24. CAPITAL COST ESTIMATE

24.1 Summary

The present Capital Cost Estimate pertaining to this study meets AACE Class 3 – estimate type criteria, which is usually prepared to establish a preliminary Capital Cost Forecast and assess the profitability potential of the project. This will allow management, or the project sponsor, to obtain authorization for funds for further project definition. As such, this estimate forms the initial ''Control Estimate'' against which subsequent cost estimates developed in the next study and engineering phases will be compared and monitored. The accuracy range for the Capital Cost Estimate and the Operating Cost Estimate developed in this study has an expected range of -10% on the low side and +15% on the high side.

The following table provides a further summary, by cost type (direct or indirect), and discipline.

Table 24-1: Project Capital Cost Summary by Discipline

Cost Type	Discipline	Labour Hrs	Labour (CAD)	Material (CAD)	Equipment (CAD)	Indirect (CAD)	Total (CAD)
Direct Costs	Civil	82,263	$13,045,292	$1,820,566	$847,875	$0	$15,714,050
	Concrete	29,245	$3,339,809	$2,227,625	$0	$0	$5,567,433
	Structural	14,519	$2,177,775	$4,892,992	$0	$0	$7,070,767
	Architectural	21,995	$2,449,143	$2,695,495	$0	$0	$5,144,639
	Mechanical	61,670	$8,330,225	$1,869,064	$28,378,800	$0	$38,578,089
	Piping	22,713	$2,988,794	$1,064,691	$30,941	$0	$4,084,426
	Electrical	17,911	$2,314,487	$1,455,421	$2,458,266	$0	$6,228,174
	Automation / Telecom	10,261	$1,215,362	$2,012,650	$0	$0	$3,228,012
	Mining	0	$0	$0	$0	$5,440,786	$5,440,786
	Total direct costs	**260,577**	**$35,860,887**	**$18,038,821**	**$31,715,882**	**$5,440,786**	**$91,056,377**
Indirect Costs	Owner's Teams	0	$0	$0	$0	$1,712,000	$1,712,000
	G&A Costs	0	$0	$0	$0	$2,027,375	$2,027,375
	Closure Costs (inc. contingency)					$9,467,197	$9,467,197
	EPCM	0	$0	$0	$0	$9,547,000	$9,547,000
	Preliminary & General	0	$0	$0	$0	$4,012,950	$4,012,950
	Contingency	0	$0	$0	$0	$12,107,000	$12,107,000
	Total indirect costs	**0**	**$0**	**$0**	**$0**	**$38,873,522**	**$38,873,522**
Grand Total		**260,577**	**$35,860,887**	**$18,038,821**	**$31,715,882**	**$44,314,308**	**$129,929,899**

24.2 Estimate Overview and Qualifications

The capital cost estimate has been compiled by BBA and includes estimates from different sources and allocations from Sayona Owner's team. The capital cost estimate includes all direct (process and non-process infrastructure) costs, indirect (Owners and other) costs, contingency and other allowances.

The estimate for the process and non-process infrastructure is based on the preliminary engineering and design completed to date. Unit costs and prices have been obtained from equipment quotations, in-house data from other projects and industry standard estimating factors.

The capital cost estimate does not provide for escalation allowances or impact from new duties taxes on commodities such as aluminium, steel or others.

24.3 Estimate Structure

The capital cost estimate is structured using the work breakdown structure (WBS) detailed in Section 27.

Within the work breakdown structure, each cost line item is further structured into categories of direct / indirect, discipline and supply / installation.

24.4 Base Date

The base date for the capital estimate is Q4 2019.

24.5 Currency

The capital estimate has been presented in Canadian dollars.

24.6 Estimate Accuracy

The accuracy values were estimated based on the level of scope defined and range of price quotations. The accuracy levels ranged from -10% to +15 %.

Foreign exchange risk or new duties impact has not been included in the accuracy assessment.

This estimate of accuracy is also limited to the current scope. This accuracy level could be exceeded if the scope is varied by, for example, changing production rate, changing the number or type of process operations, or by major changes to assumptions regarding infrastructure.

24.7 Estimate Basis and Detail

24.7.1 Summary by Area

The following table summarizes the capital cost estimate by area (based on the project WBS), with the following sections providing further detail on each major area and relevant basis for the estimate.

Table 24-2: Capital Cost Summary by Area

WBS	Description	Labour (hours)	Labour (CAD)	Material (CAD)	Equipment (CAD)	Indirects (CAD)	Total (CAD)
Direct Costs							
2000	**Mining**						
2100	Mining Fleet - General	0	$0	$0	$0	$2,193,840	$2,193,840
2200	Mine Establishment - General	0	$0	$0	$0	$3,246,946	$3,246,946
2300	Mine Infrastructure - General	2,709	$432,918	$38,950	$0	$0	$471,868
3000	**Process Plant**						
3100	Crushing - General	22,821	$3,045,685	$1,785,140	$5,882,312	$0	$10,713,138
3200	Plant Feed - General	14,982	$1,775,072	$1,703,282	$1,336,832	$0	$4,815,186
3300	Milling and magnetic separation - General	13,067	$1,727,837	$489,517	$4,913,325	$0	$7,130,679
3400	Flotation - General	12,607	$1,682,331	$408,052	$3,859,549	$0	$5,949,932
3500	Product Drying and Bagging - General	10,529	$1,348,737	$737,758	$2,814,549	$0	$4,901,044
3600	Tailings dewatering - General	19,408	$2,519,441	$1,379,772	$5,154,678	$0	$9,053,891
3700	Process Plant Common - General	6,160	$768,193	$844,380	$1,162,177	$0	$2,774,750
3710	Process Plant Common - Buildings	25,612	$3,205,802	$4,109,221	$0	$0	$7,315,022
3720	Process Plant Common - Process Plant Electrical & Control	15,712	$1,883,701	$2,469,329	$1,411,800	$0	$5,764,830
3740	Process Plant Common - Piping	19,510	$2,570,398	$867,481	$0	$0	$3,437,879
3800	Reagents - General	5,663	$736,533	$259,165	$2,941,871	$0	$3,937,569
4000	**Tailings Storage Facility**						
4000	Tailings Storage Facility - General	48,593	$7,782,192	$971,895	$407,728	$0	$9,161,815
5000	**Common Services**						

