, comprehensive studies around the environment, water, air quality, biodiversity and social impacts

Feasibility Studies are considered much more detailed and the final step before making a commitment to construct and finance

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Cash Flow Modeling – PEA > PFS > FS

AbraSilver Announces Robust PEA of Diablillos Including After-Tax NPV of US$364M

Economics Demonstrate Potential for a Highly Economic Oxide Silver-Gold Development Project

Toronto – November 29, 2021: AbraSilver Resource Corp. (TSX.V:ABRA; OTCQX: ABBRF) ("AbraSilver" or the "Company") is pleased to announce the results of a Preliminary Economic Assessment ("PEA") for its wholly-owned Diablillos project ("the Project") in Salta Province, Argentina. The PEA is based on the Mineral Resource estimate, recently reported in a Technical Report titled "NI 43-101 Technical Report Mineral Resource Estimate – Diablillos Project", effective October 28, 2021.

All dollar ($) figures are presented in US dollars unless otherwise stated. Base Case metal prices used in this analysis are $1,650 per gold ("Au") ounce ("oz") and $24.00 per silver ("Ag") oz.

PEA Study Highlights:

- Robust Economics:
  - Pre-Tax $NPV_{5\%}$ of $678.5 Million (CAD$ 882.1 Million) with an Pre-Tax IRR of 44.3% (Base Case);
  - After-Tax $NPV_{5\%}$ of $364.0 Million (CAD$ 473.2 Million) with an After-Tax IRR of 30.2% (Base Case).
- 7,000 tonnes per day ("tpd") production rate with an initial mine life of up to 16 years.
- Average annual production:
  - Average annual production in first 5 years of 8.0 Moz Ag and 44.3 koz Au, or 11.4 Moz AgEq;
  - Average Life-of-Mine ("LOM") production of 4.2 Moz Ag and 52.0 koz Au, or 8.5 Moz AgEq.
- Low cash operating costs:
  - All-in Sustaining Cash Costs ("AISC") during first 5 years of $10.41/oz AgEq;
  - All-in Sustaining Cash Costs ("AISC") during average Life-of-Mine ("LOM") of $11.97/oz AgEq.
- Initial Capital Expenditure of $255.0 million, with payback period of 2.6 years.

AbraSilver Announces Robust Diablillos PFS With US$494M After-Tax NPV and 26% IRR

Toronto – March 25, 2024: AbraSilver Resource Corp. (TSX.V:ABRA; OTCQX: ABBRF) ("AbraSilver" or the "Company") is pleased to announce results from its Preliminary Feasibility Study ("PFS" or the "Study") for its wholly-owned Diablillos project (the "Project") in Salta Province, Argentina. The PFS project team was comprised of SGS Geological Services ("SGS"), with support from Knight Piesold Ltd., SGS Bateman, Bmining (Chile), and INSA (Argentina).

All dollar ($) figures are presented in US dollars unless otherwise stated. Base case metal prices used in this analysis are $1,850 per gold ("Au") ounce ("oz") and $23.50 per silver ("Ag") oz.

PFS Study Highlights:

- **Attractive project economics – $494 million** after-tax Net Present Value discounted at 5% per annum ("$NPV_{5\%}$"), at base-case metal prices, with an after-tax Internal Rate of Return ("IRR") of **25.6%** and **payback of 2.4** years. At current spot prices[1] an after-tax $NPV_{5\%}$ of **$661 million** with an **IRR of 30.3%** and payback of **2.1 years**
- **Substantial silver and gold production – 13.3 Moz silver-equivalent** ("AgEq") average annual production over a **13-year** life-of-mine ("LOM"), comprised of **7.7 Moz Ag** and **71 koz Au**, or, with average annual production of **17.9 Moz AgEq** over the first five years of full mine production, comprised of 14.5 Moz Ag and 44 koz Au
- **Low All-in Sustaining Cash Costs ("AISC")**[2] – Average AISC of **$12.40/oz AgEq** over LOM
- **Low capital cost** – Initial pre-production capital expenditure of **$373 million** and sustaining capital of $65 million
- **Open pit mine with high grades** – Conventional open pit mining and processing plant focused exclusively on oxide mineralization with average grades of **91 g/t Ag and 0.81 g/t Au (155 AgEq)** over the LOM
- **Maiden Proven & Probable ("P&P") Mineral Reserves** – Based on the PFS, Diablillos is estimated to hold P&P Minerals Reserves containing **210 Moz of AgEq metal** (42.3 Mt at 91 g/t Ag & 0.81 g/t Au)

Cash Flow Modeling – PEA > PFS > FS

Table 4 – Summary of Capital Cost Estimates

Description	2021 PEA Study	2024 PFS	Change	
			2024 PFS vs. 2021 PEA	
	$ millions	$ millions	% Change	$ Change
Surface Mining	51.6	39.3	-24.0%	-12.4
Processing	76.9	96.9	26.1%	20.0
Site Infrastructure	53.7	152.0	183.2%	98.3
Owner and Indirect Costs	46.3	64.9	40.3%	18.7
Contingency & Other Provisions	26.5	20.3	-23.3%	-6.2
Initial Capital Costs	255.0	373.5	46.5%	118.5
Sustaining Capital	15.2	65.0	328.0%	49.8
Closure	8.2	11.1	35.5%	2.9
Total Capital Costs	278.4	449.6	61.5%	171.2

