



Annual Information Form
For the Year Ended August 31, 2022

Dated as of November 28, 2022

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1. Preliminary Information

In this Annual Information Form (the "AIF"), except as otherwise indicated or as the context otherwise requires, the "Company", "we", "our" or "us" or "Avalon" refers to Avalon Advanced Materials Inc.. All information contained herein is as at November 28, 2022 and all monetary amounts are stated in Canadian dollars, unless otherwise stated.

1.1. Financial Statements

This AIF should be read in conjunction with the Company's consolidated financial statements and management's discussion and analysis for the 12 months ended August 31, 2022 (the "Year" or "Fiscal 2022"). The consolidated financial statements and management's discussion and analysis are available on the Company's website at www.avalonadvancedmaterials.com and under the Company's profile on the SEDAR website at www.sedar.com. All financial statements are prepared in accordance with International Financial Reporting Standards and are reported in Canadian dollars.

1.2. National Instrument 43-101 - Qualified Persons

The technical information included in this AIF, unless otherwise stated, has been reviewed and approved by Donald S. Bubar, P. Geo., President and Chief Executive Officer of the Company. Mr. Bubar is a qualified person under National Instrument 43-101 – *Standards of Disclosure for Mineral Projects* ("NI 43-101").

1.3. Cautionary Note to U.S. Investors Regarding Mineral Resources

NI 43-101 is a rule of the Canadian Securities Administrators, which establishes standards for all public disclosure an issuer makes of scientific and technical information concerning mineral projects. Unless otherwise indicated, all mineral reserve and mineral resource estimates contained in or incorporated by reference in this AIF have been prepared in accordance with NI 43-101 and the Canadian Institute of Mining, Metallurgy and Petroleum classification system. These standards differ significantly from the mineral property disclosure requirements of the Securities and Exchange Commission's Industry Guide 7 ("Guide 7"), which, until recently, applied to most SEC registrants, and so the mineral reserve and mineral resource information contained in the AIF and incorporated herein by reference is not comparable to similar information disclosed by U.S. companies pursuant to Guide 7. However, on October 31, 2018, the SEC adopted changes to its disclosure rules to modernize the mineral property disclosure requirements applicable to most SEC registrants. New subpart 1300 of Regulation S-K (the "SEC Modernization Rules") became effective on February 25, 2019 and, for fiscal years beginning on or after January 1, 2021, replaces Guide 7's disclosure requirements. Under the SEC Modernization Rules, consistent with global standards as embodied by the Committee for Reserves International Reporting Standards ("CRIRSCO"), most SEC registrants will be required to disclose specified information concerning mineral resources that have been identified on their mineral properties. Consistent with CRIRSCO standards, the SEC Modernization Rules have also added definitions to recognize measured mineral resources, indicated mineral resources and inferred mineral resources. Thus, although the SEC Modernization Rules are not identical to Canada's NI 43-101 standards, they are intended to be more consistent with those standards.

2. Disclosure Regarding Forward-Looking Information

Certain of the statements that are not historical facts contained in this AIF are forward-looking information and forward-looking statements that involve risks and uncertainties that could

cause actual events or results to differ materially from estimated or anticipated events or results reflected in the forward-looking statements. Such forward-looking statements reflect the Company's current views with respect to future events and include, among other things, statements regarding targets, estimates and/or assumptions in respect of reserves and/or resources, and are based on estimates and/or assumptions related to future economic, market and other conditions that, while considered reasonable by management, are inherently subject to risks and uncertainties, including significant business, economic, competitive, political and social uncertainties and contingencies. These estimates and/or assumptions include, but are not limited to:

- grade of ore;
- mineral product and commodity prices;
- metallurgical recoveries;
- operating costs;
- achievement of current timetables for development;
- strength of the global economy;
- availability of additional capital;
- availability of supplies, equipment and labour; and
- market and sector trends.

Factors that could cause the Company's actual results, performance, achievements, developments or events to differ materially from those expressed or implied by forward-looking statements include, among others, the factors described or referred to under "Risk Factors" in this AIF, and:

- risks related to the Company's history of losses, lack of operating history, ability to generate material revenues and continue as a going concern;
- risks related to establishing new mining operations in the event that the Company elects to proceed with the development of one of its mineral projects;
- risks related to the Company's need for additional financing;
- risks related to any joint venture or strategic alliances that may be entered into by the Company;
- risks related to the impact of the novel coronavirus ("COVID-19") pandemic, or other global pandemics;
- risks related to either Avalon's or Cheetah Resources Pty Ltd. ("Cheetah")'s development plans of the Nechalacho Rare Earth Elements Project ("Nechalacho" or the "Nechalacho Project") negatively impacting the other's development plans;
- risks related to the progression of the Separation Rapids Lithium Project to a positive feasibility stage;
- risks related to securing product offtake agreements on a timely basis;
- risks related to the unique ore type at the Nechalacho Project and the Separation Rapids Lithium Project for which known metallurgical processes have not previously been applied;
- uncertainty related to title to the Company's properties as well as the risk of delays in obtaining licenses and permits as a result of local opposition, including uncertainty related to any challenges in connection with Indigenous land title claims and Indigenous rights;
- risks related to the possible existence of rights and interests of Indigenous groups, which may limit the Company's ability to develop its properties;
- risks related to the need to acquire properties for the hydrometallurgical plant and potentially a rare earth refinery for the Nechalacho Project;
- risks that actual capital costs, production schedules and economic returns for the Nechalacho Project may differ significantly from those anticipated by the Company;

- risks related to the demand for technology metals and minerals and fluctuations in their pricing;
- risks related to the demand for lithium and fluctuations in its pricing;
- risks related to competition and the actions of competitors;
- risks related to costs or delays in the commercialization of rare earth products;
- uncertainties related to the fact that the Company's mineral resources and mineral reserves are only estimates;
- risks related to obtaining, maintaining and renewing licenses and permits, and the material costs, liabilities and obligations in connection therewith;
- risks that the Company will be subject to material costs, liabilities and obligations in connection with environmental laws, regulations and approvals and that approvals will not be available;
- uncertainties involving uninsured risks;
- risks related to possible shortages of supplies, equipment and labour;
- risks related to the Company's ability to attract and retain qualified management and technical personnel;
- uncertainty whether the Company will acquire commercially mineable ore deposits or whether the current mineral deposits identified by the Company can be developed as commercially viable ore bodies;
- risks inherent to the competitive nature of the mineral industry;
- risks related to the extensive federal, state, provincial, territorial and local laws and regulations to which the Company's activities are subject;
- risks related to the availability and reliability of adequate infrastructure;
- risks and hazards inherent to the mining industry;
- risks related to any changes in critical accounting estimates that adversely affect the Company's financial results;
- risks related to potential conflicts of interest of the Company's directors and officers who may have involvement with other resource companies;
- risks related to cybersecurity;
- risks due to being a "passive foreign investment company" for U.S. purposes;
- risks related to fluctuations of currency exchange rates;
- risks related to share price volatility;
- risks related to dilution of existing shareholders;
- risks related to not paying cash dividends; and
- risks related to there being no market for the Company's warrants.

Most of the foregoing factors are beyond the Company's ability to control or predict. Although the Company has attempted to identify important factors that could cause actual results, performance, achievements, developments or events to differ materially from those described in forward-looking statements, there may be other factors that cause actual results, performance, achievements, developments or events not to be as anticipated, estimated or intended. There can be no assurance that the estimates and/or assumptions upon which these forward-looking statements are based will occur.

Readers can identify many of these statements by looking for words such as "believe", "expects", "will", "intends", "projects", "anticipates", "estimates", "continues" or similar words or the negative thereof. There can be no assurance that the plans, intentions or expectations upon which these forward-looking statements are based will occur.

The forward-looking statements contained herein are made as of the date of this AIF and are expressly qualified in their entirety by this cautionary statement. Readers should not place undue reliance on the forward-looking statements, which reflect management's plans, estimates, projections and views only as of the date hereof. The Company undertakes no

obligation to publicly revise these forward-looking statements to reflect subsequent events or circumstances, except as required by applicable law.

3. Corporate Structure

The Company was amalgamated on July 24, 1991 under the *Company Act* (British Columbia) (now the *Business Corporations Act* (British Columbia) ("BCA")) under the name Keith Resources Ltd. pursuant to the amalgamation of Rockridge Mining Company and Meadfield Mining Corp..

On September 29, 1994, the Company consolidated its share capital on a five-for-one basis and changed its name to Avalon Ventures Ltd..

On July 18, 2005, the Company carried out a transition under the BCA by filing Notice of Articles and at the same time adopted new Articles to bring them in line with the requirements and alternatives available under the BCA, including increasing its authorized share structure to an unlimited number of common shares without par value and 25,000,000 preferred shares without par value. The new Articles also reduced the percentage of votes required from 75% to 66 2/3% to pass special and separate resolutions and gave authority to the Board of Directors to make capital alterations and changes to the Company's name as permitted under the BCA.

On February 17, 2009, the Company changed its name to Avalon Rare Metals Inc..

On February 9, 2011, the Company continued under the *Canada Business Corporations Act* ("CBCA").

On February 24, 2016, the Company changed its name to Avalon Advanced Materials Inc..

On March 15, 2021, the Company completed a share capital amendment, which involved amending the Company's articles to reflect a 500:1 consolidation of the Company's common shares, immediately followed by a 1:500 split of the Company's post-consolidated common shares on March 15, 2021 (the "Share Capital Amendment").

The Company's head and registered office is located at Suite 1901, 130 Adelaide Street West, Toronto, Ontario, M5H 3P5, (416) 364-4938.

The Company is a reporting issuer in all of the provinces (except for the Province of Quebec) and territories of Canada. The Company's shares are listed and posted for trading on the Toronto Stock Exchange in Canada (the "TSX" or the "Exchange") under the symbol "AVL", on the OTCQB® Venture Market (the "OTCQB") in the United States under the symbol "AVLNF" and on the Frankfurt Stock Exchange in Germany under the symbol "OU5".

The Company operates principally in Canada and is currently extra-provincially registered to carry on business in Ontario, the Northwest Territories and Nova Scotia.

The Company has four directly wholly-owned subsidiaries – Avalon Lithium Inc., Nolava Minerals Inc. ("Nolava") (a Delaware company), Avalon Rare Metals Ltd. (a Delaware company), and 8110131 Canada Inc. ("8110131") (a CBCA company). None of these subsidiaries has carried on any operations since their incorporation except for the staking and exploration of certain mining claims in Utah, USA by Nolava and the acquisition of certain royalties by 8110131. In addition, the Company has a 50% interest in NWT Rare Earths Ltd.,

with Cheetah Resources Corp. owning the other 50%, which was created during the year ended August 31, 2020 to hold the exploration permits and related authorizations pertaining to the Nechalacho Project, in order to assist each party's development of their respective projects.

4. General Development of the Business

4.1 Three Year History

Avalon is a mineral exploration and development company with a focus on critical minerals for new technologies and environmentally beneficial applications. Avalon operates primarily in Canada with a focus on "Technology Metals" or "Cleantech Materials", including lithium, tantalum, cesium, indium, gallium, germanium, tin, rare earth elements ("REE"), yttrium and zirconium.

The Company is in the process of exploring or developing three of its five mineral resource projects. For at least the last three fiscal years the Company has expended substantially all of its efforts on the development of its Separation Rapids Lithium Project, the Lilypad Tantalum-Cesium Property and the East Kemptville Tin-Indium Project while supporting Cheetah's development of the Nechalacho T-Zone Project.

As described below in section "5.1.1.1 Nechalacho Project", during the year ended August 31, 2020, Avalon completed a sale of the rights to the near-surface dominantly light rare earth mineral resources above a depth of 150 metres at the Nechalacho Project to Cheetah Resources Pty Ltd..

On January 29, 2021, the Company issued a convertible note payable in the amount of \$3,000,000 (the "2021 Note") to an entity managed by the Lind Partners ("Lind"). The 2021 Note has a term of two years with a maturity date of January 29, 2023 and accrued an interest amount of \$600,000 on the date of issuance, resulting in the 2021 Note to bear a face value of \$3,600,000 at issuance. Commencing on May 30, 2021, Lind is entitled to convert any outstanding amount of the face value of the 2021 Note into common shares, at a conversion price equal to 85% of the five day trailing value weighted average price ("VWAP") of the common shares prior to the date of conversion. The Company has the right to repurchase the 2021 Note at the outstanding face value at any time, subject to the holder's option to convert up to one third of the original value into common shares prior to the Company's repurchase. In conjunction with the issuance of the 2021 Note, Lind received a closing fee of \$90,000 and 9,800,000 common share purchase warrants. Each warrant entitles the holder to purchase one common share of the Company at a price of \$0.18 per common share until January 29, 2025. As at the date of this AIF, the balance owing on the Note was \$130,000.

In February 2021, the Company entered into a binding letter of intent (the "LOI") to purchase ownership of 2333382 Ontario Inc. ("2333382"), a private Ontario corporation which owns four industrial minerals properties and a demonstration-scale processing plant located at Matheson, Ontario. The asset owned by 2333382 of most interest to Avalon is an asset transfer agreement giving 2333382 the right to acquire full title to the mining leases of the former phosphate mine on the Cargill Carbonatite Complex ("Cargill") near Kapuskasing, Ontario. This carbonatite complex hosts significant concentrations of a number of critical minerals including rare earths and scandium, contained both in the bedrock and in the mine tailings.

Work done by 2333382 has demonstrated that the estimated 12.5 million tonnes of tailings contain phosphate levels ranging from 15-20% P₂O₅ and can be sold "as is" for use in various

agricultural fertilizer products. Some sales of these phosphate-rich tailings are already generating revenues for 2333382 with considerable potential for growth as demand for phosphate mineral products is increasing. Analytical work done by 2333382, the Ontario government and Avalon on the tailings to date indicates the presence of significant concentrations of rare earths, scandium and zirconium, which preliminary testwork indicates will be recoverable through additional processing of the tailings. This provides significant potential for future revenue growth.

The total purchase price to be paid by the Company will be \$16 million, payable in a combination of cash and common shares of Avalon over a period of two years, assuming the Cargill site title is secured. The initial payment of \$200,000 in cash and the issuance of 1,000,000 common shares has been made during the Year. The agreement calls for the balance of the purchase price to be made in four instalments on the following schedule (assuming the Letter of Credit ("LoC") needed to secure title to the Cargill Mining Leases is successfully secured):

- i) on or before August 15, 2021, \$900,000 in cash, of which 50% can be paid in common shares at the Company's discretion;
- ii) on or before February 15, 2022, \$3 million in cash;
- iii) on or before August 15, 2022, \$3 million in cash; and
- iv) on or before February 15, 2023, \$8,700,000 in cash.