WBS	Description	Labour (hours)	Labour (CAD)	Material (CAD)	Equipment (CAD)	Indirects (CAD)	Total (CAD)
5100	Water Services - General	6,745	$925,523	$159,857	$1,086,347	$0	$2,171,727
5110	Water Services - Fire Water - General	1,046	$117,587	$74,203	$396,000	$0	$587,790
5200	Electrical Supply - General	821	$143,744	$43,375	$135,500	$0	$322,619
5600	Compressed Air - General	583	$77,913	$21,985	$156,529	$0	$256,427
6000	**On Site Infrastructure**						
6100	Site Wide Civil - General	11,146	$1,818,792	$136,064	$0	$0	$1,954,857
6200	On Site Roads - General	2,279	$354,173	$38,277	$0	$0	$392,450
6210	On Site Roads - Truck Scale - General	1,243	$146,933	$52,313	$56,685	$0	$255,932
6300	Site Buildings - General	4,681	$508,144	$941,856	$0	$0	$1,450,000
7000	**Off Site Infrastructure**						
7110	Site Access Road - West Side	8,182	$1,273,666	$122,924	$0	$0	$1,396,590
7120	Site Access Road - Ch. Preissac Refection	5,224	$786,161	$76,724	$0	$0	$862,885
7310	Power supply - Incoming power line	1,255	$229,412	$307,300	$0	$0	$536,712
Total Direct Costs		**260,577**	**$35,860,887**	**$18,038,821**	**$31,715,882**	**$5,440,786**	**$91,056,377**
Indirect Costs							
8000	**Owner's Costs**						
8000	General	0	$0	$0	$0	$1,712,000	$1,712,000
8200	G&A Costs	0	$0	$0	$0	$2,027,375	$2,027,375
8300	Mining Requirements	0	$0	$0	$0	$0	$0
9000	**Project Indirect Costs**						
	Closure Costs (inc. contingency)					$9,467,197	$9,467,197
9100	EPCM Services	0	$0	$0	$0	$9,547,000	$9,547,000

WBS	Description	Labour (hours)	Labour (CAD)	Material (CAD)	Equipment (CAD)	Indirects (CAD)	Total (CAD)
9200	Construction - Facilities and Utilities	0	$0	$0	$0	$258,750	$258,750
9300	Construction - Operation and Maintenance	0	$0	$0	$0	$747,000	$747,000
9400	Professional Services - Third Party	0	$0	$0	$0	$65,000	$65,000
9500	Commissioning Services	0	$0	$0	$0	$401,200	$401,200
9600	Overhead Expenditures / Monetary Fees Input	0	$0	$0	$0	$385,000	$385,000
9800	Escalation / Risk / Contingency	0	$0	$0	$0	$12,107,000	$12,107,000
9900	Common Distributables	0	$0	$0	$0	$2,156,000	$2,156,000
Total Indirect Costs		**0**	**$0**	**$0**	**$0**	**$38,873,522**	**$38,873,522**
Total Costs		**260,577**	**$35,860,887**	**$18,038,821**	**$31,715,882**	**$44,314,308**	**$129,929,899**

24.7.2 WBS 2000 – Mining

The Area 2000 – Mining – cost estimate includes all elements associated with mining activities, including mine pre-development, some maintenance related costs, mining infrastructure (roads) and the mine fleet. Mining capex is based on an owner-operator fleet. The mining equipment fleet will be leased assuming a 5.85% interest rate over a 7-year period, with a 10% down payment. The down payment and initial payment are capitalized and considered in the initial capital costs. The remainder of the payments are considered as sustaining capital.

Table 24-3: Capital Cost Estimate for Area(s) 2000 – Mining

WBS	Description	Total (CAD)
2100	Mining - Mining Fleet - General	$2,193,840
2200	Mining - Mine Establishment – General	$3,246,946
2300	Mining - Mine Infrastructure - General	$471,868
Total		**$5,912,654**

The capex is based on budgetary quotes received from equipment suppliers. The effective lives of the major mining equipment are based on recommendations from equipment suppliers and other project experience, and are defined as follows:

- DTH Drill: 30,000 hours
- Backhoe Excavator: 35,000 hours
- Wheel Loader: 35,000 hours
- Rigid Haul Truck: 60,000 hours
- Articulated Haul Truck: 30,000 hours
- Bulldozer (40 t): 60,000 hours
- Bulldozer (24 t): 30,000 hours
- Motor Grader: 30,000 hours
- Auxiliary Excavator: 30,000 hours

24.7.3 WBS 3000 – Process Plant

Crushing and processing of the mined ore has been organized into three areas in the WBS:

- 3100 – Primary Crusher, Secondary / Tertiary Crusher, Screening Area:

  The Area 3100 cost estimate includes the supply, delivery and installation of process equipment contained within the primary crusher building, delimited by the grizzly and the primary crusher conveyor, which is a sacrificial conveyor that feeds the primary screen feed conveyor, process equipment delimited by the primary screen feed conveyor and the mill feed conveyor (inclusive). This area was designed by ASDR as a modular installation and costs were estimated based on budgetary pricing from ASDR.