Source: www.abrasilver.com

Cash Flow Modeling – PEA > PFS > FS

Figure 1 – Diablillos Project Annual Silver Equivalent Production and Grade Profile

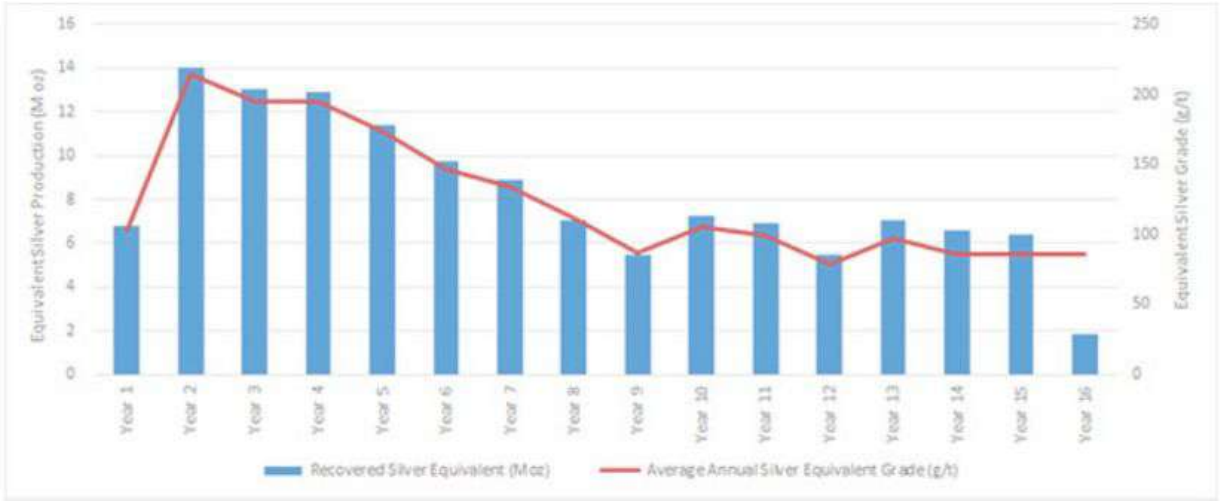
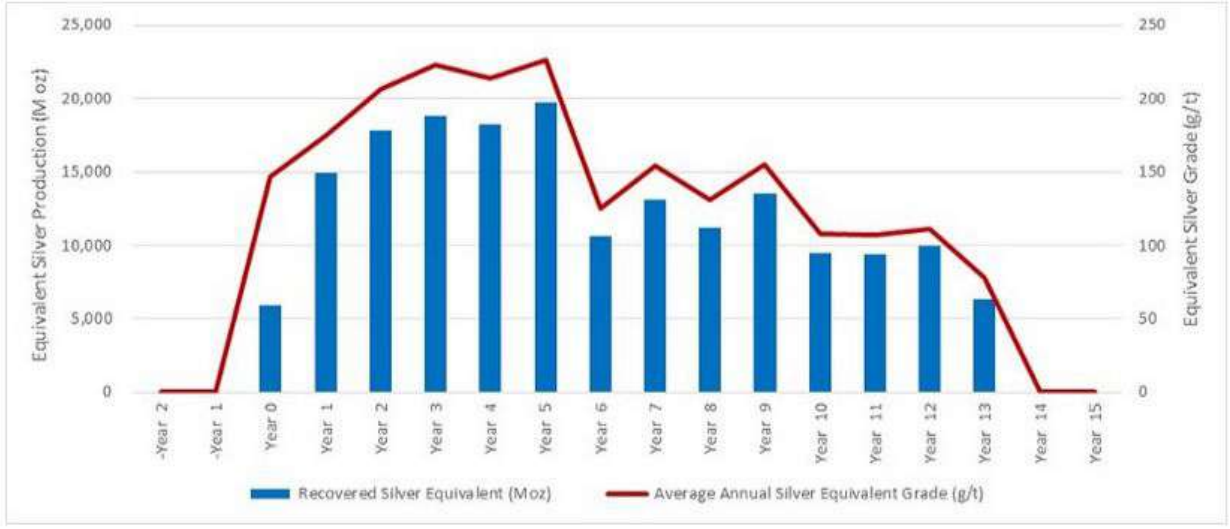


Figure 1 – Annual Silver Equivalent Production and Grade Profile



Source: www.abrasilver.com

Cash Flow Modeling – PEA > PFS > FS

PEA

Table 5 – Summary of Project Economics

Metrics	Units	Results
Life of mine	years	16
Total mineralized material mined	M tonnes	37.4
Total contained silver	M oz	86.9
Total contained gold	k oz	939.8
Strip ratio	Waste : ore	3.6
Throughput	tpd	7,000
Head grade – silver (first 5 years / LOM)	g/t	130.5 / 72.2
Head grade – gold (first 5 years / LOM)	g/t	0.65 / 0.78
Recoveries – silver (first 5 years / LOM)	%	77.4 / 73.4
Recoveries – gold (first 5 years / LOM)	%	85.9 / 86.0
Average Production – silver (first 5 years / LOM)	M oz	8.0 / 4.2
Average Production – gold (first 5 years / LOM)	k oz	44.3 / 52.0
Operating cash costs LOM – silver equivalent	$/oz AgEq	9.83
Operating cash costs LOM – gold equivalent	$/oz AuEq	816
AISC (LOM) – silver equivalent (first 5 years / LOM)	$/oz AgEq	10.41 / 11.97
AISC (LOM) – gold equivalent (first 5 years / LOM)	$/oz AuEq	818 / 993
Initial Capital Costs	$ M	255.0
Sustaining Capital Costs	$ M	23.4
Pre-Tax $NPV_{5\%}$	$ M	678.5
After-Tax $NPV_{5\%}$	$ M	364.0