As of the date of this AIF, the required LoC had not yet been secured and the Company has delayed further purchase payments above until 2333382 has secured the LoC and completed the asset transfer with the current owner of the mining leases. Finalization of the acquisition payment schedule is presently being renegotiated.

On March 15, 2021, the Company completed the Share Capital Amendment, which involved amending the Company's articles to reflect a 500:1 consolidation of the Company's common shares, immediately followed by a 1:500 split of the Company's post-consolidated common shares on March 15, 2021. Shareholders who held less than 500 common shares in the form of a physical certificate immediately prior to March 15, 2021 ("Registered Shareholder") were paid a cash payment in exchange for their shares (the "Cash Payment") equal to the number of common shares they held immediately prior to the Share Capital Amendment multiplied by \$0.21, which is the volume weighted average trading price of the common shares on the TSX during the five consecutive trading days prior to March 15, 2021. Shareholders holding less than 500 common shares in a brokerage account immediately prior to the March 15, 2021, and who so elected through their intermediary, have been paid the Cash Payment. All other shareholders continued to hold the same number of shares after the Share Capital Amendment that they held prior to the Share Capital Amendment.

As a result of the Share Capital Amendment, a total of 955,949 common shares were redeemed and cancelled, of which 932,366 shares were elected by shareholders who held their shares in a brokerage account, and the balance of 23,583 shares were held by Registered Shareholders.

In April 2021, the Company signed a binding letter of intent with RenJoules International Ltd., an Essar Group Company ("Essar"), to become a strategic partner and co-developer in support of Avalon's plans to establish a regional lithium battery materials supply chain to serve the needs of future electric vehicle and battery manufacturers in Ontario and elsewhere.

This agreement involves providing initial financial and development support for building a lithium refinery in Thunder Bay, Ontario that will be designed to accept lithium minerals

concentrates, not only from Avalon's Separation Rapids Lithium Project north of Kenora, ON, but also from other aspiring new producers from the many lithium pegmatite resources that occur in northwestern Ontario. It will operate as a separate private business, called Avalon Lithium Inc., a newly established Avalon subsidiary in which Essar can become a co-owner, if they complete a final agreement to provide financial support.

As of the date of this AIF Essar had not attempted to finalize initial commercial terms and fund completion of final feasibility studies for either the refinery operations or lithium mineral concentrate production at the Separation Rapids site that will provide the initial feed for the refinery until other new producers also get started. This will also include acquisition of the site for the refinery in Thunder Bay and proceeding with initial site preparation work both at Separation Rapids and the Thunder Bay site. In the meantime, the Company has had other expressions of interest in supporting the Company's lithium battery supply chain ambitions, including LG Energy Solution who signed an MOU with Avalon on September 20, 2022, as described below.

On May 9, 2022, the Company issued a convertible note payable in the amount of \$3,000,000 to an entity managed by the Lind Partners ("Lind") (the "2022 Note"). The 2022 Note has a term of two years with a maturity date of May 9, 2024 and accrued an interest amount of \$600,000 on the date of issuance, resulting in the 2022 Note to bear a face value of \$3,600,000 at issuance. Lind is entitled to convert any outstanding amount of the face value of the Note into common shares commencing on September 10, 2022 at a conversion price equal to 85% of the five day trailing value weighted average price ("VWAP") of the common shares prior to the date of conversion. The Company has the right to repurchase the 2022 Note at the outstanding face value at any time after September 10, 2022, subject to the holder's option to convert up to one third of the original value into common shares prior to the Company's repurchase. As at the date of this AIF, the balance on the 2022 Note was \$2,910,000.

Subsequent to the end of the Year, the Company entered into a non-binding memorandum of understanding (the "MOU") with LG Energy Solution ("LGES") to supply LGES with a battery-grade lithium hydroxide from its planned refinery starting in 2025. Under the terms of the MOU, Avalon would commit, for five years initially, to provide LGES with at least 50% of its planned initial lithium hydroxide production from its Thunder Bay facility, with the potential to increase production as demand grows. LGES will also provide 50% of initial feed for the years 2025-2030, enabling Avalon's Separation Rapids and other lithium assets to get into production and commence lithium mineral concentrate production to serve the refinery. Pursuant to the MOU, the parties continue discussions to enter into a definitive supply agreement and broader strategic partnership agreement, including co-ownership of the refinery with Avalon, which is expected to be finalized soon.

During the Year, the Company secured a firm off-take commitment to purchase petalite concentrates produced at Separation Rapids. The off-take agreement is for a multiple number of years with a major non-Chinese international glass-ceramic manufacturer. The agreement is subject to a number of conditions precedent, including the delivery and acceptance of a larger commercial sample of the petalite product. The customer has agreed to initially pay the current market price for the petalite product for at least the first year after commercial shipment commences. There is now considerable interest from other major glass ceramic manufacturers in Europe and Asia as there is presently a global shortage of petalite supply after China took control of the traditional petalite supply sources in Zimbabwe. The Company is also in active discussions with a major European company with interest in supporting petalite production for glass-ceramic manufacturers with investment to help put into production, the Company's Separation Rapids, Snowbank and Big Whopper petalite-rich

resources.

4.2 Significant Acquisitions

Not applicable.

5. Description of the Business

5.1.1 General

Overview

The Company is a mineral development company that is seeking to build shareholder value by becoming a diversified, sustainable producer and marketer of critical minerals for clean technology and by expanding the markets for its specialty mineral products.

The Company operates primarily in Canada with a diversified asset base giving the Company exposure to a broad range of these critical minerals including lithium, rare earth elements ("REEs"), cesium, tin, indium, gallium, germanium, tantalum and zirconium.

The Company is in various stages of developing three of its five mineral resource properties with particular emphasis on lithium, cesium, tin, indium and rare earths. Avalon continues to evaluate new opportunities with near term development potential such as extracting valuable products from mine wastes using new technologies. This is an opportunity the Company has modelled at its East Kemptville Tin-Indium Project and at another site in northeastern Ontario called Cargill where there is potential, in addition to phosphate revenues, to recover rare earths and scandium from tailings at a closed phosphate minesite. The concept is attracting increasing interest from ESG investors and government now promoting the "circular economy", particularly for sites with abundant critical minerals in the wastes, but for an entrepreneurial junior company this continues to be challenging.

All three of the Company's advanced projects have significant mineral resources and preliminary economic evaluations for which the next step is identifying markets for the mineral products and/or processing bulk samples to demonstrate appropriate extraction processes and produce product samples for customer evaluation. Advances in technology can suddenly create new demand for certain critical minerals providing opportunities for new producers if one is in a position to react quickly to serve the new demand. A well-known example has been the sudden growth in demand for the "magnet rare earths" neodymium and praseodymium ("Nd-Pr"), coupled with the risk of supply shortages due to China's control of the rare earth supply chain.

The Company has embraced the principles of sustainability as core to its business practice and has made a strong commitment toward implementing corporate social responsibility ("CSR") best practices. In late 2022, the Company expects to release its eleventh comprehensive sustainability report (the "2022 Sustainability Report") and in February, 2021 secured a top 5% ESG Risk rating amongst our peer companies from Sustainalytics.

The Company believes that industrial demand for the advanced materials products it seeks to produce, particularly lithium compounds, is growing rapidly due to their importance in an expanding array of applications in new clean technology notably energy storage and electric vehicles.

The Company currently relies on equity markets to raise capital to finance its exploration and development programs. The Company has no sources of revenue at the present time to finance its development programs other than some small investment income on its cash balances. The Company also may potentially finance exploration and/or development of its properties through joint ventures or other arrangements with third parties including access to debt financing.

Market Trends

While the Company does not have any producing mines, it is directly affected by trends in the metal industry, notably rare earths and lithium.

Rare Earths

The Company continues to monitor developments in the global rare earths market. Prior to 2017 very few consumers of rare earths were concerned about the availability of rare earths. Low pricing levels and product availability has reduced the interest of consumers in investing in rare earth projects outside China. However, since the start of 2017 prices for certain REE (Nd, Pr, Dy) began to increase due to increased demand for magnets for motors of hybrid and electric vehicles. Future price trends for rare earths still largely depend on decisions made in China. China remains the dominant producer with over 80% of supply. Prices are expected to continue to increase as demand increases and as China continues to restrict rare earth production from former domestic producers that used environmentally damaging recovery processes. However, the Saskatchewan Research Council is now in the process of establishing a rare earth separation facility in Saskatoon along with a facility to produce the magnet metals.

Rare earth magnets remain vital to many clean technology applications requiring high efficiency, lightweight electric motors and generators. This includes motors for electric vehicles, which can require 5-10kg of rare earth magnets per vehicle. The growing market for electric vehicles, especially in China, has created new demand for these high strength magnets, resulting in rising prices for neodymium and praseodymium ("Nd/Pr").

Future prices for rare earths are difficult to predict as they are influenced by demand for REE containing products such as magnets for electric motors in hybrid and electric vehicles, but also by Chinese government policy, and geopolitical events such as the simmering US-China trade war. Increased demand for hybrid and electric vehicles should lead to higher prices for rare earths, however there are a number of new initiatives outside China to create new rare earth supply chains that will get started in a few years. Demand for REE products is likely to continue to grow through innovation of new applications in many new technologies.

Lithium

Lithium is not traded on any formally recognized commodity exchange but there are a number of new sources of reliable publicly available price data including Benchmark Minerals Intelligence. The demand for lithium battery materials, both lithium carbonate and lithium hydroxide, has been growing rapidly in recent years, driven predominantly by lithium ion rechargeable battery technology now in high demand for electric vehicles and other energy storage applications. Current projections indicate continued growth in lithium demand from the battery sector for the foreseeable future. Because lithium is marketed in different forms, (including lithium minerals used in glass and ceramics) aggregate lithium demand and supply is usually expressed in terms of lithium carbonate equivalent ("LCE").

For the purposes of its 2016 lithium battery materials PEA, Avalon used a price assumption of US\$11,000 per tonne FOB plant for lithium hydroxide consistent with price forecasts developed in mid 2016 by Roskill Information Services. For the purposes of its 2018 petalite concentrate PEA, the pricing of petalite equated to an approximate price assumption of US\$15,000/tonne FOB plant for lithium hydroxide. In November, 2022 Fastmarkets MB was reporting prices as high as US\$83,000/tonne for lithium hydroxide. Demand is likely to exceed supply for at least the next five years until a number of new supply sources are established. Lithium battery material prices are also related to product quality with very high purities attracting higher prices.

Lithium chemicals are getting most of the attention in the market and the media due to the increased demand projected for lithium ion batteries in electric vehicles. But the markets for lithium in high strength glass products are also growing. Many existing and new high strength glass formulations for automotive, aircraft, cell phones, and video displays where durability and light weighting are key, require lithium to achieve the desired properties. Petalite as a high purity lithium aluminum silicate mineral is the desired lithium product for addition to many glass and ceramics formulations because the alumina and silica are also batch ingredients and the mineral form introduces all three in a pre-mixed form lacking in any undesired impurities. Avalon has been exploring new alternative petalite concentration processes that will accommodate different product quality requirements by glass-ceramic end-users.

Demand for lithium both for battery materials and high strength lithium glass-ceramics products continues to grow. The Company has received several expressions of interest in the battery material products mainly from internationally based battery manufacturers, as well as glass-ceramic manufacturers. Production of both petalite product samples and lithium battery materials samples for evaluation by potential buyers continues. The Company is looking at a number of different production models for its planned lithium battery materials refinery which will depend on the specific requirements of the buyers who provide firm offtake commitments. Several companies that have expressed interest in making an offtake commitment have also expressed interest in being an investing partner in the refinery which the Company now envisions as being a separate business unit.

Overall market prices for securities in the mineral resource sector and factors affecting such prices, including base metal prices, political trends in the countries such companies operate, and general economic conditions, may have an effect on the terms on which financing is available to the Company, if at all.

Employees

The Company employed 5 full-time and 1 part-time employees as of August 31, 2022 and continued to employ 5 full-time employees as of the date of this AIF.

5.1.1.1 Separation Rapids Lithium Project

The Separation Rapids property now consists of nineteen mineral claims and one mining lease covering a combined area of approximately 4,414 hectares (10,910 acres) in the Paterson Lake Area, Kenora Mining Division, Ontario, all of which are owned 100% by Avalon. The total of 19 mineral claims includes two additional claims northwest of the property staked by Avalon in December 2020 covering the extension of the regional trend of mineralized dykes. The lease covers an area of approximately 421 hectares over the area of the lithium pegmatite deposit and adjacent lands that may be used for mine development infrastructure. Avalon

also owns three aggregate permits along the road to the site, which cover a total area of approximately 16 hectares and are located within the area covered by the claims. The original vendors retained a 2.0% NSR interest in the property, which was acquired in 2012 by a wholly-owned subsidiary of the Company for \$220,000. The deposit is a potential source of lithium minerals for use in the glass and ceramics industry and specialty composite materials as well as lithium compounds for the battery industry.

Please see the detailed description of the Separation Rapids Lithium Project in Section 5.4.1.

5.1.1.2 Nechalacho Project

The Nechalacho Project is located at Thor Lake in the Mackenzie Mining District of the Northwest Territories ("NWT"), about five kilometres north of the Hearne Channel of Great Slave Lake and approximately 100 kilometres southeast of the city of Yellowknife. The property is now comprised of eight contiguous mining leases totalling 5,786 hectares (14,297 acres). The original five leases are subject to one underlying 2.5% Net Smelter Returns ("NSR") royalty agreement. Avalon has the contractual right to buy out this royalty on the basis of a fixed formula, which is currently approximately \$1.6 million and which will increase at a rate equal to the Canadian prime rate until the royalty is bought out.