- 3200 – Stockpile, reclaim and Conveying:

  The Area 3200 cost estimate includes the supply and installation costs for all the crushed ore reclaim, conveying and storage dome.

- 3300/3400/3500/3600/3700/3800 – Processing Plant Area:

  The Area 3300 to 3800 cost estimate includes the supply and installation costs for all process equipment within the process plant building, including the grinding circuit, magnetic separation, flotation circuits, concentrate dewatering and product handling as well as tailings thickening, filtration and disposal. The estimate for this area also takes into consideration reagents storage and transfer area as well as plant utilities and services, including process and fresh water pumps and compressed air supply.

The cost estimates for the above areas were developed from budgetary quotes chosen from suppliers, often at least three bids, which underwent a review and selection based on a number of criteria. BBA's purchasing group managed the communication with vendors, using design criteria jointly specified by the process and mechanical disciplines. The estimates for platework, piping, electrical, steel, concrete, civil and architectural, were developed using the 3D model as the basis for determining quantities; automation and instrumentation estimates were factored; no P&IDs were developed in this study.

Table 24-4 offers a breakdown of process plant costs of area 3000.

Table 24-4: Capital Cost Estimate for Area(s) 3000 – Process Plant

WBS	Description	Total (CAD)
3100	Process Plant - Crushing - General	$10,713,138
3200	Process Plant - Plant Feed - General	$4,815,186
3300	Process Plant - Milling and mag separation - General	$7,130,679
3400	Process Plant - Flotation - General	$5,949,932
3500	Process Plant - Product Drying and Bagging - General	$4,901,044
3600	Process Plant - Tailings dewatering - General	$9,053,891
3700	Process Plant - Process Plant Common - General	$2,774,750
3710	Process Plant - Process Plant Common - Buildings	$7,315,022
3720	Process Plant - Process Plant Common - Process Plant Electrical & Control	$5,764,830
3740	Process Plant - Process Plant Common - Piping	$3,437,879
3800	Process Plant - Reagents - General	$3,937,569
Total		**$65,793,920**

The following tables present the unit rates and prices, and nominal allowances made, which have been used in the compilation of the process plant capital cost estimate.

Table 24-5: Process Plant Unit Prices

Item	UOM	Unit rate	Comment
Structural steelwork – medium weight	$/t	3,700	Including fabrication, surface treatment and freight to site.
Structural steelwork – heavy weight	$/t	3,600	Including fabrication, surface treatment and freight to site.
Structural steelwork – installation	Mh/t	11.5	Installation factor from other projects.
Concrete	$/m3	1,356	Average concrete installed price inclusive of concrete, formwork and rebar

Item	UOM	Unit rate	Comment
Concrete – installation	Mh/m3	7.1	Average installed hours per m3 of concrete
Site work – labour	$/Mh	137.62	Average “all-in” labour rate including contractor supervision, facilities, consumables, construction equipment, margin, overheads and profit.
Wear liners, profile cut	$/t	10,500	Including fabrication, surface treatment
Structural steel and platework (hoppers and bins)	$/t	10,300	Including fabrication, surface treatment
Belt conveyors (fixed)	$/m	5,600	Fabrication and supply of all components including steelwork and supply to site.
Chutework	Ea	44,270	Fabrication, including selective lining
Hoppers	Ea	25,720	Fabrication, including selective lining

24.7.4 WBS 4000 – Tailings Storage Facility & Water Management

The capital cost estimates related to the tailings and waste rocks facility and water management infrastructure have been developed by BBA based on the quantity provided by SNC-Lavalin, on the following basis:

- At the Authier project site, the tailings will be filtered and managed with waste rocks in a co-disposal storage facility;
- Quantities of tailings and waste in the DFS have been provided by Sayona Mining and are based on the quantities provided in the PFS;
- Quantities associated with water management infrastructure were estimated by BBA. All quantities submitted for the cost estimate exclude contingency;
- The quantities received from engineering have been distributed over the two phases of the project.

Quantities provided by SNC-Lavalin for the co-disposal and overburden storage facilities as well as the water management infrastructure include the following elements (scope):

- Co-disposal and overburden storage facility:
  - Clearing (Considered Tree Clearing and Stumpage);
  - Drainage requirement underneath the pile should be validated at the details engineering (long term stability);
  - Geotextile – acting as filter between waste rocks and tailings in the slope of tailings cells (could be with other materials as overburden according to filter criteria).

- Water Management Infrastructure:
  - Collection basins:
    - Stripping (Top Soil Removal);
    - Cut – overburden;
    - Cut – Bedrock;
    - Geotextile;
    - Geomembrane;
    - Granular material MG-56;
    - Rip Rap – 50-300 mm.
  - Derivation ditches:
    - Stripping (Top Soil Removal);
    - Cut – overburden;
    - Cut – Bedrock;
    - Geotextile;
    - Granular material MG-56;
    - Rip Rap – 100-300 mm.
  - Collection ditches:
    - Stripping (Top Soil Removal);
    - Cut – overburden;
    - Cut – Bedrock;
    - Geotextile;
    - Granular material MG-56;
    - Rip Rap – 100-300 mm.
  - Pumping:
    - Pumping lines length;
    - Pumps.
  - Water treatment facility platform (including treatment unit).