PFS

Table 5 – Summary of Project Economics

Metrics	Units	Results
Life of mine	years	13
Total mineralized material mined (Includes Yr. 0)	M tonnes	42.3
Total contained silver (Includes Yr. 0)	M oz	123.5
Total contained gold (Includes Yr. 0)	k oz	1,107.5
Strip ratio (excludes pre-stripping)	Waste:ore	6.4
Throughput	tpd	9,000
Head grade – silver (first 5 years / LOM)	g/t	168 / 91
Head grade – gold (first 5 years / LOM)	g/t	0.51 / 0.81
Recoveries – silver (first 5 years / LOM)	%	84.4 / 82.8
Recoveries – gold (first 5 years / LOM)	%	85.2 / 86.6
Average Production – silver (first 5 years / LOM)	M oz	14.5 / 7.7
Average Production – gold (first 5 years / LOM)	k oz	44.0 / 71.0
AISC (LOM) – silver equivalent (first 5 years / LOM)	$/oz AgEq	9.97 / 12.40
Initial Capital Costs	$ M	373.5
Sustaining Capital Costs	$ M	65.0
Pre-Tax $NPV_{5\%}$	$ M	995.1
After-Tax $NPV_{5\%}$	$ M	493.7

Source: www.abrasilver.com

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Cash Flow Modeling – PEA > PFS > FS

Table 1 – Commodity Price Sensitivity Analysis

Economic Parameters	Base Case Prices	Spot Prices[1]	Base Case Prices +15%	Base Case Price -15%	2021 PEA Price Deck
Silver Price ($/oz)	$23.50	$24.76	$27.03	$19.98	$24.00
Gold Price ($/oz)	$1,850	$2,181	$2,128	$1,573	$1,650
After-tax NPV (5%, US$ million)	$493.7	$661.5	$741.9	$245.6	$447.3
After-tax NPV (8%, US$ million)	$363.4	$498.5	$567.7	$159.0	$328.2
After-Tax IRR (%)	25.6%	30.3%	33.3%	16.7%	24.6%
Payback (years)	2.4	2.1	2.1	3.2	2.4

Source: www.abrasilver.com

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Cash Flow Modeling – Key Inputs

- Mineral Resource Estimate
  - Life of Mine
  - Tonnes
  - Grade
  - Throughput
- Metallurgical Studies
  - Recovery rate
  - Process method (oxide, sulphide, transition)

Cash Flow Modeling – Key Inputs

- Engineering Studies
  - Direct Cash Costs
    - Mining (Open pit/underground or combination)
    - Milling (Heap leach, flotation, agitated leach, TC+RC)
    - G&A (On-site)
    - Essentially includes cost of reagents, supplies, utilities, and selling costs
  - All-In-Sustaining Costs (World Gold Council)
    - Direct Cash Costs plus
    - Royalties, production taxes, CSR, reclamation and permitting costs
    - Sustaining capital
    - By-Product Credits
  - Initial Capital and Taxes

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Cash Flow Modeling – Key Outputs

- Operations
  - Annual throughput
  - Annual production stats
  - Total production stats
  - Equivalents
  - AISC
  - Break even price
- Financial
  - NPV
  - IRR
  - Payback
  - EBITDA
  - Free Cash Flow
    - Cumulative
    - Annual – Shortfall?

- Other
  - NPV / Shares
  - Share Price / NPV
  - Unlevered
  - Debt
  - Royalty and Stream Valuation

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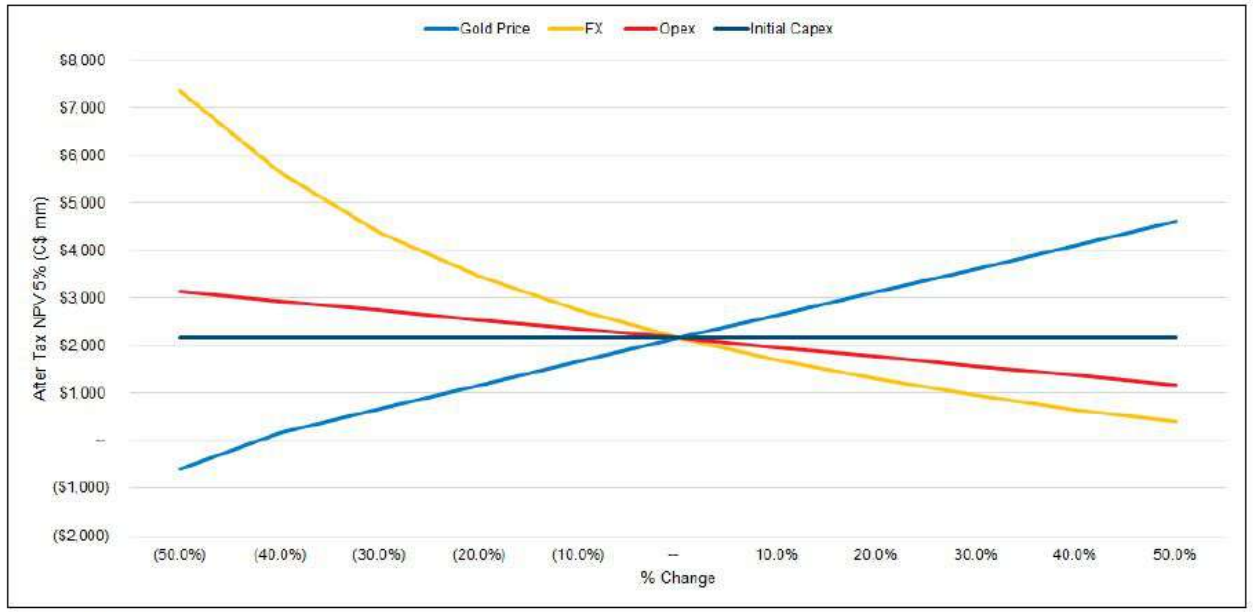
Cash Flow Modeling – Details, details