During the year ended August 31, 2020, Avalon completed a sale of the rights to the near-surface dominantly light rare earth mineral resources above a depth of 150 metres ("Upper Zone Resources") at the Nechalacho Project to Cheetah Resources Pty Ltd. ("Cheetah"). Cheetah was subsequently acquired by Vital Metals Limited, a publicly-listed company in Australia (VML-ASX). Avalon retained a 3.0% net smelter returns royalty (the "3.0% NSR Royalty") and will continue to have access to the property for development and mining of its 100% owned Basal Zone heavy rare earth resource. Avalon has also agreed to waive the 3.0% NSR Royalty for the first five years of Cheetah's commercial production and to grant Cheetah the option to pay the Company \$2 million within eight years of the transaction closing to extend the waiver of this royalty in perpetuity. Cheetah also has the option to purchase the Company's option in the 2.5% NSR Royalty, provided that, upon exercising the option, it extinguishes this royalty. The eight mining leases are jointly recorded in the names of Cheetah 50% and the Company 50%, while the beneficial ownership is held in trust by Cheetah and Avalon as to their respective beneficial ownership entitlement in and to the Upper Zone Resources and the Basal Zone Resources, respectively. Avalon and Cheetah have formed a jointly-owned corporation (NWT Rare Earths Ltd.) to hold the exploration permits and related authorizations related to Nechalacho and have also entered into a co-ownership agreement governing each party's activities and management at site.

Please see the detailed description of the Nechalacho Project in Section 5.4.2.

5.1.1.3 Lilypad Cesium-Tantalum Project

The Lilypad Cesium-Tantalum Project consists of 14 claims, comprising 166 new claim units or cells, totalling slightly over 3,299 hectares (8,152 acres), covering a field of lithium, tantalum and cesium mineralized pegmatites, and located 150 kilometres northeast of Pickle Lake, Ontario. The claims were staked by the Company between January 1999 and October 2000 and are 100% owned by the Company with no underlying royalties. Previous owners of the property drilled some 50 shallow drill holes and Avalon completed 32 drill holes totalling 4,781 metres in 2000 and 2001 in a program focused primarily on tantalum potential. This produced encouraging initial results including the discovery of significant cesium mineralization as the cesium ore mineral pollucite ((Cs,Na)₂Al₂Si₄O₁₂·2H₂O) assaying up to 6.205% Cs₂O over 1.70 metres along with significant tantalum mineralization assaying over

0.10% Ta₂O₅. Lithium commonly occurs in these pegmatites both as spodumene and as lepidolite in association with the pollucite and tantalite mineralization.

A preliminary resource was estimated for the Pollucite Dyke in 2001 containing roughly 340,000 tonnes grading 2.294% Cs₂O and 0.037% Ta₂O₅ based on 9 holes drilled to a maximum vertical depth of 250 metres. The resource is open to depth and along strike for expansion and recent mapping in 2021 discovered an extension to the west that doubled the known strike length to over 400 metres. Other similar pollucite-bearing LCT pegmatite dykes on the property remain untested. Work is underway to verify this resource estimation under present CIM Standards for NI 43-101. The Lilypad mineral resources described above are considered historic under NI 43-101 and a qualified person has not done sufficient work to classify the historical estimate as current mineral resources, and therefore the Company is not treating the historic estimate as a current resource. The historical estimate should not be relied upon.

The historic resource estimate is stated in an Assessment Report (Rees, 2001, Report on the 2001 Exploration Program, Lilypad Lakes Tantalum Cesium Property, Fort Hope, Ontario, reference number 52P09NE2005; #2.22617) that is publicly available for download online at the Ontario government assessment report database. The methodology is briefly described in an internal Company document. No resource categories are stated. It is clear from the internal document that manual polygonal estimation methodology was utilized. This is a well-established manual method used prior to the advent of extensive computer use in resource estimation. It is stated that a specific gravity ("SG") of 2.62 was utilized but no underlying data provided. Assay procedures are described but there was apparently no current QAQC methods such as insertion of blanks and standards, duplicate analyses of core or check analyses at a second laboratory.

In order to verify this resource it would be necessary to examine all underlying data for quality including the assays and drill hole surveys, determine the density of the mineralized rock and finally re-estimate the resource. Avalon has commenced this work by completing due diligence on the database against historic laboratory assay certificates, analyzing samples for density, surveying the locations of drill holes in the field and assaying check samples from identical locations to the historic samples. This data is then utilized to estimate resources, this work being in progress.

The project had been inactive since 2002 awaiting a recovery in tantalum demand or new demand for cesium minerals. New demand for cesium emerged in 2018 with the cessation of pollucite production at the Tanco mine in Manitoba. Then in 2019, Cabot Corp. announced the sale of its Specialty Fluids division (owner of the Tanco Mine) to Sinomine, a large Chinese mining and chemical company with a division focused on critical minerals supply. This potentially creates new market opportunities for Avalon to serve with its cesium, tantalum and lithium products which motivated re-activation of the project in 2020-21 with the collection of a small bulk sample of cesium mineralization for process testwork and a follow-up geological mapping program. There is now also renewed interest in tantalum due to limited supply sources and growing demand in new technology.

Some 75% of cesium production has been used to make cesium formate: a high density, low viscosity fluid used in deep offshore oil drilling. Cesium formate has a value of approximately US\$2,200/kg and is leased to oil well drilling companies and recycled after use. Because cesium is now in extremely short supply, cesium chemical products, such as cesium carbonate, now sell at prices of up to US\$5,000/kg. Cesium has a variety of other high

technology applications, including extremely accurate atomic clocks, and great potential in a range of applications in the production of electricity, in electronics, and in chemistry.

In the fall of 2020, the Company carried out a brief field program to collect 200 kg of cesium mineralized pegmatite rock from the Pollucite Dyke for study on how to efficiently concentrate the pollucite mineralization which, unlike most such occurrences, is found widely distributed throughout the many lithium-cesium-tantalum ("LCT") pegmatite dykes on the property. Planned follow-up work will initially involve mineralogical and analytical testwork to characterize in detail how the pollucite occurs, which will be followed by metallurgical process testwork to identify the most efficient methods for concentrating the pollucite and recovering by-product tantalum and lithium. This will include tests using the Selfrag AG EPD process which promotes rock breakage along mineral grain boundaries. The results were encouraging and a possible, larger scale test is being considered.

Sensor-based ore-sorting of a small sample of pollucite mineralization also produced encouraging results. This technology could provide a means for pre-concentrating the ore at site and shipping of higher-grade material to a refinery. A larger scale sorting test is also being considered for the near future.

The 2021 summer exploration program also included geochemical sampling to identify new tantalum-cesium drill targets, and collection of additional sample material from the Pollucite Dyke for process testwork. Significant cesium values were obtained from four other LCT dykes with three samples assaying greater than 1% Cs₂O. Two of the highest cesium values were from the previously unmapped western extension of the Pollucite Dyke, about 180 metres west of the closest historic drill hole confirming potential to at least double its strike length. Samples assaying at or greater than 1% Cs₂O were also obtained from the Rubellite Dyke, a second pegmatite with high tantalum enrichment located about 500 metres east of the Pollucite Dyke. Two other little-explored pegmatites known as the Baseline and Opie Dykes were also found to contain significant cesium values. Some samples are also highly enriched in lithium where it occurs mainly in coarse grained spodumene. One sample from the Spodumene Dyke with coarse spodumene crystals returned 3.34% Li₂O and the six samples collected from that dyke averaged 0.7% Li₂O.

During the Year, the analytical results from a biogeochemical survey conducted during the 2021 summer field program were received. A review of the data indicates encouraging results with strong cesium and lithium anomalies associated with known mineralization at the Pollucite and Rubellite Dykes and similar anomalies in overburden covered areas indicating potential for new mineralized pegmatite discoveries. The completion of the analytical work on the samples collected will lead to the definition of new drill targets for LCT pegmatites.

A follow-up drilling program is tentatively planned in 2022, to test some of the new targets and do additional drilling on the Pollucite Dyke. Preliminary environmental studies were also initiated. Future development of the project would be positively impacted by new infrastructure development, including road access, to the Ring of Fire mineral projects located further to the north which the Ontario Government has also committed to establish.

The project is located in the traditional territory of the Eabametoong First Nation ("EFN"), approximately 25 km west of the community of Fort Hope. The Company has been in communication with EFN community leadership for many years including former Chief Harvey Yesno who now serves on Avalon's Board of Directors. The new leadership continues to be supportive of the project. Some community members from local First Nations assisted with camp construction, line-cutting and geochemical work in the 2021 mapping and sampling program.

5.1.1.4 East Kemptville Tin Project

The 100% owned East Kemptville Tin-Indium Project is located approximately 55 kilometres northeast of Yarmouth, in Yarmouth County, southwestern Nova Scotia in the vicinity of the former East Kemptville Tin Mine. Highway #203, which connects the Town of Yarmouth to the southwest with the Town of Shelburne to the east, passes a short distance to the northwest of the project area. The East Kemptville Tin mine was developed in 1985 on a resource of tin-copper-zinc mineralization known geologically as a "greisen". Greisens are hydrothermal mineral deposits associated with granites consisting of a stockwork of mineralized veins and replacement zones in altered and mineralized granitic rocks.

The Company presently holds mineral rights at East Kemptville through an exploration licence of 75 units covering 1,165 hectares. It does not immediately convey surface land rights and, accordingly, access must be arranged with the permission of surface rights holders.

The Company completed a preliminary economic assessment during Fiscal 2018 with a development model of utilizing the existing tailings management area ("TMA") and had been in negotiation with the surface rights owner to secure full tenure to the project site. Agreement in principle was reached in Fiscal 2019, however, the surface rights owner subsequently refused to sign the agreement after putting a hold on any new work on TMAs on all of its closed mine sites. Not having access to the existing unused tailings ponds severely limits the possibilities for economic redevelopment of the site. This realization coupled with the continuing difficulties in getting surface access to the project site, caused the Company to decide to withdraw its mineral lease application and has written off the costs incurred to-date of \$5,587,210 as an impairment loss during Fiscal 2020.

The Company continues to hold discussions with the Nova Scotia and Federal governments towards finding a solution to re-gain access to the site. Interest in extracting value from historic mine wastes while remediating the long-term environmental liability continues to grow and research funding is readily available from Natural Resources Canada to investigate efficient process technologies to recover critical minerals including lithium from the wastes.

5.1.1.5 Warren Township Anorthosite Project

The Warren Township Anorthosite Project is a mineral development opportunity located near the Village of Foleyet, 100 kilometres west of Timmins, Ontario. The project consists of a mining lease totalling 688 hectares (1,699 acres) that includes an aggregate permit over the historical quarry site and which is 100% owned by the Company. The lease covers a portion of the Shawmere Anorthosite Complex hosting a large historic resource (not prepared in accordance with NI 43-101) of a high purity calcium feldspar. There has also been demand for small quantities of the crushed anorthosite rock for use as a "lunar simulant" due to its mineralogical similarity with dust on the surface of the moon. The Company is now in conversation with a potential investing partner.

Anorthosite is a mafic igneous intrusive rock consisting of greater than 90% plagioclase feldspar. The Shawmere Complex is an unusual type of anorthosite as the plagioclase is the high calcium variety called anorthite. Previous work has demonstrated that this material can be processed to produce a high quality calcium feldspar raw material for the manufacture of reinforcing glass fibre and other innovative new glass products. The location of the property near both road and rail transportation infrastructure and its proximity to markets in southern Ontario and the northeastern United States offers the potential for development of a low-cost, highly profitable industrial minerals operation.

In June 2012, Avalon received a permit under the Aggregate Resources Act (Ontario) to operate a quarry at Warren Township on 240 hectares of land. A preliminary environmental baseline study has been completed, and an MOU was signed with the Chapleau Cree First Nation.

Avalon is considering reactivating the project in view of growing demand for the calcium feldspar product, which is being driven by innovation in glass technology and space exploration technology. The market has continued to grow with new emerging cleantech applications, such as composites for wind turbine blades.

5.1.1.6 Royalties

Wolf Mountain Platinum-Palladium Property Royalty

The Wolf Mountain Platinum-Palladium Project is located approximately 90 kilometres northeast of Thunder Bay, Ontario. In November 2003, Avalon sold its 40% working interest in the project to its joint venture partners for \$20,000 and a 0.4% NSR interest in the two properties. The joint venture can purchase this NSR interest from the Company at any time for \$1,000,000. In August, 2014, Avalon purchased an additional 2% NSR, which was held by the original vendor of the property, for \$15,000, of which up to 1.0% can be purchased by the joint venture partners for \$1,000,000.

East Cedartree Gold Property Royalty

The Company holds a 2% NSR interest in five claims, which it retained after selling these claims to a third party, comprising part of the East Cedartree Gold Property located 70 kilometres southeast of Kenora, Ontario. The title holder to the claims can repurchase a 1% NSR from the Company at any time for \$1,000,000.

5.1.1.7 Clean Technology Business Opportunities

Avalon is also continuing to evaluate the opportunity to apply innovative new extraction technologies to recover rare earths and other critical minerals from historic mine wastes including acid mine drainage at other closed mine sites. There are many such sites in North America where the waste may contain critical minerals that had no value when the mine was in operation but do today.

Management sees enormous growth potential in this emerging sector and good opportunities for accessing capital from the many government programs oriented towards cleantech development and from the growing international Impact/ESG investment community. This is also consistent with the growing interest in establishing the "Circular Economy" through innovative recycling of waste materials.

Government is increasingly committed to supporting the establishment of new critical minerals supply chains in Canada including in Ontario. Avalon is continuing to support the efforts of policymakers to implement needed regulatory changes to recognize many critical minerals as a unique low risk sub-sector of the mineral industry. Central to this need is recognizing the importance of bulk sampling at the early stages of exploration to determine if the mineralization of economic interest can be efficiently processed to make a product that will be accepted in the market.

5.1.2 Bankruptcy and Similar Procedures

Not applicable

5.1.3 Reorganizations

Not applicable

5.1.4 Social or Environmental Policies

Avalon is committed to being an environmentally and socially responsible corporate citizen in how it conducts its exploration and development activities. In particular, in the conduct of these activities, Avalon applies the Principles and Performance Guidelines for Responsible Mineral Exploration that has been established by the PDAC for its members and which can be viewed at <http://www.pdac.ca/pdac/advocacy/csr/pdac-principles-guidelines-draft.pdf>. In addition, Avalon has become an associate member of MAC, with a view to gradual implementation of their applicable Towards Sustainable Mining ("TSM") principles.