Table 24-6: Capital Cost Summary for Area 4000 – Tailings Storage Facility & Water Management

WBS	Description	Total (CAD)
4000	Tailings Storage Facility - General	$9,161,815
Total		**$9,161,815**

24.7.5 WBS 5000 – Common Services

Common services included in the capital cost estimate are summarized as follows:

- Water services (storage, pumping and reticulation);
- Potable water treatment plant;
- Waste water treatment plant;
- On-site communications network;
- On-site HV substation;
- Compressed air network.

The following tables provide further breakdown of the common services capital cost estimate, and the allowances included for specific items. The allowances exclude process equipment which has been priced via the mechanical equipment list (refer to appendices).

Table 24-7: Capital Cost Estimate for Area(s) 5000 – Common Services

WBS	Description	Total (CAD)
5100	Common Services - Water Services - General	$2,171,727
5110	Common Services - Water Services - Fire Water - General	$587,790
5200	Common Services - Electrical Supply - General	$322,619
5600	Common Services - Compressed Air - General	$256,427
Total		**$3,338,563**

24.7.6 WBS 6000 – On-Site Infrastructure

The Area 6000 – On-Site Infrastructure – cost estimate includes site preparation of site roads and pads as well as the water management systems, including run-off water collection from the industrial site, potable water treatment and distribution, waste water (sewage) collection and treatment, and fire water storage and distribution. The estimates were developed from budgetary quotes and quantities estimated from the 3D model.

On-site infrastructure costs are for those capital cost items which are not related to processing infrastructure, i.e. non-process infrastructure. Table 24-8 details the on-site infrastructure Capex items included in the capital cost estimate.

Table 24-8: Capital Cost Estimate for Area(s) 6000 – On-site Infrastructure

WBS	Description	Total (CAD)
6100	On-Site Infrastructure - Site wide Civils - Site preparation - General	$1,954,857
6200	On-Site Infrastructure - On-site Roads - General	$392,450
6210	On-Site Infrastructure - On-site Roads – Truck Scale - General	$255,932
6300	On-Site Infrastructure - Site Buildings - General	$1,450,000
Total		**$4,053,239**

24.7.6.1 WBS 6300 – Administration & Services

Comprises the administrative and services buildings, excluding buildings and services associated with the mine industrial area (MIA).

The cost estimate for the various buildings in this WBS area was developed from pricing supplied to BBA by Sayona. Allowances have been made for office equipment and furnishings.

The laboratory and associated equipment will be rented from a local supplier. Costs associated with laboratory operation are based on a 5-year contract with a reputable analytical laboratory services supplier (budgetary estimate). Rental costs were supplied from a local building supplier and allowances were included for furnishings and office equipment. The mine garage (truck shop) is assumed to be leased, with a 15% down payment and the remaining portion financed over a seven year term with a 7% interest rate. The first installment payment and the down payment are capitalized and shown in the table below.

The administrative building and the guard house are rented and are not part of the estimate.

Table 24-9: Capital Cost Summary – Administration & Services

	Estimated CAPEX (CAD)
Administrative Building	Rental
Guard House	Rental
Warehouse	$350,000
Workshop	$350,000
Laboratory	Rental
Mine Garage	$750,000
Total	**$1,450,000**

24.7.7 WBS 7000 – Off-site Infrastructure

The Area 7000 – Off-site – cost estimate includes the road upgrade work needed to access the site as well as the electrical power line and telecom line to service the site. Road upgrades off-property consider the civil requirements needed to upgrade Chemin Preissac and based on BBA's estimate of fill quantities required. The telecom and power line estimates were derived on the basis of distance from Route 109 to the project site and budgetary pricing ($/km) obtained from local contractors and provided through Sayona Mining.

Off-site infrastructure comprises of two main components, namely upgrades to Chemin Preissac, the realignment of Chemin de la Sablière and Chemin des Pêcheurs intersection as well as the income HV power line to site. The following table details the allowances included for these two items.

Table 24-10: Capital Cost Estimate for Area(s) 7000 – Off-site Infrastructure

WBS	Description	Total (CAD)
7110	Off-site Infrastructure - Site Access Road - West Side	$1,396,590
7120	Off-site Infrastructure - Site Access Road - Ch. Preissac Refection	$862,885
7310	Off-site Infrastructure - Power supply - Incoming power line	$536,712
Total		**$2,796,187**

The access road upgrades are a nominal allowance, allocated out from the site development capex nominated in the previous PFS. The power supply for the incoming power line is taken from preliminary discussions with Hydro-Quebec, cost from local supplier and data base from BBA.

24.7.8 WBS 8000 – Owner's Costs

Table 24-11: Capital Cost Summary for Area 8000 – Owner's Costs

WBS	Description	Total (CAD)
8000	Owner's costs – General	$1,712,000
8200	Owner's costs – Project Development	$2,027,375
Total		**$3,739,375**

24.7.9 WBS 9000 – Project Indirect Costs

Table 24-12: Capital Cost Summary for Area 9000 – Project Indirect Costs

WBS	Description	Total (CAD)
	Closure Costs (incl. contingency)	$9,467,197
9100	Project Indirect Costs - EPCM Services	$9,547,000
9200	Project Indirect Costs - Construction - Facilities and Utilities	$258,750
9300	Project Indirect Costs - Construction - Operation and Maintenance	$747,000
9400	Project Indirect Costs - Professional Services - Third Party	$65,000
9500	Project Indirect Costs - Commissioning Services	$401,200
9600	Project Indirect Costs - Overhead Expenditures / Monetary Fees Input	$385,000
9800	Project Indirect Costs - Escalation / Risk / Contingency	$12,107,000
9900	Project Indirect Costs - Project Indirect Costs - Common Distributable	$2,156,000
Total		**$35,134,147**

Table 24-13: Indirect Cost Allowances

Item	UOM	Unit rate	Comment
Engineering, procurement and construction management	%	11.15	Of total direct cost; within acceptable industry range at the feasibility level
Owner's team consultants	%	2	Of total direct cost; from previous projects
Contingency	%	12	Of total project costs

24.8 Exclusions and Assumptions

The scope of the capital estimate is restricted to the consultant as presented in the plot plan, PFDs, equipment list, and scope of work.