- The number of variables in a mining project is enormous
  - Commodity price, fuel costs, recovery, equipment costs, labour costs, selling costs, taxes, royalties, dilution, resource variability, power costs, contractors, mechanical downtime, maintenance costs, FX, inflaction, etc
  - It is possible to model all inputs but takes time. Commodity price is most important economic factor as indicated by sensitivity analysis

Cash Flow Modeling – Sensitivities

- Purpose
  - To identify the key variables that affect cash flow forecasts. For mining projects, this is typically:
    - Commodity prices
    - Grades and recovery
    - Initial capital
    - Operating costs
  - Develop mitigating factors or optimize certain parts of the operations to maximize valuation, for example:
    - Optimized mine plan (higher grades up front)
    - Phased development (lower initial capital outlay)
    - Grid power compared to diesel generators (lower operating costs)

Cash Flow Modeling – Sensitivities



Source: MMTS, 2021

Table 22-4: Base Case After Tax NPV 5% Sensitivity to Gold Price and Foreign Exchange

	US $ Gold Price								
US$/C$	$1,200	$1,300	$1,400	$1,500	$1,600	$1,700	$1,800	$1,900	$2,000
0.65	$1,785	$2,158	$2,530	$2,902	$3,275	$3,647	$4,019	$4,391	$4,763
0.70	$1,437	$1,784	$2,130	$2,476	$2,822	$3,168	$3,514	$3,859	$4,204
0.75	$1,133	$1,459	$1,783	$2,107	$2,429	$2,752	$3,075	$3,398	$3,720
0.79	$915	$1,228	$1,537	$1,844	$2,151	$2,458	$2,764	$3,070	$3,377
0.85	$626	$918	$1,209	$1,496	$1,782	$2,067	$2,352	$2,637	$2,922
0.90	$412	$691	$966	$1,241	$1,512	$1,782	$2,051	$2,320	$2,589
0.95	$218	$485	$749	$1,009	$1,269	$1,526	$1,781	$2,037	$2,291

- The most sensitive variable is identified by the steepest line. For mining projects, this is almost always the gold price
- The least sensitive variable is the shallowest line. In this case, exchange rate.

Source: IAMGOLD, Cote Lake Project PFS (2017)