In 2010, Avalon was awarded the 2010 Environmental and Social Responsibility Award by the PDAC in recognition of the Company's community engagement efforts during the exploration of its Nechalacho Deposit. The PDAC Environmental and Social Responsibility Award honours individuals or organizations demonstrating outstanding initiative, leadership and accomplishment in protecting and preserving the natural environment and/or in establishing good community relations during an exploration program or operation of a mine. Avalon continues to be a leader in promoting responsible exploration practices, emphasizing early engagement and open communication with local Indigenous communities living in proximity to all of its projects. The Company has encouraged skills training and employment opportunities for Indigenous people and has offered joint business opportunities including environmental remediation work related to historical exploration activities. Committed to the principles of environmental and social responsibility, Avalon was the first junior exploration company to formally adopt PDAC's e3 Plus principles and guidelines as a policy of the Company.

Sustainability Policy

Avalon Advanced Materials Inc. recognizes that maintenance of environmental quality is vital to the Company's existence, progress, and continued development. The Company will maintain high environmental standards limited only by technical and economic feasibility. The Company will take positive action to protect the safety of its workers, conserve natural resources, and minimize the impact of its activities on the environment through diligent application of appropriate technology and responsible conduct at all stages of exploration, mine development, mining, mineral processing, decommissioning, and reclamation.

The Sustainability Policy was approved by the Board of Directors in 2014 and replaces the Safety and Environment Policy previously approved in 2006. The Sustainability Policy is far more comprehensive and reflects the growing demands of society. At the end of this fiscal year, a review of the policy was ongoing to further strengthen and demonstrate Avalon's leadership in this area.

At Avalon, sustainability means adopting leading industry standards for the management of health, safety and the environment, transparently engaging with local communities and stakeholders, treating those with whom we work with respect, and creating a workplace where employees are valued, engaged and encouraged to succeed. Avalon believes that a commitment to sustainability enhances our reputation and ability to attract and retain quality people, enables us to gain access to new resources and capital and allows us to better identify

and manage opportunities and risks related to our business. Through this, Avalon gains a competitive advantage and maintains our social license to operate by balancing social, environmental, health, safety and economic considerations in our business practices.

The purpose of Avalon Advanced Materials Inc.'s Sustainability Policy is to provide a measurable framework for the performance of the Company's activities in an environmentally and socially responsible manner, ensuring compliance by the Company and its employees with all applicable environmental regulations and commitments. It commits Avalon to work proactively with communities of interest to define sustainability priorities and participate in the development of responsible legislation. Avalon operates a risk and change management program and will periodically conduct internal or external audits of all projects and operations to ensure compliance with this policy, applicable laws and standards and Avalon will report on these results.

There are 4 pillars to the Policy:

Health and Safety. Health and safety is a core value at Avalon. Avalon's objective is to create an injury free workplace and to enhance the wellbeing of employees, contractors and the communities in which we operate.

Environment. The preservation and protection of the long-term health, function and viability of the natural environment is a key objective.

Community. Avalon is committed to being a responsible corporate citizen and contributing to the social and economic well-being of the communities associated with our activities.

People. A workplace based on mutual respect, fairness and integrity is a fundamental component of Avalon's core values. Avalon will create a workplace where employees are encouraged to innovate and grow within the organization over the long term.

(For a complete copy of the Sustainability Policy, see:

https://www.avalonadvancedmaterials.com/_resources/corporate/sustainability_policy_20150128.pdf)

Corporate Social Responsibility ("CSR")

In late 2022, the Company expects to release its eleventh comprehensive Sustainability Report. The 2022 Sustainability Report will be available for view or download on the Company's website at: <http://www.avalonadvancedmaterials.com>. The 2022 Sustainability Report does not form part of this AIF.

In 2021, the Company engaged Sustainalytics, a Morningstar company, to conduct an independent audit of the Company's business practices and policies toward obtaining an Environmental, Social and Corporate Governance ("ESG") Risk Rating License. Sustainalytics' ESG Risk Ratings provide investors with third-party validation of the Company's sustainability performance along with insights into why certain ESG issues are considered material for a company and how well a company is managing those risks. The benefits of obtaining an ESG Risk Rating include the ability to provide better access to ESG investment capital, and the ability to gain commercial benefit from the rating externally with creditors, suppliers and other stakeholders. In February, 2021 Avalon secured a top 5% ESG Risk rating amongst our peer companies from Sustainalytics that demonstrated our leadership in this area and how our sustainability management systems reduce risk at our sites and for our suppliers, customers and other stakeholders.

The 2022 Sustainability Report is being prepared in accordance with the Global Reporting Initiative's Global Reporting Standards. The 2022 Sustainability Report will incorporate a self-assessment of Fiscal 2022 performance and sets targets for 2023 against the applicable and updated Mining Association of Canada "Toward Sustainable Mining" indicators. It also integrates the appropriate United Nations' 17 Sustainable Development Goals into our sustainability performance. Notably, Avalon completed risk assessments and updated all Emergency Response Plans for the sites where work was completed during the fiscal year. All work programs at project sites were completed without environmental incidents. Regrettably, there was one medical aid accident at the Lilypad exploration program when an employee cut his finger with an axe. In addition, there were some safety near misses, so the site was closed and employees attended a one day safety and environment refresher course. There were no further incidents following this training. Avalon continued to monitor the COVID-19 pandemic and updated the detailed office reopening procedures to reflect the rapidly evolving social and legal requirements. The office remains largely closed in the short term and employees are working from home.

In addition to the Company's safety and environmental performance in the field, the report includes many other accomplishments such as community outreach, and metallurgical process improvements that contribute to improved environmental performance. Avalon is committed to working closely with its Indigenous partners to create lasting economic and social benefits in the communities. Dialogue is ongoing with Wabaseemoong Independent Nations ("WIN") and Métis Nation of Ontario ("MNO") with respect to the Separation Rapids Lithium Project, and was restarted with the Eabametoong First Nation ("EFN") for the Lilypad Cesium-Tantalum Project. During Fiscal 2020 the Company made a donation to secure a supply of hand sanitizer for Eabametoong First Nation to assist the community in managing the risk of spreading the COVID-19 virus to its members. Avalon has an MOU with the Chapleau Cree First Nation regarding work at the Warren Township Anorthosite Project, and with the Wabaseemoong Independent Nations at Separation Rapids and agreements with the Deninu K'ue First Nation ("DKFN") and the Northwest Territory Métis Nation ("NWTMN") at the Nechalacho Project. Avalon continued discussions with the Acadia First Nation for the East Kemptville Project and with the Métis Nation of Ontario for Separation Rapids. Avalon successfully employed Indigenous employees during the field work programs.

Avalon's leading sustainability efforts are also benefitting the exploration industry. During Fiscal 2019, the Prospectors and Developers Association of Canada ("PDAC") adopted Avalon's energy monitoring system and published it for its members, as well as working with regulators to develop balanced regulations with applicability to Avalon projects. Avalon participated in a multi-stakeholder development of a climate change risk assessment and is utilizing it to augment existing risk assessments and project design to ensure resiliency to potential climate change impacts. Avalon also supported PDAC in the development of training materials for the Mining Association of Canada's Toward Sustainable Mining's Community of Interest Panel regarding the exploration industry. PDAC may further adapt them for a broad range of educational applications. Avalon is also supporting the PDAC and Mining Association of Canada in its efforts to educate regulators and policymakers regarding the need to update regulations in order to encourage more exploration and development of critical minerals resources in Canada that are vital for establishing the new clean economy in Canada and to ensure access to land for exploration purposes.

The Company's focus is on materials that enable clean technology, including electric vehicles, power storage, solar and wind power. In order to do this sustainably, Avalon designs its operations to minimize environmental impacts and greenhouse gas emissions, while planning for rehabilitation and productive use of the land post closure. The Company also now

incorporates a staged-development approach to its cleantech materials projects, which involves starting production at a modest scale, to minimize project footprint and potential risks to environment, while also reducing investment risk and creating opportunities for its Indigenous business partners. Further, Avalon is a leader in looking at closed mine sites as opportunities to remediate long term environmental liabilities through economic extraction of valuable minerals from waste materials using new technologies such as sensor-based ore-sorting or the Precision Periodic extraction technology.

In response to the increasing concern expressed by regulators, insurers, investors, customers and other communities of interest, and building on its historic success in reducing greenhouse gas emissions, Avalon has recently begun investigating the potential to become carbon neutral by no later than 2050. In conjunction with climate change risk assessment, Avalon is investigating a wide range of opportunities and potential barriers to cost effectively achieving this, and is cautiously optimistic that a serious and realistic commitment to achieving this goal can be made. The completion of a University of Toronto Master student Capstone project in 2021 identified economic options to be carbon neutral at the Separation Rapids Project.

Being a recognized sustainability leader reduces costs and facilitates good relationships with communities, which helps reduce risk of experiencing lengthy delays in receiving operating permits and approvals. This also helps facilitate the acquisition of our social license to operate. Avalon believes that responsible users of our cleantech materials will require increasingly sustainable sources for their materials which we believe will provide Avalon with a competitive advantage in securing market access for its products.

5.2 Risk Factors

An investment in securities of Avalon is highly speculative and involves significant risks. Exploration activities are based on professional judgments and statistically-based tests and calculations, and often yield few rewarding results. Mineral properties are often non-productive for reasons that cannot be anticipated in advance and operations may be subject to risks including labour disputes, environmental hazards, safety issues, geological issues, weather conditions and changing regulatory requirements as examples. Avalon is subject to competitive risk as its ability to finance its activities and generate profitable operations or proceeds from disposal of assets are subject to world prices for rare metals, REE, lithium and other specialty minerals and the economic forces that influence capital markets. Any one of the following risk factors could materially affect business, financial condition and/or future operating results and prospects and could cause actual events to differ materially from those described in forward-looking statements relating to Avalon. Additional risks and uncertainties not currently identified by Avalon or that Avalon currently believes not to be material also may materially and adversely affect Avalon's business, financial condition, operations or prospects.

We have no operating revenues and a history of losses.

The Company has had no operating revenues and a history of losses, and no operating revenues are anticipated until one of the Company's projects comes into production, which may or may not occur. The Company will continue to experience losses unless and until it can successfully develop and begin profitable commercial production at one of its mining properties. There can be no assurance that the Company will be able to do so.

We have no history of mineral production.

Avalon is an exploration and development company and has no history of mining or refining mineral products from its properties. As such, any future revenues and profits are uncertain. There can be no assurance that the Nechalacho Project, the Separation Rapids Lithium Project or any other project will be successfully placed into production, produce minerals in commercial quantities or otherwise generate operating earnings. Advancing projects from the exploration stage into development and commercial production requires significant capital and time and will be subject to further technical studies, permitting requirements and construction of mines, processing plants, roads and related works and infrastructure. The Company will continue to incur losses until mining-related operations successfully reach commercial production levels and generate sufficient revenue to fund continuing operations. There is no certainty that the Company will generate revenue from any source, operate profitably or provide a return on investment in the future.

There is material uncertainty regarding our ability to continue as a going concern.

The business of mining and exploring for minerals involves a high degree of risk and there can be no assurance that current exploration programs will result in profitable mining operations. The recoverability of the carrying value of exploration and evaluation assets and the Company's ability to continue as a going concern is dependent upon the preservation of its interest in the underlying properties, the discovery of economically recoverable reserves, the achievement of profitable operations or the ability of the Company to raise alternative financing.

The Company is currently in the exploration and development stage of its properties. If the Company determines based on its most recent information that it is feasible to begin operations on its properties, the Company will be required to raise additional capital in order to develop and bring the properties into production. Our ability to raise funds will depend on several factors, including, but not limited to, current economic conditions, our properties, our prospects, metal prices, businesses competing for financing and our financial condition. There can be no assurance that we will be able to raise funds, or to raise funds on commercially reasonable terms.

The development of the Nechalacho Project and the Separation Rapids Lithium Project involve numerous uncertainties and there are no guarantees that we will be successful.

Mine development projects typically require long time frames and significant expenditures before production is possible. Bringing any of the Nechalacho Project and the Separation Rapids Lithium Project into successful operation is dependent on many factors such as:

- the availability of funds to finance construction and other capital expenditures and to provide working capital;
- the timing and availability of permits and other approvals to proceed with construction and to operate the mine and processing facilities;
- the completion of negotiations with First Nations and other Indigenous groups and stakeholders affected by such project;
- the completion of acquisition of a property or properties for the processing facilities and the availability of infrastructure necessary for construction and operation;
- the negotiation of sales or offtake contracts for the planned production from such project; and
- the completion of negotiations with strategic partners for the provision of additional investment and/or the provision of technical assistance or services.

Other unanticipated problems and delays may arise in the development of the Nechalacho Project or the Separation Rapids Lithium Project and, accordingly, the Company may not be successful in establishing mining and processing operations.

Additional financing will be needed for our business operations and there are no guarantees that we will be able to raise sufficient funds.

The Company does not presently have sufficient funds to complete permitting, development and construction of the Nechalacho Project or the Separation Rapids Lithium Project, or to complete exploration or feasibility studies on any of its other properties. Accordingly, the Company will need to raise additional financing, which may be sought through sales of equity or debt securities, asset sales, joint ventures, project financing or other arrangements. The recent climate for financing in the mineral industry in general and for rare earth minerals projects in particular has been difficult, and there can be no assurance that the Company will be able to complete necessary financings on a timely basis or at all. Failure to complete adequate financing on a timely basis could result in delay or indefinite postponement of the development of the Nechalacho Project or the Separation Rapids Lithium Project, and could require the Company to reduce general and administrative expenses or impair the Company's ability to continue as a going concern. Future financings may result in significant dilution to existing shareholders.

We may fail to identify suitable joint venture partners or may fail to successfully manage joint ventures although there is growing interest the Separation Rapids Project due to surging demand for lithium.

As part of the Company's development strategy, the Company is considering a number of alternatives to access development capital for its mineral properties, including joint ventures with strategic partners. While the Company has recently received several expressions of interest from potential joint venture partners there is no assurance that it will succeed at effectively managing the operation of any joint venture to production.

Our business, results of operations may also be adversely affected by the COVID-19 pandemic, or other pandemics.

In March 2020, the World Health Organization declared the COVID-19 virus a pandemic, which resulted in quarantines, travel restrictions, and the temporary closure of many businesses around the world. Government efforts to contain the spread of COVID-19 through city lockdowns or "stay-at-home" orders, widespread business closures, restrictions on travel and emergency quarantines, among others, caused significant and unprecedented disruptions to the global economy and normal business operations across sectors and countries. In the first half of 2020, many businesses and social activities around the world were severely disrupted. Such disruption and the potential economic setbacks and continued supply chain issues on a worldwide scale in 2022 and 2023 could have a material adverse effect on our business, our results of operations and our ability to raise capital.