The caveats, exclusions and assumptions relevant to the capital estimate include, but are not limited to:

- Limited geotechnical data was available for the feasibility study;
- Flowsheet and equipment sizing is based on current metallurgical testing;
- Hydrogeological inputs to the FS were nominal only;
- No infrastructure geotechnical investigations have been undertaken;
- LIDAR survey data has been used;

- Cost of schedule delays caused by scope changes, labour disputes, or environmental permitting activities are excluded;
- Project financing cost is excluded;
- Additional study costs prior to project implementation are excluded, e.g. water studies, sampling, ongoing testing, DFS, drilling and resource development;
- All VAT, import duties, surcharges and any other statutory fees have not yet been evaluated;
- Any provisions for project risks, outside of those related to design and estimating confidence levels, have not yet been evaluated;
- Mineral rights, rental fees and the purchase or use of the land are excluded;
- Escalation and impact of currency fluctuations has been excluded;
- Risk from new duties on material such as steel and aluminium on bulk material (structural, rebar and embedded metal in concrete, equipment, pipe, wire, etc.) is not included.

24.8.1 Reclamation and Salvage

In accordance with the Mining Act of Québec, closure and restoration requirements have been developed to return the Authier Project site to an acceptable condition, ensuring that the site is safe, and the surrounding environment is protected.

The cost of restoring the Authier site is estimated to be $12.6M. As required by the Ministère des Ressources Naturelles (“MERN”), this cost estimate includes the cost of site restoration, the post-closure monitoring as well as engineering costs (30%) and a contingency of 15%. In accordance with the regulations, Sayona intends to post a bond as a guarantee against the site restoration cost.

24.8.2 Sustaining Capital

The total sustaining capital cost is estimated at $83.0M through the mine life. The sustaining capital cost is composed of the following items and presented in a yearly basis in Table 24-14.

Table 24-14: Sustaining Capital

Year		1	2	3	4	5	6	7	8	9	10	11	12	13	14	LOM
Mine Equipment- Financed	M$	1.8	1.8	3.2	4.1	4.8	6.2	5.4	4.1	3.9	2.9	2.0	1.3	0.1	0.0	**41.6**
Mine Equipment- Purchased	M$	0.3	0.1	0.2	0.1	0.0	0.2	1.2	0.0	0.0	0.0	0.0	0.4	0.0	0.0	**2.5**
Process Plant Mobile Equipment	M$	1.2	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**2.3**
Remaining Site Preparation Activities	M$	9.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**9.8**
Building Capital Rental	M$	1.0	0.8	0.8	0.8	0.8	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**4.7**
Tailings and Water Management Infrastructure	M$	0.0	0.0	0.0	10.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**10.4**
Water Treatment Plant - Capital Rental	M$	0.2	0.2	0.2	0.2	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**1.5**
Wetland Compensation	M$	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.4	**4.1**
Royalties buyback	M$	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**3.0**
Reclamation and Closure	M$	3.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**3.2**
Total Sustaining Capital Costs	**M$**	**20.7**	**3.2**	**4.7**	**15.9**	**6.4**	**7.2**	**7.9**	**4.2**	**4.1**	**3.3**	**2.4**	**2.0**	**0.5**	**0.4**	**83.0**

- Mine Equipment

  The mine equipment sustaining capital cost (financed and purchased) is attributable to the growing need for mining equipment and fleet renewal over the years of operation. The financing terms of the major mining equipment were submitted by the equipment vendor and are defined with a 5.85% interest rate over a seven-year period, with a 10% down payment.

- Process Plant Mobile Equipment

  The process plant mobile equipment sustaining capital cost is attributable to the purchase and renewal of the front-end loaders manipulating material at the ore and concentrate stockpiles.

- Remaining Site Preparation Activities

  Most of the roads, platforms and other civil infrastructure are planned to be built during pit operation. It is assumed for these future work constructions that only a minimal additional cost is associated with the placement of the material, since blasting and transport are already accounted for in the mining cost.

- Building

  To reduce initial capital, most of the secondary buildings are rented with a minimal amount after 5 or 10 years to buy them back. Cost shown in the financial cash flow model represents the rental fees and the buyback cost at different years, depending on the building. This includes mechanical garage, offices, warehouse, etc.

- Tailings and Water Management Infrastructure

  Site preparation for the tailing and waste pile has been sequenced in time for three reasons:

  1. No need to prepare the whole area Year 1;
  2. Limit the amount of water to be treated with a larger area;
  3. Reduce construction cost as we assumed these elements are to be built with the mining equipment.

  It includes peripheral ditches, new water collecting basin, increase in size of existing basin, site preparation, etc. With the increase in areas of the piles, a second water treatment unit is planned in Year 10. This unit size and needs will be validated during operation and might be replaced with a larger basin, depending on the construction cost. With the co-disposition of tailings and waste, a geotechnical woolen membrane will be required between the tailing and the waste, for long-term consolidation behavior.

- Water Treatment Plant

  The initial water treatment plant is rented and operated from a local supplier. The second unit planned in Year 10 might be replaced with other civil work, depending on water volumes and flows and treatment.