Cash Flow Modeling – Discounted Cash Flow

Description	Units	Total Production (Y-2 to Y13)	Commercial production (Y1 to13)	5 Year Average (Y1 to Y5)	Year (-2)	Year (-1)	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13
1 - MINING																				
Total high-grade ore to plant (Tank leaching)	*tonnes*	42,294,159	40,719,159	15,750,000	-	-	1,575,000	3,150,000	3,150,000	3,150,000	3,150,000	3,150,000	3,150,000	3,150,000	3,150,000	3,150,000	3,150,000	3,150,000	3,150,000	2,919,159
Au grade	*g/t*	0.81	0.81	0.51	-	-	0.85	0.32	0.54	0.75	0.61	0.34	0.64	1.09	1.04	1.49	1.00	0.90	1.19	0.64
Ag grade	*g/t*	90.81	91.24	168.36	-	-	80	149	164	164	165	200	75	68	49	38	29	35	17	28
AgEq grade		154.93	155.23	208.64	-	-	147	174	206	223	214	226	125	154	131	155	108	107	111	78
Contained Au	*oz*	1,107,499	1,064,218	259,148	-	-	43,281	32,189	54,619	76,125	62,038	34,179	64,366	110,342	105,535	151,198	100,967	91,585	120,893	60,184
Contained Ag	*oz*	123,480,296	119,445,104	85,251,085	-	-	4,035,192	15,133,014	16,582,150	16,573,123	16,751,562	20,211,237	7,611,245	6,925,468	4,958,262	3,805,738	2,947,490	3,590,603	1,767,762	2,587,451
Total cover/overburden moved to waste dumps	*tonnes*	63,625,003	41,156,870	30,041,486	12,751,214	5,959,453	3,757,466	1,722,943	7,218,977	11,887,468	5,106,229	4,105,869	4,822,764	3,610,694	512,429	1,660,927	508,570	- 0	-	- 0
Total waste moved to waste dumps	*tonnes*	303,504,116	250,685,299	106,580,984	12,751,214	19,555,812	20,511,792	18,697,252	18,725,011	21,808,437	23,626,652	23,723,631	22,895,829	23,279,176	23,790,891	23,163,262	23,670,851	19,104,844	5,649,047	2,550,416
Total ore from mine to stockpile	*tonnes*	4,249,752	3,738,865	680,211	-	444,189	66,699	163,943	124,989	41,563	223,348	126,369	954,171	570,824	59,109	686,738	179,149	330,770	277,892	-
Total moved	*tonnes*	350,048,028	295,143,324	123,011,195	12,751,214	20,000,000	22,153,491	22,011,195	22,000,000	25,000,000	27,000,000	27,000,000	27,000,000	27,000,000	27,000,000	27,000,000	27,000,000	22,585,614	9,076,939	5,469,576
2 - PROCESSING																				
Total Recovered																				
Yearly Avg Recovery Au	%	86.67%	86.64%	85.23%	0.00%	0.00%	87.30%	86.41%	85.72%	83.97%	84.01%	86.03%	87.14%	84.87%	86.78%	86.86%	88.40%	89.01%	89.18%	88.06%
Yearly Avg Recovery Ag	%	82.32%	82.81%	84.44%	0.00%	0.00%	69.74%	83.37%	84.88%	83.56%	85.30%	85.12%	80.56%	82.60%	82.10%	82.09%	81.74%	81.72%	81.71%	81.69%
Au	*oz*	961,394	923,452	220,112	-	-	37,942	27,853	46,886	63,819	51,972	29,582	56,048	93,207	90,615	131,523	89,459	81,531	107,812	53,145
Ag	*oz*	103,206,812	100,306,515	72,272,180	-	-	2,900,296	12,721,185	14,151,629	13,823,652	14,175,642	17,400,072	6,192,005	5,732,431	4,078,178	3,130,799	2,409,292	2,933,597	1,444,413	2,113,620
AgEq	*oz*	178,890,993	173,003,801	89,600,117	-	-	5,887,192	14,913,862	17,842,649	18,847,692	18,267,061	19,728,853	10,604,260	13,070,007	11,211,727	13,484,718	9,451,805	9,352,024	9,931,768	6,297,376
3 - REVENUE																				
Au Gross Revenue	*k$*	1,778,578	1,708,386	407,207	-	-	70,192	51,528	86,739	118,065	96,148	54,726	103,688	172,433	167,638	243,317	165,499	150,833	199,453	98,318
Ag Gross Revenue	*k$*	2,425,360	2,357,203	1,698,396	-	-	68,157	298,948	332,563	324,856	333,128	408,902	145,512	134,712	95,837	73,574	56,618	68,940	33,944	49,670
Total Gross Revenue (Au + Ag)	*k$*	4,203,938	4,065,589	2,105,603	-	-	138,349	350,476	419,302	442,921	429,276	463,628	249,200	307,145	263,476	316,891	222,117	219,773	233,397	147,988
Gross Au revenue after % payable deduction	%	99.80%			-	-	70,052	51,425	86,565	117,829	95,956	54,617	103,481	172,088	167,303	242,830	165,168	150,531	199,054	98,122