Development for the Nechalacho Project will need to be co-ordinated with the new owner of the near-surface resources which could result in delays.

During the year ended August 31, 2020, the Company sold the near-surface resources of the Nechalacho Project (which were not part of its own development plans). Although the parties have agreed to work together, and have even formed a jointly-owned company to temporarily hold the exploration permits and related authorizations, there is a risk that one company's

development work could negatively impact the other's development plans and cause delays in the Company's ability to rapidly develop the Nechalacho Project.

The Preliminary Economic Assessment of the Separation Rapids Lithium Project is preliminary in nature and there is further work to do to define the appropriate development model and complete a final feasibility study.

The Preliminary Economic Assessment of the Separation Rapids Lithium Project is preliminary in nature. The metallurgical processes developed for the project require further work to confirm that a commercially acceptable product can be consistently produced and sold in the marketplace.

We will need to enter into offtake agreements and failure to secure and enter into favourable offtake agreements with customers could have a material adverse effect on, and could result in delay or suspension of the development of, the Nechalacho Project and the Separation Rapids Lithium Project.

The Company intends to pursue entering into offtake agreements with industrial consumers of the minerals it intends to produce in order to have assurance of future sales of its products. It is likely that it will be necessary to have some of the offtake agreements in place in order to secure project financing for the Nechalacho Project and Separation Rapids Lithium Project in order to demonstrate the economic viability of the project to lenders. Failure to secure and enter into favourable offtake agreements with customers could have a material adverse effect on, and could result in delay or suspension of the development of these projects.

The ore types at both the Nechalacho Project and Separation Rapids Lithium Project are unique and there is a risk that the metallurgical process that we anticipate using will not perform at commercial scale as expected.

The ore types on both projects are unique for which well-established metallurgical processes have not previously been applied. Accordingly, there is a risk that the process designed at the bench and pilot scale will not perform at commercial scale as expected. The failure of such metallurgical process could materially and adversely affect the Company's expected project development and production schedules.

Title to some of our mineral properties may be challenged or defective. Indigenous groups may raise title disputes in relation to land claims and any impairment or defect in title could have a negative impact on our results of operations and financial condition.

The Company's title to its properties may be subject to disputes or other claims including Indigenous land title claims. Although the Company has exercised the usual due diligence with respect to determining title to properties in which it has a material interest, there is no guarantee that title to such properties will not be challenged or impugned. There may be valid challenges to the title of the Company's properties, which, if successful, could impair the Company's ability to explore, develop and/or operate its properties or to enforce its rights with respect to its properties. Indigenous rights and title may be claimed with respect to Crown properties or other types of tenure with respect to which mining rights have been conferred. In addition, other parties may dispute the Company's title to the properties in which it has an interest and such properties may be subject to prior unregistered agreements or transfers or land claims by Indigenous peoples, and title may be affected by undetected encumbrances or defects or government actions.

An impairment to or defect in the Company's title to its properties could have a material adverse effect on the Company's business, financial condition or results of operations. In addition, such claims, whether or not valid, will involve additional costs and expenses to defend or settle which could adversely affect the Company's profitability.

The Company will need to enter into agreements with applicable Indigenous groups to complete the development of the Nechalacho Project. The Company entered into an accommodation agreement with the Deninu K'ue First Nation ("DKFN") which provides for business and employment opportunities for the DKFN and contains measures to mitigate the environmental and cultural impacts of the project. The Company was seeking to enter into similar agreements with the Lutsel K'e Dene First Nation (the "LKDFN") and Yellowknives Dene First Nation (the "YKDFN"), but there is no assurance that these agreements will be completed in a timely manner or at all. Even after the accommodation agreements are entered into, the continuing co-operation of the First Nations will be required to implement the terms of the agreements and proceed with the Nechalacho Project. Any failure of co-operation by these or any other potentially impacted Indigenous groups could result in delay of work on the Nechalacho Project. The Company also entered into a Participation Agreement with the Northwest Territory Métis Nation ("NWTMN"). This agreement provides for training, employment, and business opportunities for the NWTMN related to the Nechalacho Project and associated facilities in the Northwest Territories. The Participation Agreement also contains measures to mitigate environmental and cultural impacts that may result from the project development.

During the year ended August 31, 2020, the DKFN's legal counsel sent a letter to the Company dated February 11, 2020, asserting that Avalon was in breach of its Accommodation Agreement with the DKFN, as the DKFN had not received advance notice regarding assignment and business opportunities related to the co-ownership agreement with Cheetah. The Company responded on February 20, 2020, explaining that the resources that were sold to Cheetah were not subject to the Agreement and accordingly Avalon was not in breach of the Accommodation Agreement. There has been no subsequent communication from the DKFN's legal counsel with respect to this matter.

The Company will need to enter into agreements with applicable Indigenous groups to complete the development of the Separation Rapids Lithium Project. The project is located in the traditional land use area of the Wabaseemoong Independent Nations ("WIN") for which they have stewardship under an agreement with the Province of Ontario. The Company first signed an MOU with WIN in 1999 which was renewed when the project was reactivated in 2013. Avalon management has been keeping WIN leadership informed on project activities and remains committed to fulfilling its community consultation obligations and partnering with WIN on project business opportunities. The Company has also initiated dialogue with the Métis Nation of Ontario who hold Indigenous rights in the area.

We may need to acquire additional properties for our hydrometallurgical plant and separation plant, which may significantly delay the development of the Nechalacho Project as a whole.

As part of the Nechalacho Project feasibility study the Company planned for a hydrometallurgical plant to be located at Pine Point, 85 kilometres east of Hay River, Northwest Territories and a rare earth separation refinery to be located in Geismar, Louisiana. It is presently considering alternative sites for both facilities including Saskatoon where Cheetah is also establishing a hydrometallurgical facility. Any grants and surface leases, if granted, may be subject to the rights of holders of exploration claims or other subsurface rights, which may be inconsistent with the use of the property for the hydrometallurgical plant. In addition, economic factors such as power cost and infrastructure factors such as the

adequacy of road and/or rail access may cause the Company not to proceed with acquiring the Pine Point surface leases.

The Company's purchase option on the land parcel in Geismar, Louisiana expired on December 15, 2014. Several sites in western Canada are under consideration for the location of an updated hydrometallurgical plant.

If the properties in Pine Point, Geismar or a suitable alternative are not acquired, the Company will need to identify and acquire another suitable site or sites for its hydrometallurgical plant and rare earth refinery, which may significantly delay the development of the Nechalacho Project as a whole.

In addition, the Company will also need to obtain a parcel of land similar to the previously identified land parcel in Geismar, Louisiana, or elsewhere, to build its own rare earth refinery.

Our feasibility study relies upon estimates based on assessments of market conditions and available technical information concerning the Nechalacho Project, which are only historical projections and are inherently uncertain.

The Company's expected production schedules, capital costs, engineering and construction estimates and operating costs which are included in this AIF are contained in the Feasibility Study which was completed in 2013. The FS relied upon estimates based on assessments of market conditions at that time and available technical information concerning the Nechalacho Project. Accordingly, the results indicated by the FS are historical projections only and are inherently uncertain. In particular, actual capital costs may significantly exceed those estimated by the FS, and engineering and construction estimates and schedules set forth in the FS may prove materially inaccurate.

Anticipated operating costs and production schedules set forth in the FS are based upon a variety of factors, including:

- anticipated tonnage, grades and metallurgical characteristics of the ore to be mined and processed;
- anticipated recovery rates of REE and other minerals from the ore;
- cash operating costs of comparable facilities, supplies/consumables and equipment;
- anticipated climatic conditions; and
- forecasts for foreign exchange markets, and discount rates.

Capital costs, operating costs, production and economic returns, and other estimates contained in studies or estimates prepared by or for the Company in the future may differ significantly from those anticipated by the Company's current estimates, and there can be no assurance that the Company's actual capital and operating costs will not be higher than currently anticipated. The Company's actual costs and production may vary from estimates for a variety of reasons, including: lack of availability of raw material or equipment; unexpected construction or operating problems; metallurgical performance; unanticipated geologic features; short-term operating factors; delays in delivery of consumables; revisions to mine plans; risks and hazards associated with mining; natural phenomena, such as inclement weather conditions, water availability, floods, and earthquakes; and unexpected labour shortages or strikes. Costs may also be affected by a variety of factors, including changing waste-to-ore ratios, ore grade metallurgy, labour costs, the cost and consumption rate of commodities, general inflationary pressures and currency exchange rates. Many of these factors are beyond the Company's control. Failure to achieve estimates or material

increases in costs could have an adverse impact on the Company's future cash flows, business, results of operations and financial condition.

Furthermore, delays in the construction and commissioning of mining projects or other technical difficulties may result in even further capital expenditures being required. Any delay in the development of a project or cost overruns or operational difficulties once the project is developed may have a material adverse effect on the Company's ability to finance or complete construction of the Nechalacho Project and on the Company's business, results of operations and financial condition.

Changes in the market price of rare earth minerals, which in the past has fluctuated widely, will affect the profitability of our operations and financial condition.

The Company's revenues, if any, from the Nechalacho Project and Separation Rapids Lithium Project, are expected to be derived in large part from the mining and sale of rare metals and minerals from the Basal Zone deposit. Demand for and the prices of those commodities has fluctuated widely, particularly in recent years, and is affected by numerous factors beyond the Company's control, including international economic and political conditions (such as the complaint filed with the World Trade Organization and won by the United States, the European Union and Japan against China's REE export restrictions in 2014), expectations of inflation, international currency exchange rates, interest rates, global or regional consumption patterns, speculative activities, levels of supply and demand, increased production of rare metals and minerals due to new mine developments and improved mining and production methods, availability and costs of lithium, REE and other rare mineral substitutes; lithium, REE and other rare minerals and other stock levels maintained by producers and others and inventory carrying costs. The effect of these factors on the price of rare metals and minerals and therefore the Company's ability to finance the construction of the Nechalacho Project or the Separation Rapids Lithium Project and the economic viability of the Company's operations cannot be accurately predicted.

Demand for REE products may be impacted by demand for products incorporating rare earths, including hybrid and electric vehicles, wind power equipment and other clean technology products, as well as demand in the general automotive and electronic industries. Lack of growth in these markets may adversely affect the demand for REE products, which would have a material adverse effect on the Nechalacho Project and the Company's business. In contrast, extended periods of high commodity prices may create economic dislocations that may be destabilizing to rare earth minerals supply and demand. Strong REE prices, as well as real or perceived disruptions in the supply of REE, also create economic incentives to identify or create alternate technologies that ultimately could depress future long-term demand for REE products, and at the same time may incentivize development of additional mining properties to produce REE. For example, automobile manufacturers have previously announced plans to develop motors for electric and hybrid cars that do not require REE products due to concerns about the available supply of rare earths. If the automobile industry or other industries reduce their reliance on rare earth products, the resulting change in demand could have a material adverse effect on the Company's business. In particular, if prices or demand for rare earths were to decline, this could impair the Company's ability to obtain financing for the Nechalacho Project and its ability to find purchasers for its products at prices acceptable to the Company.

Volatility in lithium prices and lithium demand may create some uncertainty on the feasibility for the Company to develop its Separation Rapids Lithium Project.

The development of the Separation Rapids Lithium Project is dependent on the continued growth of the lithium market, and the continued increased demand for lithium chemicals by emerging producers of electric vehicles and other users of lithium-ion batteries. These producers and the related technologies are still under development and a continued sustained increase in demand is not certain. To the extent that such demand does not manifest itself, and the lithium market does not continue to grow, or existing producers increase supply to satisfy this demand, then the Company's ability to develop its Separation Rapids Lithium Project will be adversely affected. The Company's lithium exploration and development activities may be significantly adversely affected by volatility in the price of lithium. Mineral prices fluctuate widely and are affected by numerous factors beyond the Company's control such as global and regional supply and demand, interest rates, exchange rates, inflation or deflation, fluctuation in the value of the United States dollar and foreign currencies, and the political and economic conditions of mineral-producing countries throughout the world. The exact effect of these factors cannot be accurately predicted, but the combination of these factors may result in the Company's lithium activities not producing an adequate return on invested capital to be profitable or viable.

We operate in a highly competitive industry and some of our competitors may engage in predatory pricing behaviour or manipulation of the available supply of REE or lithium.

An increase in the global supply of rare metal and REE products and lithium, dumping and predatory pricing by our competitors may materially adversely affect our ability to raise capital and construct and profitably operate the Nechalacho Project or the Separation Rapids Lithium Project. The pricing and demand for rare metal and REE products and lithium is affected by a number of factors beyond the Company's control, including growth of economic development and the global supply and demand for rare metal and REE products. Currently China provides the majority of the world's supply of REE. Further, the prospect of the Nechalacho Project and the Separation Rapids Lithium Project and other development projects achieving production may lead our competitors to engage in predatory pricing behaviour or manipulation of the available supply of REE and/or lithium. Any increase in the amount of rare earth products exported from China or from mines outside China, or produced in South America or Australia in the case of lithium, and increased competition may result in price reductions, reduced margins and loss of potential sales, any of which could materially adversely affect the profitability of the Nechalacho Project or our ability to further pursue the Separation Rapids Lithium Project. As a result of these factors, the Company may not be able to compete effectively against future competitors.

Any unexpected costs or delays in the commercialization of rare earth products could have a material adverse effect on our ability to finance construction of and successfully operate the Nechalacho Project.

The success of the Nechalacho Project will depend, in part, on the establishment of new markets by the Company or third parties for certain rare earth products that may be in low demand, the creation of new markets and the successful commercialization of REE products in existing and emerging markets. Any unexpected costs or delays in the commercialization of any of the foregoing products and applications could have a material adverse effect on our ability to finance construction of and successfully operate the Nechalacho Project.

Our mineral resource and mineral reserves are only estimates and are subject to significant risks and uncertainties.

Mineral resource and mineral reserve estimates are based upon estimates made by Company personnel and independent geologists. These estimates are inherently subject to uncertainty

and are based on geological interpretations and inferences drawn from drilling results and sampling analyses and may require revisions based on further exploration or development work. There is no certainty that any of the mineral resources or mineral reserves identified on the Nechalacho Project or Separation Rapids Lithium Project will be realized, that any anticipated level of recovery of minerals will in fact be realized, or that an identified mineral reserve or mineral resource will ever qualify as a commercially mineable (or viable) deposit which can be legally and economically exploited. Evaluations of drilling results are ongoing, but until a deposit is actually mined and processed, the quantity of mineral resources and mineral reserves and grades must be considered as estimates only.