- Wetland Compensation

  A compensation scheme for damage to wetlands and waterways is currently in force in Québec. The compensation program and the impacted areas are presented in the following table. This amount was distributed yearly through the mine life assuming that the impacts would not be happening only at the beginning of the project, but throughout the duration of the operation.

Table 24-15: Wetland and Waterway Compensation Program

Area	Compensation ($/m^2)	Area m^2	M$
Wetland destroyed	14.08	72,500	1.02
Wetland impacted	2.48	1,200,000	2.98
Waterway destroyed	24.08	1,000	0.02
Waterway impacted	16.88	3,000	0.05
Total		**1,276,500**	**4.07**

- Reclamation and Closure

  The mine closure cost estimated is attributable to:

  - The dismantling of the infrastructure, including restoration and the rehabilitation of the sector;
  - The dismantling and demobilization of the water treatment system and the pumping station including restoration and rehabilitation of the area;
  - Securing the site;
  - The management of residual materials;
  - The management of mine and sterile tailings in a co-disposal pile;
  - The gradual restoration of the accumulation areas (co-disposition).

- Royalties Buy Back.

  Some of the royalties are planned to be purchased at Year 1, for a total of $3.0M, in order to optimize the economic outcome of the project.

  - Claim 2183455 – 1% of the 2% NSR to 9187-1400 Quebec Inc. can be purchased for $1.0M;
  - Claim 2194819 – 1% of the 1% NSR to 9187-1400 Quebec Inc. can be purchased for $1.0M;
  - Claim 2116146 – 1% of the 2% NSR to Jefmar Inc. can be purchased for $1.0M.

24.9 Working Capital

An amount will be required to sustain the operations until the first payment coming from concentrate sales. A provision of $6.95M was accounted for in this purpose. It was assumed that this amount would be ‘’reimbursed’’ to the project at Year 4 (i.e., 1 year after that the project would be cashflow positive (capital paid back)).

25. OPERATING COST ESTIMATE

25.1 Summary

The following table summarizes the operating costs calculated for the project.

Table 25-1: Summary LOM Operating Costs

Cost Area	LOM (M$)	$/t Milled	CAD/t Conc Prod (Dry)	USD/t Conc Prod (Dry)
Open Pit Mining	302.3	25.0	191.5	145.5
Mineral Processing (Includes mobile eqpt.)	226.7	18.7	143.7	109.2
Analytical Laboratory	12.7	1.1	8.1	6.1
Water Treatment	16.1	1.3	10.2	7.7
Tailings Management	6.0	0.5	3.8	2.9
General and Administration	67.1	5.5	42.5	32.3
Total On-site Costs	**630.9**	**52.2**	**399.7**	**303.8**
Royalties	20.4	1.7	12.9	9.8
Total On-site Costs + Royalties	**651.3**	**53.8**	**412.7**	**313.6**
Concentrate Transport and Logistics Costs	108.5	9.0	68.8	52.3
Total Operating and Shipping Costs	**759.8**	**62.8**	**481.4**	**365.9**

25.2 Mining Operating Cost

The operating costs have been estimated using parameters outlined in the previous sections of the report. The Owner / Operator scenario assumes that Sayona will carry out the majority of the mining and maintenance activities, however blasting and major equipment repairs will be contracted to the suppliers. All costs related to the supervision and technical services of the project have been included in the general and administrative costs, thus are not included in this section of the report.

The cost estimate was developed from first principles for the Owner / Operator arrangement and was based on the following general inputs and assumptions:

- All costs are in Canadian dollars;
- Diesel price of $0.9257/L;
- Allowances for ore re-handle on the ROM stockpile;

- The mine operations salaries were provided by Sayona based on an analysis of the salary and fringe benefits costs for mining contractors in the Abitibi mining sector. BBA has not revised the data of the analysis.

The following table provides the estimated mining operating costs over the life of mine.

Table 25-2: LOM Mining Operating Costs

Item	Unit	Total	Q-1	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11	Y12	Y13	Y14
Drilling & Blasting	M$	51.92	0.00	2.45	2.22	3.14	4.34	5.47	5.99	6.94	6.09	4.74	3.55	2.05	1.73	1.67	1.54
Loading	M$	34.44	0.00	1.39	1.57	2.33	3.13	3.93	4.53	4.45	3.76	2.98	2.17	1.28	1.05	1.00	0.89
Hauling	M$	129.47	0.00	2.88	3.44	5.48	10.03	14.36	18.41	15.78	16.46	14.67	11.16	5.60	4.21	3.79	3.20
Auxiliary Services	M$	48.18	0.00	2.70	4.32	3.66	4.07	4.17	4.27	4.39	4.37	4.32	3.96	2.43	2.16	1.74	1.62
Maintenance	M$	38.24	0.00	1.68	1.94	2.50	3.29	4.13	4.85	4.51	4.32	3.79	2.96	1.72	1.08	0.81	0.66
Total Cost	M$	302.25	0.00	11.09	13.49	17.11	24.86	32.05	38.05	36.07	35.00	30.49	23.79	13.08	10.23	9.00	7.92
Total Unit Cost	$/t mined	3.19	0.00	3.67	4.09	2.87	2.78	2.69	2.72	2.58	2.97	3.40	3.98	5.19	5.90	6.19	6.78