Gross Ag revenue after % payable deduction	%	99.80%			-	-	68,021	298,350	331,898	324,206	332,461	408,084	145,221	134,443	95,646	73,427	56,505	68,802	33,876	49,571
Royalty on NSR (Au) (EMX)	%	1.00%			-	-	701	514	866	1,178	960	546	1,035	1,721	1,673	2,428	1,652	1,505	1,991	981
Royalty on NSR (Ag) (EMX)	%	1.00%			-	-	680	2,983	3,319	3,242	3,325	4,081	1,452	1,344	956	734	565	688	339	496
Smelting and refining (Au)	*$/oz*	4			-	-	152	111	188	255	208	118	224	373	362	526	358	326	431	213
Smelting and refining (Ag)	*$/oz*	1			-	-	2,030	8,905	9,906	9,677	9,923	12,180	4,334	4,013	2,855	2,192	1,687	2,054	1,011	1,480
Total charges on smelting and refining (Au + Ag)	*k$*	76,090	73,908	51,471	-	-	2,182	9,016	10,094	9,932	10,131	12,298	4,559	4,386	3,217	2,718	2,044	2,380	1,442	1,692
Net smelter return NSR - Au	*k$*	1,753,425	1,684,226	401,448	-	-	69,199	50,799	85,512	116,395	94,789	53,952	102,222	169,994	165,268	239,876	163,159	148,700	196,632	96,928
Net smelter return NSR - Ag	*k$*	2,324,059	2,258,749	1,627,459	-	-	65,310	286,462	318,673	311,287	319,214	391,823	139,434	129,086	91,834	70,501	54,254	66,060	32,526	47,595
Royalty on NSR (Au)	%	3.00%			-	-	2,076	1,524	2,565	3,492	2,844	1,619	3,067	5,100	4,958	7,196	4,895	4,461	5,899	2,908
Royalty on NSR (Ag)	%	3.00%			-	-	1,959	8,594	9,560	9,339	9,576	11,755	4,183	3,873	2,755	2,115	1,628	1,982	976	1,428
Royalty on NSR (Au + Ag)	*k$*	122,325	118,289	60,867	-	-	4,035	10,118	12,126	12,830	12,420	13,373	7,250	8,972	7,713	9,311	6,522	6,443	6,875	4,336
Export Duties (Au)	%	8.00%			-	-	5,536	4,064	6,841	9,312	7,583	4,316	8,178	13,600	13,221	19,190	13,053	11,896	15,731	7,754
Export Duties (Ag)	%	4.50%			-	-	2,939	12,891	14,340	14,008	14,365	17,632	6,275	5,809	4,133	3,173	2,441	2,973	1,464	2,142
Export Duties (Au + Ag)	*k$*	244,857	236,382	105,351	-	-	8,475	16,955	21,181	23,320	21,948	21,948	14,452	19,408	17,354	22,363	15,494	14,869	17,194	9,896
Net revenue - Au	*k$*	1,560,549	1,498,961	357,288	-	-	61,587	45,211	76,106	103,592	84,362	48,018	90,977	151,295	147,088	213,490	145,211	132,343	175,008	86,266
Net Revenue - Ag	*k$*	2,149,755	2,089,343	1,505,400	-	-	60,412	264,977	294,773	287,941	295,273	362,436	128,977	119,404	84,947	65,213	50,185	61,106	30,087	44,026
Total Net Revenue Au + Ag	*k$*	3,710,304	3,588,304	1,862,688	-	-	121,999	310,188	370,878	391,533	379,635	410,454	219,954	270,699	232,035	278,703	195,396	193,449	205,089	130,292
5 - OPERATING COST																				
Camp and Service Hub - Operating Cost	*k$*	155,025	150,623	58,260	-	-	4,402	11,652	11,652	11,652	11,652	11,652	11,652	11,652	11,652	11,652	11,652	11,652	11,652	10,798
Mine - Ore Mining Cost	*k$*	81,762	78,947	30,536	-	-	2,815	6,107	6,107	6,107	6,107	6,107	6,107	6,107	6,107	6,107	6,107	6,107	6,107	5,660
Mine - Waste Mining Cost	*k$*	546,363	486,035	206,642	456	23,212	36,660	36,251	36,305	42,283	45,808	45,996	44,391	45,134	46,126	44,910	45,894	37,041	10,953	4,945
Mine - Overburden Mining Cost	*k$*	-9,432	-8,643	-6,309	-	-	- 789	- 362	- 1,516	- 2,496	- 1,072	- 862	- 1,013	- 758	- 108	- 349	- 107	-	-	0
Mine - Cover Mining Cost (Contractor)	*k$*	17,775	0	0	12,114	5,661	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Plant - Processing Cost	*k$*	293,482	285,819	110,554	-	-	7,663	22,111	22,111	22,111	22,111	22,111	22,111	22,111	22,111	22,111	22,111	22,111	22,111	20,490
Utilities and Off-site Facilities - Operating Costs	*k$*	378,056	369,603	142,961	-	-	8,453	28,592	28,592	28,592	28,592	28,592	28,592	28,592	28,592	28,592	28,592	28,592	28,592	26,497
Maintenance - Maintenance Operations Cost	*k$*	130,344	128,897	49,857	-	-	1,447	9,971	9,971	9,971	9,971	9,971	9,971	9,971	9,971	9,971	9,971	9,971	9,971	9,241