In addition, the grade of mineralization which may ultimately be mined may differ from that indicated by drilling results and such differences could be material. The quantity and resulting valuation of mineral reserves and mineral resources may also vary depending on, among other things, metal prices (which may render mineral reserves and mineral resources uneconomic), cut-off grades applied and estimates of future operating costs (which may be inaccurate). Production can be affected by such factors as permitting regulations and requirements, weather, environmental factors, unforeseen technical difficulties, unusual or unexpected geological formations and work interruptions. Any material change in quantity of mineral resources, mineral reserves, grade, or stripping ratio may also affect the economic viability of any project undertaken by the Company. In addition, there can be no assurance that metal recoveries in small scale, and/or pilot laboratory tests will be duplicated in a larger scale test under on-site conditions or during production.

The Company's estimated mineral resources and mineral reserves should not be interpreted as assurances of commercial viability or potential or of the profitability of any future operations. Readers should be cautioned not to place undue reliance on these estimates. The Company cannot be certain that its mineral resource and mineral reserve estimates are accurate and cannot guarantee that it will recover the expected quantities of metals. Future production could differ dramatically from such estimates for the following reasons:

- actual mineralization or ore grade could be different from those predicted by drilling, sampling, feasibility studies or technical reports;
- increases in the capital or operating costs of the mine;
- changes in the life-of-mine plan;
- the grade of ore may vary over the life of the mine and the Company cannot give any assurances that any particular mineral reserve estimate will ultimately be recovered;
- or
- metallurgical performance could differ from forecast.

The occurrence of any of these events may cause the Company to adjust its mineral resource and reserve estimates or change its mining plans, which could negatively affect the Company's financial condition and results of operations. Moreover, short-term factors, such as the need for additional development of the ore body or the processing of new or different grades, may adversely affect the Company.

We may not be able to obtain all required permits and licenses to place our properties into production.

The construction and operation of the Nechalacho Project and the other exploration and development operations of the Company, such as on the Separation Rapids Lithium Project, requires licenses and permits from various governmental authorities. Obtaining the necessary governmental permits is a complex and time consuming process involving numerous jurisdictions. There can be no assurance that the Company will be able to obtain all necessary

licenses and permits that may be required to carry out exploration, development, mining and processing operations at its projects. If the Company proceeds to production on the Nechalacho Project or any other project, licenses and permits may contain specific operating conditions and there can be no assurance that these conditions will not result in material increases in capital or operating costs or reductions in anticipated production, or that the Company will be able to comply with any such conditions. Costs related to applying for and obtaining permits and licenses or complying with the requirements they impose may be prohibitive and could delay planned exploration, development, construction or operation activities. Failure to comply with applicable laws, regulations and permitting requirements or with the conditions contained in licenses or permits may result in enforcement actions, including orders issued by regulatory or judicial authorities, causing operations to cease or be curtailed, and may include corrective measures requiring capital expenditures, installation of additional equipment, or remedial actions.

Parties engaged in exploration, development, mining or processing operations may be required to compensate those suffering loss or damage by reason of those activities and may have civil or criminal fines or penalties imposed for violations of applicable laws or regulations. Amendments to current laws, regulations and permits governing operations and activities of mining companies, or more stringent implementation thereof, could have a material adverse impact on our operations and cause increases in capital expenditures or production costs, reductions in levels of production at producing properties or require abandonment or delays in the development of new mining properties.

Our activities are subject to environmental laws and regulations that may increase our costs of doing business and restrict our operations.

All phases of the Company's exploration and development activities are subject to regulation by governmental agencies under various environmental laws in the various jurisdictions in which it operates. These laws and the regulations adopted thereunder address emissions into the air, discharges into water, management of waste, management of hazardous substances, the transportation of hazardous and/or radioactive substances, protection of natural resources, antiquities and endangered species, and reclamation of lands disturbed by mining operations. Environmental legislation and regulation is evolving in a manner which will require stricter standards and enforcement, increased fines and penalties for non-compliance, more stringent environmental assessments of proposed projects, and a heightened degree of responsibility for companies and their officers, directors and employees. Compliance with environmental laws and regulations may require significant capital outlays on behalf of the Company and may cause material changes or delays in the Company's intended activities. There is no assurance that future changes in environmental regulation, if any, will not adversely affect the Company's operations or result in substantial costs and liabilities to the Company in the future. Furthermore, environmental hazards which are unknown to the Company at present and which have been caused by previous or existing owners or operators may exist on the Company's properties.

We do not maintain insurance with respect to certain high-risk activities, which exposes us to significant risk of loss.

In the course of exploration and development of, and production from, mineral properties, certain risks, and in particular, unexpected or unusual geological operating conditions including rock bursts, cave-ins, fire, flooding and earthquakes may occur. It is not always possible to fully insure against such risks as a result of high premiums or other reasons. Should such events arise, they could reduce or eliminate any future profitability and result in increasing costs and a decline in the value of the Company's securities.

Competition for recruitment and retention of qualified personnel, for which we compete with other exploration companies, many of which have greater financial resources than us, and a shortage of equipment and supplies could adversely affect our ability to operate our business.

The Company will be dependent on various supplies, equipment, parts and labour and the services of contractors to carry out construction of the Nechalacho Project and to carry out its other exploration and development projects, such as the Separation Rapids Lithium Project. The availability and cost of such supplies, equipment, parts or labour or the services of contractors could have a material adverse effect on the Company's ability to successfully construct and operate the Nechalacho Project and carry out its other exploration and development activities on the Separation Rapids Lithium Project.

The loss of key management personnel may adversely affect our business and results of operations.

The Company is dependent on the services of key executives including the Company's President and Chief Executive Officer and other highly skilled and experienced executives and personnel focused on managing the Company's interests and the advancement of the Nechalacho Project and other projects, such as the Separation Rapids Lithium Project, as well as the identification of new opportunities for growth and funding. Due to the Company's relatively small size, the loss of these persons or the Company's inability to attract and retain additional highly skilled employees required for the development of the Company's activities may have a material adverse effect on the Company's business or future operations.

The mineral industry is highly speculative and involves substantial risks.

Mineral exploration and development are highly speculative, and certain inherent exploration risks could have a negative effect on the Company. Most exploration projects do not result in the discovery of commercially mineable ore deposits and no assurance can be given that any particular level of recovery of ore reserves will be realized or that any identified mineral deposit will ever qualify as a commercially mineable (or viable) ore body which can be legally and economically exploited. Estimates of reserves, mineral deposits and production costs can also be affected by such factors as environmental permitting regulations and requirements, weather, environmental factors, unforeseen technical difficulties, unusual or unexpected geological formations and work interruptions. Material changes in ore reserves, grades, stripping ratios or recovery rates may affect the economic viability of any project.

The Company's future growth and productivity will depend, in part, on its ability to identify and acquire additional mineral rights, and on the costs and results of continued exploration and development programs. Mineral exploration is highly speculative in nature and is frequently non-productive. Substantial expenditures are required to:

- establish ore reserves through drilling and metallurgical and other testing techniques;
- determine metal content and metallurgical recovery processes to extract metal from the ore;
- conduct environmental, social, economic and technical studies; and
- construct, renovate or expand mining and processing facilities.

In addition, if the Company discovers a mineral deposit, it would take several years from the initial phases of exploration until production is possible. During this time, the economic feasibility of production may change. As a result of these uncertainties, there can be no assurance that the Company will successfully acquire additional mineral rights.

We operate in a highly competitive industry.

The mineral exploration and development industry is intensely competitive. Significant competition exists for the marketing of the minerals that the Company intends to produce as well as the acquisition of mineral concessions, claims, leases and other mineral interests. The Company may be at a competitive disadvantage in arranging for the sale of products intended to be produced at the Nechalacho Project or other properties, such as the Separation Rapids Lithium Project, or in acquiring additional mining properties because it must compete with other individuals and companies, many of which have greater financial resources, operational experience and technical capabilities than the Company. The Company may also encounter increasing competition from other mining companies in its efforts to hire experienced mining professionals. Competition for exploration resources at all levels is currently very intense, particularly affecting the availability of manpower, drill rigs and helicopters. Increased competition could adversely affect the Company's ability to attract necessary capital funding or acquire suitable producing properties or prospects for mineral exploration in the future.

Our exploration activities are subject to various federal, provincial, state and local laws and regulations.

The Company's operations and exploration and development activities in Canada and the United States are subject to extensive federal, state, provincial, territorial and local laws and regulations governing various matters, including:

- environmental protection;
- management, transportation and use of toxic, hazardous and/or radioactive substances and explosives;
- management of tailings and other wastes generated by the Company's operations;
- management of natural resources;
- exploration and development of mines, production and post-closure reclamation;
- exports;
- price controls;
- taxation;
- regulations concerning business dealings with Indigenous groups;
- labour standards and occupational health and safety, including mine safety; and
- historic and cultural preservation.

Failure to comply with applicable laws and regulations may result in civil or criminal fines or penalties or enforcement actions, including orders issued by regulatory or judicial authorities enjoining or curtailing operations or requiring corrective measures, installation of additional equipment or remedial actions, any of which could result in the Company incurring significant expenditures. The Company may also be required to compensate private parties suffering loss or damage by reason of a breach of such laws, regulations or permitting requirements. It is also possible that future laws and regulations, or changes to or a more stringent enforcement of current laws and regulations by governmental authorities, could cause additional expense, capital expenditures, restrictions on or suspensions of the Company's operations and delays in the development of the Company's properties.

Exploration activities depend on adequate infrastructure and we cannot be assured that our properties will maintain adequate infrastructure.

Mining, processing, development and exploration activities depend on adequate infrastructure. Reliable roads, bridges, power sources and water supply are important determinants, which affect capital and operating costs. Unusual or infrequent weather

phenomena, sabotage, government or other interference in the maintenance or provision of such infrastructure could adversely affect the Company's operations, financial condition and results of operations.

Mining and resource exploration is inherently hazardous and subject to conditions or events beyond our control, which could have a material adverse effect on our business and plans.

Mineral exploration, the development and construction and operation of mines and mining involves many risks, which even a combination of experience, knowledge and careful evaluation may not be able to overcome. The work which the Company is undertaking and proposes to undertake will be subject to all the hazards and risks normally incidental to exploration, development and production of resources, any of which could result in work stoppages and damage to persons or property or the environment and possible legal liability for any and all damage. Fires, power outages, labour disruptions, flooding, explosions and cave-ins are risks involved in the operation of mines and the conduct of exploration programs. Although the Company has secured liability insurance and will, when appropriate, secure property insurance in an amount which it considers adequate, the nature of these risks is such that liabilities might exceed policy limits, the liabilities and hazards might not be insurable, or the Company might elect not to insure itself against such liabilities due to high premium costs or other reasons, in which event the Company could incur significant costs or uninsured losses that could have a material adverse effect upon its financial condition.

Changes in critical accounting estimates could adversely affect financial results.

Avalon's most significant accounting estimates relate to the carrying value of the Company's metal and mineral property assets. The accounting policies in relation to metal and mineral properties are set out in full in the Company's annual financial statements. Management regularly reviews the net carrying value of each metal and mineral property. Where impairment indicators exist, management assesses if carrying value can be recovered. Management's estimates of metal and mineral prices, mineral resources and operating, capital and reclamation costs are subject to certain risks and uncertainties which may affect the recoverability of metal and mineral property costs. Although management has made its best estimate of these factors, it is possible that changes could occur in the near term, which could adversely affect the future net cash flows to be generated from the properties. Other significant estimates relate to accounting for stock based compensation and warrant valuation. Option and warrant pricing models require the input of highly subjective assumptions including the expected price volatility. Changes in the subjective input assumptions can materially affect the fair value estimate, and therefore the existing models do not necessarily provide a reliable single measure of the fair value of the Company's stock options granted/vested during the year, or of the value of the Company's derivative financial instruments.

Certain officers and directors may be in a position of conflicts of interest.

Certain of the Company's directors and officers also serve as directors and/or officers of other companies or other managerial positions involved or related to natural resource exploration and development and consequently there exists the possibility for such directors and officers to be in a position of conflict. Any decision made by any of such directors and officers involving the Company will be made in accordance with their duties and obligations to deal fairly and in good faith with a view to the best interests of the Company and its shareholders. In addition, each of the Company's directors is required to declare any interest in any matter in which such directors may have a conflict of interest in accordance with the procedures set forth in the CBCA and other applicable laws.

We are subject to cybersecurity risks.

The Company is reliant on its information technology ("IT") systems for its operations. User access and security of all Company sites and IT systems can be critical elements to its operations, as is cloud security, security of all of the Company's IT systems, and protection against cyber security incidents. Any IT failure pertaining to availability, access or system security could potentially result in disruption of the activities of the Company and its personnel, and could adversely affect the reputation, operations or financial performance of the Company.

Potential risks to the Company's IT systems could include unauthorized attempts to extract sensitive business information, confidential or personal information, denial of access extortion, corruption of information or disruption of business processes, or by inadvertent or intentional actions by the Company's employees or vendors. A cybersecurity incident resulting in a security breach or failure to identify a security threat could disrupt business and could result in the loss of sensitive, confidential or personal information or other assets, as well as litigation, regulatory enforcement, violation of privacy or securities laws and regulations, and remediation costs, all of which could materially impact the Company's business or reputation.

We believe that we may be a "passive foreign investment company" for the current taxable year which may result in materially adverse United States federal income tax consequences for United States investors.

U.S. investors in the Company's common shares and warrants should be aware that the Company believes it was classified as a "passive foreign investment company" (a "PFIC") under the meaning of Section 1297 of the United States Internal Revenue Code of 1986, as amended during its tax year ended August 31, 2022, and based on current business plans and financial expectations, the Company believes that it may be a PFIC for the current and future taxable years. If the Company is a PFIC for any taxable year during which a United States person holds its common shares or warrants it may result in materially adverse United States federal income tax consequences for such United States person. The potential consequences include, but are not limited to, recharacterization of gain from the sale of the common shares, warrants, and those common shares received upon exercise of warrants as ordinary income and the imposition of an interest charge on such gain and on certain distributions received on the common shares or common shares received upon exercise of warrants. Certain elections may be available under U.S. tax rules to mitigate some of the adverse consequences of holding shares in a PFIC.