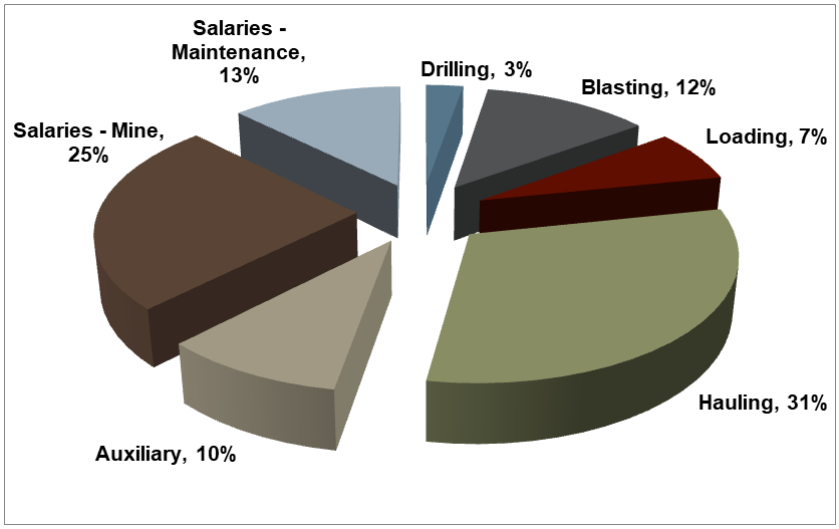

Figure 25-1: LOM Mining Operating Cost Breakdown

Table 25-3: LOM mining Operating Cost Breakdown

Cost Category	LOM Average (CAD/t mined)	% of Total
Drilling	0.09	3%
Blasting	0.39	12%
Loading	0.22	7%
Hauling	0.99	31%
Auxiliary	0.31	10%
Salaries - Mine	0.80	25%
Salaries - Maintenance	0.40	13%
Total Cost	3.19	100%

The drilling and blasting cost category includes the salaries of the drill operators, the fuel consumed by the drills, the explosives and accessories, the fees for the blasting crew to load and blast the drill holes, the maintenance parts costs, the costs for blast movement monitoring in the first 2 years of the project, and the consumables.

The loading cost category includes the salaries of the loading equipment operators, the fuel consumed by the equipment, the maintenance parts costs, and the consumables.

The hauling cost category includes the salaries of the truck operators, the fuel consumed by the equipment, the maintenance parts costs, and the consumables.

The auxiliary services cost category includes the salaries for the operators of the auxiliary mining equipment, the fuel consumed by the equipment, the maintenance parts costs, the cost for haul road material, the salaries of general labourers, mine dewatering costs, and the consumables.

The maintenance cost category includes the salaries of the mechanics, the additional costs for major repairs by the equipment supplier, and the cost of the fuel & lube and service trucks.

25.3 General and Administration

The total general and administration (G&A) costs are estimated at CAD69.1M for the life of the project, for an average of CAD5.71/t of ore processed per year.

The G&A costs include the salaries of all staff personnel and mine administration team, as well as office expenses (such as electricity, printers, computers, software fees, telephone, etc.), and other general expenses.

Table 25-4: Items of the G&A Cost

Staff	LOM
	Salaries + benefits + bonus ($)
Mine Production	
▪ Mine general foreman	2,153,250
▪ Mine shift foreman	1,761,750
▪ Trainer	1,663,875
▪ Clerk	896,063
Mine Maintenance	
▪ Maintenance superintendent	2,190,375
Processing Plant	
▪ Processing superintendent	3,132,000
▪ Shift supervisor	4,590,000
▪ Plant metallurgist	2,090,813
▪ Maintenance planner	1,539,000
Technical Services	
▪ Mine engineer / Mine responsible	2,986,875
▪ Engineering tech. / Surveyor assist	2,693,250
▪ Environmental coordinator	1,761,750
▪ Geologist	2,190,375

Staff	LOM
	Salaries + benefits + bonus ($)
▪ Geologist technician	1,370,250
Administration	
▪ General Manager	3,523,500
▪ Administrative Assistant	978,750
▪ Purchasing manager / storekeeper	1,761,750
▪ HR Manager	2,153,250
▪ HR responsible / public relation	1,174,500
▪ Accounting manager	1,761,750
Cost of Salaries	**43,743,375**
Cost per Tonne of Ore ($/t)	**3.62**
Others G&A	
Contractors	
▪ Janitor services	770,000
▪ Security	2,636,760
▪ Garbage disposal	350,000
▪ Sewage disposal	420,000
▪ Snow removal / road maintenance	1,120,000
Mine G&A	
▪ Surveying equipment & consumables	174,000
▪ Flags and cones	168,000
▪ Monitoring tools (blast, vibrations, etc.)	73,000
General Costs	
▪ Consultants (audit, geotech, finance, etc.)	4,900,000
▪ Infirmary supplies and related costs	75,000
▪ Safety equipment, supplies and related costs	1,330,553
▪ Vehicle registration and insurances	116,000
▪ Workers social activities	565,000
▪ Travel and seminars	355,000
▪ Site communications & cell phones	365,000
▪ Office equipment	235,000
▪ Legal fees	365,000
▪ Training expenses	165,000
▪ Computer services	570,000
▪ Recruiting	85,000
▪ Associations memberships	75,000
Municipal Taxes Costs	
▪ Taxes & municipality support	5,800,000

Staff	LOM
	Salaries + benefits + bonus ($)
Others	
▪ Environmental services	1,125,000
▪ Insurances	3,262,500
▪ Building maintenance	210,000
Cost of others G&A	**25,310,813**
Total G&A Cost	**69,054,188**
Total G&A Cost per Tonne of Ore ($/t)	**5.71**

25.4 Processing Costs

25.4.1 Summary

The following table summarizes the operating cost estimate for the processing plant.