Cash Flow Modeling – Discounted Cash Flow

Logistics	k$	113,662	112,215	43,404	-	-	1,447	8,681	8,681	8,681	8,681	8,681	8,681	8,681	8,681	8,681	8,681	8,681	8,681	8,045
G&A - General Administration Costs	k$	25,111	22,802	8,820	-	-	2,309	1,764	1,764	1,764	1,764	1,764	1,764	1,764	1,764	1,764	1,764	1,764	1,764	1,635
Total unit operating cost	USD/t milled	40.95	39.94	40.93	-	-	40.9	39.61	39.26	40.85	42.42	42.54	41.99	42.30	42.82	42.36	42.75	39.97	31.69	29.91
Total Operating Cost	k$	1,732,149	1,626,298	644,725	12,570	28,873	64,408	124,767	123,667	128,665	133,614	134,012	132,257	133,254	134,897	133,439	134,665	125,919	99,831	87,310
Operating Cashflow	k$	1,978,155	1,962,006	1,217,963	- 12,570	- 28,873	57,592	185,421	247,212	262,868	246,021	276,442	87,697	137,445	97,138	145,264	60,730	67,529	105,258	42,982
6 - CAPITAL COST																				
DIRECT COST	k$	288,228	34	34	28,384	179,921	79,889	34	-	-	-	-	-	-	-	-	-	-	-	-
MINE	k$				-	19,908	19,367	-	-	-	-	-	-	-	-	-	-	-	-	-
PROCESS PLANT	k$				180	88,354	8,394	-	-	-	-	-	-	-	-	-	-	-	-	-
INFRASTRUCTURE	k$				28,204	71,659	52,128	34	-	-	-	-	-	-	-	-	-	-	-	-
INDIRECT COST	k$	64,924	1,655	1,655	21,434	18,463	23,372	1,655	-	-	-	-	-	-	-	-	-	-	-	-
CONTINGENCY	k$	20,333	0	0	-	10,167	10,167	-	-	-	-	-	-	-	-	-	-	-	-	-
SUSTAINING CAPEX	k$	64,996	64,996	30,545	-	-	-	2,380	3,938	20,756	1,170	2,302	12,425	-	48	10,564	48	-	10,239	1,080
REMEDIATION AND CLOSURE COSTS	k$	11,148	11,148	0	-	-	-	-	-	-	-	-	500	500	500	500	500	500	500	500
Total Capital Cost	k$	449,629	77,832	32,234	49,818	208,551	113,427	4,069	3,938	20,756	1,170	2,302	12,925	500	548	11,064	548	500	10,739	1,580
7 - PRE-TAX CASH-FLOW																				
Pre-Tax Cash Flow	k$	1,528,526	1,884,174	$1,185,729	- 62,388	- 237,424	- 55,836	181,352	243,274	242,112	244,851	274,140	74,773	136,945	96,590	134,200	60,183	67,029	94,519	41,402
Pre-Tax Cumulated Cash Flow	k$	14,057,795	14,775,642	$1,591,795	- 62,388	- 299,812	- 355,648	- 174,295	68,978	311,090	555,941	830,081	904,854	1,041,799	1,138,389	1,272,589	1,332,771	1,399,801	1,494,320	1,535,721
8 - AMORTIZATION - DEPRECIATION																				
Infrastructure and Civil Structures Capital					27,610	65,710	14,706	88	48	15,662	48	0	12,264	0	48	10,564	48	0	10,239	1,080
Infrastructure and Civil Structures Amortization Scheme			60%			16,566	39,426	8,823	53	29	9,397	29	0	7,359	0	29	6,338	29	0	6,143
			20%				5,522	13,142	2,941	18	10	3,132	10	0	2,453	0	10	2,113	10	0
			20%					5,522	13,142	2,941	18	10	3,132	10	0	2,453	0	10	2,113	10
Infrastructure and Civil Structures Amortization					0	16,566	44,948	27,487	16,136	2,987	9,424	3,171	3,142	7,368	2,453	2,481	6,348	2,151	2,122	6,153
Mechanical equipment and others (Purchase and Replacement) Capital					21,481	109,434	62,827	2,476	3,890	5,094	1,122	2,302	160	-	-	-	-	-	-	-
Mechanical equipment and others) Purchase and Replacement) Amortization Scheme			33%			7,160	36,474	20,940	825	1,297	1,698	374	767	53	-	-	-	-	-	-
			33%				7,160	36,474	20,940	825	1,297	1,698	374	767	53	-	-	-	-	-
			33%					7,160	36,474	20,940	825	1,297	1,698	374	767	53	-	-	-	-
Mechanical equipment and others) Purchase and Replacement) Amortization					-	7,160	43,634	64,574	58,240	23,062	3,820	3,368	2,839	1,194	821	53	-	-	-	
Total Amortization - Depreciation	k$	350,124	254,383	212,268	-	7,160	88,582	92,061	74,375	26,049	13,244	6,539	5,981	8,563	3,273	2,535	6,348	2,151	2,122	6,153
9 - TAXATION																				
Pre-Tax Cash-flow after depreciation		1,178,402	1,629,791	973,460	- 62,388	- 244,584	- 144,417	89,291	168,898	216,063	231,607	267,601	68,792	128,382	93,317	131,665	53,835	64,878	92,397	35,249
Pre-Tax Cumulative Cash-flow after depreciation		9,262,831	10,083,579	244,107	- 62,388	- 306,972	- 451,389	- 362,098	- 193,200	22,863	254,470	522,071	590,863	719,246	812,562	944,227	998,062	1,062,940	1,155,337	1,190,586
Provincial gross income tax on total revenue	5.00%	185,515	179,415	93,134	-	-	6,100	15,509	18,544	19,577	18,982	20,523	10,998	13,535	11,602	13,935	9,770	9,672	10,254	6,515
Municipal tax on total revenue	0.60%	22,262	21,530	11,176	-	-	732	1,861	2,225	2,349	2,278	2,463	1,320	1,624	1,392	1,672	1,172	1,161	1,231	782
Transaction tax (in 0,6% + out 0,6%)	1.20%	70,705	63,509	30,476	749	2,849	3,558	5,268	5,982	6,491	6,173	6,561	4,382	4,853	4,410	5,078	3,967	3,838	3,788	2,630
Export duty refund Au	1.50%	26,301	25,263	6,022	-	-	1,038	762	1,283	1,746	1,422	809	1,533	2,550	2,479	3,598	2,447	2,230	2,949	1,454
Export duty refund Ag	1.50%	34,861	33,881	24,412	-	-	980	4,297	4,780	4,669	4,788	5,877	2,092	1,936	1,378	1,058	814	991	488	714
Total Taxable Income					-	-	-	71,711	148,210	194,061	210,384	244,741	55,718	112,856	79,769	115,635	42,186	53,428	80,561	27,490
Total Income Tax @ 35%	35.00%	502,863	502,863	304,188	-	-	-	25,099	51,874	67,921	73,635	85,659	19,501	39,500	27,919	40,472	14,765	18,700	28,196	9,622
Total taxation		720,183	708,173	408,540	749	2,849	8,412	42,679	72,562	89,923	94,857	108,519	32,575	55,026	41,467	56,502	26,414	30,150	40,032	17,380
10 - POST TAX CASH-FLOW																				
After Tax Cash-Flow	k$	815,625	1,176,001	777,188	- 63,136	- 240,273	- 64,248	138,673	170,712	152,189	149,994	165,621	42,197	81,919	55,124	77,697	33,769	36,879	54,487	24,021
After Tax Cumulated Cash-Flow	k$	6,634,409	7,368,613	460,100	- 63,136	- 303,410	- 367,658	- 228,984	- 58,272	93,916	243,910	409,531	451,728	533,647	588,771	666,468	700,237	737,116	791,604	815,625
All-In Sustaining Cost (Ag)	US$/AgEq oz	12	12	10																
All-In Cost (Ag)	US$/AgEq oz	15	13	10																
All-In Sustaining Cost (Au)	US$/AuEq oz	1,004	982	799																
All-In Cost (Au)	US$/AuEq oz	1,006	983	799																