A U.S. taxpayer that makes a "qualified electing fund" (a "QEF") election with respect to the Company generally will be subject to U.S. federal income tax on such U.S. taxpayer's pro rata share of the Company's "net capital gain" and "ordinary earnings" (as specifically defined and calculated under U.S. federal income tax rules), regardless of whether such amounts are actually distributed by the Company. U.S. taxpayers should be aware, however, that there can be no assurance that the Company will satisfy record keeping requirements under the QEF rules or that the Company will supply U.S. taxpayers with required information under the QEF rules, if the Company is a PFIC and a U.S. taxpayer wishes to make a QEF Election. Alternatively, a U.S. taxpayer may make a "mark-to-market election" (a "Mark-to-Market Election") if the Company is a PFIC and the common shares are "marketable stock" (as specifically defined). A U.S. taxpayer that makes a Mark-to-Market Election generally will include in gross income, for each taxable year in which the Company is a PFIC, an amount equal to the excess, if any, of (a) the fair market value of the common shares as of the close of such taxable year over (b) such U.S. taxpayer's adjusted tax basis in the common shares.

Investors should consult their own tax advisor regarding the PFIC rules and other U.S. federal income tax consequences of the acquisition, ownership, and disposition of common shares and warrants.

We are subject to foreign currency fluctuations.

It is expected that a significant portion of the Company's revenue from the sale of its products from the Nechalacho Project will likely be priced in U.S. dollars, whereas most of its operating costs will likely be incurred in Canadian dollars and other international currencies. In addition, a significant portion of the capital costs for the construction of the mining plant at the Nechalacho Project will also likely be priced in U.S. dollars. The fluctuation in the exchange rate between the U.S. dollar and the Canadian dollar and other international currencies may have a significant impact on the future profitability of the Company and it may also significantly increase or decrease the capital costs for the Nechalacho Project.

Our Common Shares have experienced volatility in share price and there can be no assurance that an active market for the Company's securities will be sustained.

In recent years, the securities markets in Canada have experienced a high level of price and volume volatility and the market price of securities of many companies, particularly those considered development stage companies, have experienced wide fluctuations in price which would not have necessarily been related to the operating performance, underlying asset values or prospects of such companies.

The market price of the Company's securities may fluctuate significantly based on a number of factors, some of which are unrelated to the financial performance or prospects of the Company. These factors include macroeconomic developments in North America and globally, market perceptions of the attractiveness of particular industries, short-term changes in commodity prices, other precious metal prices, the attractiveness of alternative investments, currency exchange fluctuation, the political environment and the Company's financial condition or results of operations as reflected in its financial statements. Other factors unrelated to the performance of the Company that may have an effect on the price of the securities of the Company include the following: the extent of analytical coverage available to investors concerning the business of the Company may be limited if investment banks with research capabilities do not follow the Company's securities; lessening in trading volume and general market interest in the Company's securities may affect an investor's ability to trade significant numbers of securities of the Company; the size of the Company's public float may limit the ability of some institutions to invest in the Company's securities; the Company's operating performance and the performance of competitors and other similar companies; the public's reaction to the Company's press releases, other public announcements and the Company's filings with the various securities regulatory authorities; changes in estimates or recommendations by research analysts who track the Company's securities or the shares of other companies in the resource sector; the arrival or departure of key personnel; acquisitions, strategic alliances or joint ventures involving the Company or its competitors; the factors listed in this Form 20-F under the heading "Cautionary Statement Regarding Forward-Looking Statements"; and a substantial decline in the price of the securities of the Company that persists for a significant period of time could cause the Company's securities to be delisted from any exchange on which they are listed at that time, further reducing market liquidity. If there is no active market for the securities of the Company, the liquidity of an investor's investment may be limited and the price of the securities of the Company may decline. If such a market does not develop, investors may lose their entire investment in the Company's securities.

Additional financing may be needed for our business operations which may lead to dilution of our current shareholders.

The Company will require additional funds to fund further exploration and/or development activities or to fulfill its obligations under any applicable agreements. If the Company raises additional funding by issuing additional equity securities, such financing will dilute the holdings of the Company's shareholders. Future sales of common shares or warrants of the Company in public or private markets could adversely affect the trading price of the Company's common shares and its ability to continue to raise funds by new offerings of common shares or warrants.

We do not currently intend to pay cash dividends.

The Company has not paid any dividends on its Common Shares. Any decision to pay dividends on its Common Shares in the future will be dependent upon the financial requirements of the Company to finance future growth, the financial condition of the Company and other factors which the Company's Board of Directors may consider appropriate in the circumstances.

There is no market for our warrants.

There is no existing trading market for warrants to purchase the common shares of the Company. As a result, there can be no assurance that a liquid market will develop or be maintained for those securities, or that an investor will be able to sell any of those securities at a particular time (if at all). The Company may not list any of its warrants on any Canadian or U.S. securities exchange, and the Common Shares could be delisted or suspended. The liquidity of the trading market in those securities, and the market price quoted for those securities, may be adversely affected by, among other things:

- changes in the overall market for those securities;
- changes in the Company's financial performance or prospects;
- changes or perceived changes in the Company's creditworthiness;
- the prospects for companies in the Company's industry generally;
- the number of holders of those securities;
- the interest of securities dealers in making a market for those securities; and
- prevailing interest rates.

5.3 Asset-backed Securities

Not applicable

5.4 Mineral Projects

The Separation Rapids Lithium Project and the Nechalacho Project are the Company's material properties. The summary of each of the Separation Rapids Lithium Project and the Nechalacho Project set forth below is qualified in its entirety by reference to the full text of the Separation Rapids Technical Report and the Nechalacho Technical Report and (each as defined below), respectively.

5.4.1 Separation Rapids Lithium Project

(A) Summary of Technical Report

The most recent technical report on the property is entitled "NI 43-101 Technical Report on the Preliminary Economic Assessment for the Production of Petalite Concentrate from the Separation Rapids Lithium Project Kenora, Ontario" dated September 26, 2018, effective August 21, 2018 (the "Separation Rapids Technical Report") and prepared by Steven R. Aiken, P.Eng. and Kevin E. Hawton, P.Eng. of Knight Piesold Limited, Richard Gowans, P.Eng., Christopher Jacobs, CEng, MIMMM, EurIng, Bruce Pilcher, CEng, FIMMM, FAusIMM(CP) and Jane Spooner, P.Geo, all of Micon, and William Mercer, Ph.D., P.Geo, each of whom is a qualified person pursuant to NI 43-101.

In accordance with NI 43-101, it is noted that the PEA must be considered preliminary in nature, as it includes Inferred mineral resources that are considered too speculative geologically to have the economic considerations applied to them that would enable them to be categorized as mineral reserves, and there is no certainty that the PEA will be realized.

The Separation Rapids Technical Report follows an earlier PEA in 2017, also by Micon, which was done to exclusively evaluate the lithium battery materials market opportunity and the economics of producing a lithium hydroxide product from the petalite concentrate. An earlier Pre-feasibility Study ("PFS") completed in 1999 and updated in 2000, also by Micon was based on the original development model of producing a lithium mineral product (petalite) for glass-ceramics applications and did not consider battery materials as a potential primary product.

1. Introduction

The objective of this PEA is to demonstrate the economic potential of a revised production schedule which includes sales of three flotation concentrate products (petalite, lepidolite and feldspar) only. This study excludes conversion of petalite to lithium hydroxide for use in the production of Lithium Ion Batteries, although if market demand requires, and subject to financing availability, Avalon could proceed in the future with the development of a lithium hydroxide demonstration plant, followed by a full-scale lithium hydroxide production plant.

The PEA is based on processing 475,000 tonnes of mineralized material per year to produce approximately 1.32 million tonnes (Mt) of petalite, 220,000 t of lepidolite and 1.31 Mt of feldspar over a 20-year total operating life.

Avalon was proposing a phased development program for the Separation Rapids Lithium Project starting with the development of the mine and a flotation concentrator for petalite and lepidolite production. A feldspar recovery circuit will be added in operating Year 5.

This PEA has been prepared by Micon under the terms of its agreement with Avalon. As discussed in the relevant sections of the report, Micon has prepared a mine plan and schedule and has prepared an economic analysis of the Separation Rapids Lithium Project. Micon has reviewed the metallurgical testwork and the mineral processing flowsheet, the infrastructure requirements, and the capital and operating cost estimates prepared by Avalon and its retained consultants.

The PEA is based on updated mineral resource estimates for lithium and feldspar contained in the Separation Rapids Lithium Deposit ("SRLD"), prepared by Avalon dated 23 May, 2018. This updated estimate is considered not materially different from the previous independent one reported in a NI 43-101 Technical Report dated 10 November, 2016.

2. Property Description, Location and Access

The Separation Rapids property is located in northwestern Ontario, 55 km due north of Kenora and about 79 km by road. It is centred on latitude 50 15' 30" N, longitude 94 35' W (UTM coordinates: 388441E 5568996N in NAD 83, Zone 15N15). The Separation Rapids property consists of nineteen mineral claims and one mining lease covering a combined area of approximately 4,414 hectares (10,910 acres) in the Paterson Lake Area, Kenora Mining Division, Ontario, all of which are owned 100% by Avalon. The claims are referred to as "new" claims as the Ontario government changed the claim system in 2019 with the change having no material effect on Avalon's property. The lease covers an area of 420.39 hectares over the area of the lithium pegmatite deposit and adjacent lands that may be used for mine development infrastructure.

Other than minor and largely funded reclamation requirements under the advanced exploration permit, there are no known environmental liabilities associated with the Separation Rapids property. Avalon holds all necessary permits required to access the Separation Rapids property and to conduct exploration. Exploration permits will be required for additional drilling in the future. There are no known factors or risks that may affect access, title or the right or ability to perform work on the property.

Mining and mineral concentration will take place at the Separation Rapids property. Shipment of concentrates from the site will be by truck. However, a rail loading trans-shipment facility will be required in order to access rail transportation for product shipment and some inbound supplies. This loading site trans-shipment facility is planned to be located on the CNR line in the vicinity of Redditt, Ontario, approximately 55 km by road from the Separation Rapids site.

The Separation Rapids area is typical of much of northwestern Ontario and the Canadian Shield. The property is relatively flat with an average elevation of approximately 350 masl. Local topographic relief is limited to 50 m or less with typical Precambrian glaciated terrain. The English River system is proximal to all claim groups. The area is located within the Boreal Hardwood Transition or Mixed Boreal Forest. A Species at Risk Act assessment was completed, and no endangered or at-risk species were identified in the area of the proposed Project. The climate is typical of Canada's mid-latitudes with long, cold winters and comparatively short spring-summer-fall periods.

The closest centre with significant services is Kenora. Forestry, tourism and mining are the three largest sectors of the Kenora economy. The closest community is Whitedog, home of the Wabaseemoong Independent Nations of One Man Lake, Swan Lake and Whitedog. The SRLD is situated in the Traditional Land Use Area of these First Nations as recognized under an agreement signed in 1983 with the Province of Ontario.

3. History

Rare-element mineralization in the area was first encountered along the English River near Separation Rapids in 1932. The petalite-bearing SRLD and an associated group of rare-metal pegmatites, were discovered by Dr. Fred Breaks of the Ontario Geological Survey ("OGS") as a result of a detailed study of rare-metal pegmatites in the region between 1994 and 1996. Avalon acquired its initial interest in the property through an option agreement with local prospectors who had staked the original claims in 1996.

Exploration on the SRLD, by Avalon, in the late-1990s was accompanied by a scoping level metallurgical study by Lakefield Research Limited and a marketing study by Equapolar

Resource Consultants which concluded that the petalite mineralization was suitable as an industrial mineral product in thermal shock resistant glass-ceramic applications. Additional exploration and drilling programs were completed by Avalon in 2017 and 2018.

Since 2014, Avalon has not only investigated market opportunities for petalite in the glass and ceramics industries along with new more efficient recovery processes, it has also developed processes for recovering concentrates of lepidolite and feldspars as well as a process for converting petalite into lithium carbonate or hydroxide.

4. Geological Setting and Mineralization

The Late Archean SRLD belongs to the petalite sub-type of the complex-type class of zoned LCT (Lithium-Cesium-Tantalum) pegmatites. The SRLD, its parent granite, the Separation Rapids Pluton and associated rare-metal pegmatites, occur within the Archean Separation Lake Metavolcanic Belt ("SLMB") which forms the boundary between the English River subprovince to the north and the Winnipeg River subprovince to the south. Both subprovinces are part of the larger Archean Superior Province of the Canadian Shield. Avalon has further subdivided the SRLD into three sub-zones, namely the Separation Rapids Pegmatite ("SRP"), Western Pegmatite and Eastern Swarm. Based on lithological, mineralogical and textural variations, the SRP itself has been subdivided into five distinct lithological units and subunits, 3a, 3b, 4, 5 and 6. Unit 6 rock has the petalite bearing portions of the deposit ("SRLD") and units 3 (albitite), 4 (potassium feldspar subzone) and 5 (quartz-mica subzone) are the surrounding pegmatite rock types.

The Separation Rapids area is underlain predominantly by a mafic metavolcanic sequence (amphibolite or Avalon's Unit 1), consisting of flows, tuffs, subordinate epiclastic metasediments and rare iron formation horizons and rhyolites. Locally, on the Avalon property itself, the metavolcanic sequence is restricted to amphibolite as the surrounding rock type.

In the SRP, petalite, potassium feldspar and sodium feldspar are major rock-forming minerals, with subordinate amounts of other minerals including spodumene, lithium-bearing muscovite, lepidolite, and quartz of which some occur as potentially economically recoverable minerals.

The petalite-bearing Unit 6 is the principal unit of interest within the SRP. Geological mapping and assays for surface and drill core samples show that mineralogy and lithium oxide (Li_2O) grades of the petalite mineralization (average 4.78% Li_2O) in the SRP are relatively homogeneous and that the petalite is close to the theoretical (stoichiometric) chemical composition (4.88% Li_2O), as well as being very pure, with marked absence of deleterious elements such as iron.

Geological mapping and diamond drilling show that the SRLD system has a strike length of over 1.5 km, and widths ranging from 10 to 70 m. To date, the SRLD has been intersected by drilling to a vertical depth of almost 275 m. The petalite-bearing pegmatite zones show little variation in true width between surface outcrop, up to 70 m, and up to 45 m for near-surface and the deepest intersected levels. These zones are open to depth.