Table 25-5: Process Plant Operating Costs

Item	CAD/t Conc.	CAD/t Ore
Labour	$20.43	$2.66
Equipment Consumables	$17.94	$2.34
Grinding Media	$14.19	$1.85
Reagents	$49.18	$6.40
Utilities (power)	$28.55	$3.72
HVAC	$5.72	$0.74
Total	**$136.01**	**$17.70**

25.4.2 Labour

The process plant operating costs include labour specifically allocated to the processing department. The following table provides details of the processing labour included in the operating cost estimate.

Table 25-6: Labour Costs

Role	FTE's	Average Rate[1]	Annual OPEX
Operators & labourers	17	$100,692	$1,709,280
Electrician	1	$108,772	$108,772
Instrument mechanic	1	$108,772	$108,772
Pipe fitter	2	$108,772	$217,545
Millwright	2	$105,664	$211,329
Total	**23**		**$2,355,698**

25.4.3 Process Plant

The processing plant operating expenses comprise a combination of wear components, grinding media and reagent consumptions which are summarized in the following tables. The cost of grinding media was calculated to be $1.63M per year.

Table 25-7: Equipment Consumables Costs

Item	CAD/t Ore
Screens	$0.08
Crusher Conveyor	$0.20
Ball Mill Liners	$0.53
Jaw Crusher Liners	$0.13
Secondary Cone Crusher Liners	$0.16
Tertiary Cone Crusher Liners	$0.16
Cyclone Wear Parts	$0.31
WHIMS Wear Parts	$0.06
Filter Press Wear Parts	$0.10
Mica Flotation	$0.02
Spodumene Flotation	$0.04
Thickener	$0.04
Tanks	$0.01
Pumps	$0.29
Conditioning Tank	$0.06
Total	**$2.34**

[1] Includes allowances and statutory

Table 25-8: Concentrator Reagents Operating Cost

Item	Consumption (g/t ore)[2]	Rate ($/t ore)	Annual OPEX
Sodium hydroxide (NaOH)	600	$0.36	$317,725
Soda ash (Na_2CO_3)	500	$0.26	$231,233
Dispersant	250	$1.21	$1,069,454
Mica collector	120	$0.52	$457,524
Spodumene collector	1000	$3.28	$2,890,417
Flocculant	180	$0.69	$532,039
Frother (MIBC)	20	$0.08	$71,312
		$6.40	**$5,569,704**

25.4.4 Power

Power has been estimated based on the installed plant capacity, with different utilization factors depending on the plant area, applied to a unit rate for power cost for the local area.

Table 25-9: Power Operating Cost

Item	Demand (MW)	Annual Energy Consumption (GWh)	Rate ($/kWh)	LOM Opex M$ (CAD)	Opex ($/t conc)
Electricity	6.812	51.57	$0.053	$44.9	$28.55

25.4.5 Heating, Ventilation, and Air Conditioning (HVAC)

Heating, ventilation, and air conditioning systems will be electrical. Electrical consumption is estimated at $657,000 per year ($0.74/t ore) for HVAC. The use of heat recovery systems will be looked at during detailed engineering.

[2] From metallurgical testwork results

25.5 On-site Laboratory

An independent service provider will operate the on-site analytical laboratory. The project will rent the laboratory building and supply furnishings. The laboratories services provider will maintain ownership of all analytical equipment and will charge Sayona on a per analysis basis with a minimum monthly fee. The laboratory operating cost breakdown is provided in Table 25-10. The cost estimate is based on budgetary pricing from a service provider.

Table 25-10: Breakdown of On-site Laboratory Operating Costs

	Total cost ($M)	Cost/t ROM ($/t ore)	Cost/t conc ($/t)
LOM (13.8 years)	$12.7	$1.05	$8.1

25.6 Process Mobile Equipment

Costs associated with the operation of process-related mobile equipment include costs associated with concentrate loading (front-end loader operation) and the re-handling of material on-site except for the materials at the jaw crusher which are included in the mining cost. There is an allocation for material handling related to crushed ore in the storage dome, tailings and other on-site re-handling on a temporary basis with mobile equipment.

25.7 Tailings and Water Management

Water management costs include operation of the water treatment plant (labour). The plant is assumed to operate about 100 days per year under the supervision of a water treatment plant supplier. Costs include an allocation ($/m^3 of water) for reagents required for plant operation.

Tailings management costs include the supply of the woolen geotextile and installation at the tailings and waste interface. These services will be completed by a contractor on a part-time basis (roughly 5 times per year). Tailings transport and deposition costs are included with the mining costs.

25.8 Royalties

The project is subject to royalties. The project plans to purchase certain royalties at Year 1, for a total of $3.0M, in order to optimize the economics of the project.

- Claim 2183455 – 1% of the 2% NSR to 9187-1400 Québec Inc. can be purchased for $1.0M;
- Claim 2194819 – 1% of the 1% NSR to 9187-1400 Québec Inc. can be purchased for $1.0M;
- Claim 2116146 – 1% of the 2% NSR to Jefmar Inc. can be purchased for $1.0M.

The remaining royalties attributed to claims 2183454, 2183455, 2194819, 2116146 and 2187652 total an amount of $20.4M over the life-of-mine ($12.9/t conc.) for a weighted average of 1.4% of revenues.

25.9 Transport and Logistics

Transport and logistics costs have been estimated from an in-country logistics consultant, and are provided in the following table. The cost is calculated on a wet tonne basis.

Table 25-11: Transport and Logistics Operating Cost

Item	Rate ($/t dry conc)
Transport – mine to port	$49.17
Port handling	$15.13
	$64.30