Cash Flow Modeling – Time Value of Money (NPV)

- **Concept:** Money today is worth more than the same amount of money in the future due to its potential to earn interest over time.
  - Earning potential
  - Inflation

$$NPV = \sum_{n=0}^{N} \frac{CF_n}{(1+r)^n}$$

Where:

N = the total number of periods
n = a single period between 0 and N
CF = the cash flow in period n
r = the discount rate

Year	Discount Factor	Year	Discount Factor
1	0.952	11	0.585
2	0.907	12	0.557
3	0.864	13	0.530
4	0.823	14	0.505
5	0.784	15	0.481
6	0.746	16	0.458
7	0.711	17	0.436
8	0.677	18	0.416
9	0.645	19	0.396
10	0.614	20	0.377

Cash Flow Modeling – Discussion

What is it best used for:

- Illustrates how a project RESPONDS to certain variables
  - Grade / Recovery fluctuation
  - Commodity price
  - Operating costs / Capital costs
  - Model debt / streams / royalties
- Will NEVER accurately predict cash flows
- Helps in decision making process
- Provides an INDICATION of value

Cash Flow Modeling – What about early-stage projects?

- In mining, there are primarily two groups. Those with revenue and those without
- Valuing companies with revenue is straight forward – use DCF model
- Valuing companies without cash flow can still be done, but requires more imagination

Valuation – Book Value

- Indication of what a company is worth if the business closed, sold assets and paid off all debts
- Calculated from financial statements:
  - Book Value = Tangible Assets minus Liabilities
- In mining, this valuation method is least reliable as it includes capitalized costs such as exploration, and price paid for the asset
- No indication of quality or success

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Valuation – Comparables

SELECTED MARKET COMPARABLES

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COMPANY	LOCATION	STAGE	TYPE	TOTAL AUEQ OZ (000's OZ)	Avg Grade	SHARES F/D	RECENT PRICE	F/D M Cap	EV	EV/OZ	Capex MM
DEVELOPERS											
AUREUS MINING	Liberia	Construction	OP	2,545,000	2.5	620,400,000	$0.06	$37,224,000	$131,324,000	$52	$172
GUYANA GOLDFIELDS	Guyana	Construction	OP & UG	8,929,000	2.9	162,000,000	$7.82	$1,266,840,000	$1,375,840,000	$154	$249
ROX GOLD	Burkina Faso	Construction	UG	1,600,000	13.9	380,000,000	$1.33	$505,400,000	$538,400,000	$337	$111
TOREX GOLD	Mexico	Construction	OP	11,583,000	3.4	819,000,000	$2.08	$1,703,520,000	$1,934,520,000	$167	$800
AVERAGE										**$177**	
K92 MINING	PNG	Post Producing	UG	1,927,000	11.4	134,000,000	$0.350	$46,900,000	$46,900,000	$22	$0
EXPLORATION											
CONTINENTAL GOLD	Colombia	PEA	UG	7,478,000	9.3	138,900,000	$2.52	$350,028,000	$316,028,000	$42	$390
DALRADIAN RESOURCES	Ireland	PEA	UG	3,494,000	9.9	299,039,369	$1.14	$340,904,881	$316,904,881	$91	$249
EASTMAIN RESOURCES	Canada	Resource	OP & UG	1,583,000	4	140,000,000	$0.52	$72,800,000	$68,000,000	$43	TBD
INTEGRA GOLD	Canada	PEA	UG	1,673,000	9	464,700,000	$0.72	$334,584,000	$309,584,000	$185	$71
PRETIUM RESOURCES	Canada	Feasibility	UG	7,500,000	16.8	153,600,000	$10.93	$1,678,848,000	$2,138,848,000	$285	$747
AVERAGE										**$129**	

- Key word is **“Selected”**. Comparables can be very subjective
- Reality is, the market sets the price of what it is willing to pay

Valuation - Cash Flow Modeling

- Can DCF models apply to early-stage projects? **YES**
- Almost all projects can be modeled using DCF
- Management should have an idea of the target size, tenor of resource, deposit model and jurisdiction
  - Porphyry vs Low sulphidation epithermal
  - Oxide vs sulphide
  - Remote location vs Non-remote location
  - Use realistic commodity price assumptions
- In today's world, with public filings and the internet, comparable projects are common and easily accessible

Project Valuation Q&A

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