Potassium feldspars in the SRP have been shown to be rubidium-rich, high-purity end-members.

The Li_2O content of the micas ranges from very low to over 6%. The highest Li_2O values are in the micas found in Subunit 6d. This includes the pink to red mica referred to as lepidolite that is the distinctive identifying feature of Subunit 6d.

5. Exploration

Following the discovery of the SRLD in 1996, Avalon carried out a brief prospecting and sampling program in November, 1996. This was followed by a program of geological mapping, trenching, line-cutting and a magnetometer survey in 1997 and 1998.

In the period from 2000 to 2014, little work of a geoscientific nature was carried out at the property. The main activity relating to advancing the Separation Rapids Lithium Project was process testwork and, consequently, the main activities at site were collection of samples, up to bulk sample size, for mineral product development.

Avalon completed a field program in July and August, 2017, on the Paterson Lake claim group. Litho-geochemical and biogeochemical surveys were undertaken over the claims, in conjunction with prospecting for new lithium pegmatites.

The initial field work in the 1990s led to the drilling of the SRLD that established the initial resource estimates. The later work in 2017 led to the discovery of new LCT pegmatites as discussed in more detail below in the section (B)(a) on the Snowbank Pegmatite.

6. Drilling

Avalon has drilled at the Separation Rapids Lithium Project in a number of campaigns between 1997 and 2018. The total number of diamond drill holes is 80 for a cumulative total of 13,192 m. The type and drilling statistics are in Table X.X. Further drilling is planned in 2022-23 to explore the new Snowbank pegmatite discovery and explore the depth potential of the SRLD.

Three of these holes were drilled during April and May, 2001 for the purposes of a geotechnical investigation of the rock at the proposed open pit mine and to determine preliminary pit slope design parameters. The potential for water inflow into the open pit was also evaluated.

The total drill database was utilized to estimate the deposit resources as described in Section 10 below.

Table X.X
Summary Drilling Statistics, Separation Rapids Pegmatite

Year	Purpose	Number of Holes	Metres	Size
1997	Geological/resources	30	4,922	NQ
1998	Geological/resources	27	3,829	NQ
2001	Geological/resources/geotechnical	12	1,420	NQ
2017	Geological/resources	5	1,473	HQ
2018	Geological resources	6	1,548	HQ
Total		80	13,192	

7. Sample Preparation, Analyses and Security

Surface samples taken in the 1990s were shipped to Chemex Labs Ltd. in Thunder Bay, Ontario for preparation then to Chemex's laboratories in Mississauga, Ontario and Vancouver, British Columbia for subsequent assaying for lithium and a range of other elements. Drill core was logged and split with half of the core being sent for assay and the other half being stored

in core boxes on site. Core sample intervals were varied, depending on lithology, to a maximum of 3 m. Split core samples were shipped to XRAL where they were assayed for lithium, rubidium using ICP and AA for rubidium and cesium.

In 2016, Avalon resampled drill core from the 1990s' programs. The objective was to re-assay the core with modern methods and inserted lithium rock standards for comparison to the historic data. The drill core was analysed by ALS Laboratory applying the same QAQC procedures as those detailed below for 2017/18 drill core.

In both the 2017 and 2018 diamond drill programs, all lithium bearing pegmatites (Unit 6) and representative non-mineralized pegmatite intercepts were sampled on continuous 2 m intervals, with shorter intervals where constrained by geologic contacts and amphibolite host rock. Samples, with included blanks and standards for QAQC purposes, were transported in sealed bags for security, to the ALS Global preparation laboratory in Thunder Bay then the produced pulps, including standards and blanks, were shipped by ALS to ALS Global in Vancouver for analysis. In addition, duplicate drill core samples were analysed for check purposes. The standards included certified lithium external and internal standards. ALS Laboratories is independent of Avalon and is a global leader in providing laboratory testing, inspection, certification and verification solutions. Samples were analysed by a number of chemical methods including ME-MS81 multielement ICP. Any high lithium values were verified by lithium specific method Li-OG63.

In addition, a limited number of samples were analysed at another commercial laboratory, SGS in Peterborough, Ontario, as an independent check on the prime laboratory utilized. SGS utilized method GE-ICM90 multielement ICP as the prime analytical method.

Finally, MICON International, which produced Avalon's PEA on the project in 2018, independently collected and analysed historic core samples and verified the results.

The drill database contains 185 specific gravity ("SG") values for various lithologies on the SRLD. Based on these measurements, the average SG for pegmatite and amphibolite (waste) was 2.62 and 3.04, respectively. The SG measurements showed low variability.

8. Data Verification

The mineral resource estimation is based on the original drilling by Avalon in 1997 to 2001 as well as the additional 2017 and 2018 drill program results. The 2018 assay database has been updated using the one created by Micon in 1999 as a basis. There were certain quality assurance/quality control ("QA/QC") procedures applied and reported on at the time of creation of the database that included check assays at a second laboratory and independent assaying by Micon.

Subsequently, Avalon completed further verification of the drill data including cross-checking the database against original field records such as drill logs, cross-checking the assays against laboratory assay certificates and re-assaying drill core splits with internally-inserted, certified lithium standards.

The assay laboratory comparison (XRAL and Chemex) undertaken in the 1990s using duplicate coarse rejects from drill core gave similar results. Despite some small differences, both the lithium and rubidium analyses from XRAL and Chemex were close and showed similar trends with high R² values for the correlation. This indicated high and acceptable reliability in the analyses.

For the purpose of this PEA, Avalon verified the drill hole database against historic data records such as drill logs, assay certificates, and other original sources of data in order to ensure that there were no errors present in the database used for resource estimation. Drill hole angle, direction and the maximum hole depth were also verified.

Certified Standard

Avalon prepared a certified rock lithium analysis standard by shipping 16 kg of SRP to CDN Resource Laboratories Ltd. in Langley, British Columbia. A Round Robin analysis procedure was then completed with five samples of the material being shipped to each of six laboratories for lithium analysis, with associated analytical methods performed. It was concluded that the lithium standard was a suitable standard for QA/QC of Separation Rapids drill core samples. The certified value for the standard SR2016 is 1.48% Li₂O with a standard deviation of 0.03% Li₂O.

In 2016, Avalon completed a program of re-assaying a limited amount of drill core with the insertion of the certified lithium standard. Comparing the 2016 re-assays for Li₂O of 42 samples with the 1990s' results showed a small positive bias for the 2016 samples at smaller Li₂O concentrations and identical mean values for each laboratory. These results confirmed the historic data.

9. Mineral Processing and Metallurgical Testing

A number of phases of metallurgical testing have been completed by Avalon since 1997 using samples obtained from of the SRLD. The work prior to 2014 was mainly undertaken by SGS Mineral Services at Lakefield, Ontario ("SGS-L"). This work not only included the recovery of petalite, but also a number of other mineral products which also can be found in the lithium bearing pegmatite.

The work since 2014 was mainly undertaken by Dorfner Analysenzentrum und Anlagenplanungsgesellschaft mbH ("ANZAPLAN"), a German company that specializes in the processing of high purity industrial and strategic minerals. This work focused on the recovery of a petalite flotation concentrate and the subsequent processing of this concentrate to produce a high-quality lithium hydroxide product suitable for the lithium battery industry.

The lepidolite, petalite and feldspar recovery processes utilized for this PEA were developed and tested by ANZAPLAN. Approximately 20 testwork programs were undertaken by ANZAPLAN between 2014 and 2018, including the production of 1 t of petalite concentrate in a pilot program conducted in 2016. ANZAPLAN also developed the process to recover a mixed Na/K-feldspar product and completed preliminary testwork on this material which indicated the suitability of this product in not only the ceramics industry but also as filler in paint, fibreglass and other products.

Using the results generated by this testwork, Avalon is able to demonstrate the following:

- Optical sorting can be used to remove amphibolite host rock material ahead of the flotation process.
- A petalite concentrate assaying over 4% Li₂O can be produced which, because of its low impurity levels, is potentially an excellent feed material to the specialized glass/ceramics industries. In addition, a high grade 4.5% Li₂O petalite concentrate can also be produced (with low sodium and potassium levels).
- Lepidolite concentrates containing approximately 4.5% Li₂O can also be produced.

- A low impurity (rubidium/potassium) feldspar concentrate can also be produced which has applications in a number of ceramic applications as well as a filler in paints and other products.
- There is potential to produce other by-products from the mineralized material, including a high purity quartz, and for additional lithium recovery from micas contained in the magnetic fraction.
- In 2020, the Company defined a petalite concentration process using dense media separation ("DMS"), a gravity type process that does not involve the use of chemical reagents or water. It produces a concentrate free of flotation chemical residues that makes it well suited for certain specialty glass-ceramic applications.

In 2021, Avalon drilled and blasted a 5,000 tonne bulk sample and shipped it to an offsite quarry in preparation for further processing research, preparation of samples for customers and/or shipping to a customer for additional development work.

10. Mineral Resource Estimate

Lithium, rubidium, tantalum, cesium and feldspar mineral resource estimates for the Separation Rapids Lithium Project have been prepared by Avalon under the supervision of Dr. William Mercer, P.Geo. (ON), former Vice President, Operations of Avalon, who is the Qualified Person ("QP") for the estimates. This updated mineral resource estimate is based on the eight diamond drill holes drilled by Avalon in 2017 and 2018, in combination with the data from the 1997 to 2001 drill holes, which were used in previous mineral resource estimates.

The Separation Rapids Lithium Project overall Measured plus Indicated mineral resource is estimated to be 8.41 Mt at a grade of 1.41% Li₂O, using a 0.6% Li₂O cut-off grade, as summarized in Table 1.1. The Inferred mineral resource is 1.79 Mt at a grade of 1.35% Li₂O. The total feldspar content of the mineralized zone is estimated at 43%. The two main mineralogical zones in the deposit, the petalite zone (6a, b, c) and the lepidolite + petalite zone (6d) have been estimated separately and contain combined Measured and Indicated resources of 6.42 Mt grading 1.41% Li₂O and 1.99 Mt grading 1.41% Li₂O, respectively (Table 1.1). This mineral resource estimate was presented in an Avalon news release on May 23, 2018 and is deemed not to be materially different from the previous estimate dated October, 2016.

Table 1.1
Separation Rapids, Mineral Resource Estimate at 0.6% Li₂O Cut-off Grade
(As at 23 May, 2018)

Class	Rock unit	Tonnes (Mt)	% Li ₂ O	% Ta ₂ O ₅	% Cs ₂ O	% Rb ₂ O	Wt. % feldspar
Measured	6a,b,c	2.425	1.440	0.005	0.010	0.322	44
	6d	0.939	1.410	0.008	0.027	0.473	40
	Total	3.364	1.431	0.006	0.015	0.365	43
Indicated	6a,b,c	3.992	1.391	0.006	0.012	0.338	44
	6d	1.049	1.402	0.009	0.025	0.469	40
	Total	5.041	1.393	0.007	0.014	0.366	43
Measured +Indicated	6a,b,c	6.416	1.409	0.006	0.011	0.332	44
	6d	1.989	1.406	0.009	0.026	0.471	40
	Total	8.405	1.408	0.007	0.015	0.365	43
Inferred	6a,b,c	1.308	1.351	0.007	0.017	0.342	44
	6d	0.483	1.346	0.008	0.020	0.427	40

	Total	1.791	1.349	0.007	0.018	0.365	43
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Notes:

1. This mineral resource estimate is valid as of May 23, 2018.
2. CIM definitions were followed for Mineral Resources.
3. The Qualified Person for this Mineral Resource estimate is William Mercer, PhD, P.Geo. (ON).
4. The mineral resource estimate is based on Avalon's drilling of 74 previous holes totalling 11,644 m drilled between 1997 and 2017 and a further four holes totalling 1,282 m in 2018.
5. Drill data was organised in Maxwell DataShed™ and for estimation purposes was transferred to the Geovia GEMS 6.8 Software, wherein the block model was developed.
6. The geological units were modeled as outlined by drill core logs.
7. Mineral resources were estimated by interpolating composites within a block model of 10 x 10 x 3 m blocks oriented along the deposit strike.
8. Grade interpolation used the Ordinary Kriging method combined with variograms and search ellipses modeled for each rock unit. For PZ unit, search ellipses of 50 x 35 x 15 m and 175 x 125 x 45 m were used for Passes 1 and 2, respectively. For LPZ unit, search ellipses of 35 x 25 x 8, 75 x 50 x 15 and 115 x 75 x 25 were used for Passes 1, 2 and 3, respectively.
9. Measured material was defined as blocks interpolated using Passes 1 and 2, using composites from ≥ 4 drill holes and a distance ≤ 25 m to the nearest composite and additional blocks with excellent geological and grade continuity. Indicated material includes blocks interpolated with Pass 1 and 2 search ellipses, using ≥ 3 drill holes and a distance ≤ 35 m to the nearest composite and blocks with geological and grade continuity. Inferred material was defined as blocks interpolated with all Passes, composites from ≥ 2 drill holes and interpolated geological continuity up to 40 m below diamond drill holes.
10. Two-metre composites were used, and no capping was necessary.
11. The mean density of 2.65 t/m³ was used for unit 6a,b,c and 2.62 t/m³ for unit 6d.
12. The cut-off grade reported in this mineral resource estimate, 0.6% Li₂O, is consistent with the previously published mineral resource estimates by Avalon (Preliminary Economic Assessment, 2016; November 15, 2017 mineral resource estimate).
13. The total feldspar contents were estimated utilizing QEMSCAN® analysis of 38 drill core intervals distributed throughout the deposit.
14. Mineral resources do not have demonstrated economic viability and their value may be materially affected by environmental, permitting, legal, title, socio-political, marketing, or other issues.

The primary lithium-bearing minerals, petalite and lepidolite, are found within the ~600 m by ~80 m SRP. Surface mapping and results from 80 diamond drill holes were used to create a 3D model of the host lithology which was used to constrain the interpolation of assays. The Separation Rapids Lithium Project database is maintained in Maxwell DataShed™ software and the resource estimation utilized GEMS 6.8.1.

The Separation Rapids Lithium Project database contains 80 diamond drill holes over a total length of 13,192 m drilled between 1997 and 2018 by Avalon. Assay values for Li₂O, Rb₂O, Cs₂O and Ta₂O₅ were recorded for 3,243 mineralized samples and 148 country rock samples which were studied for environmental impact assessment purposes.

11. Mining Methods

Pit Optimization

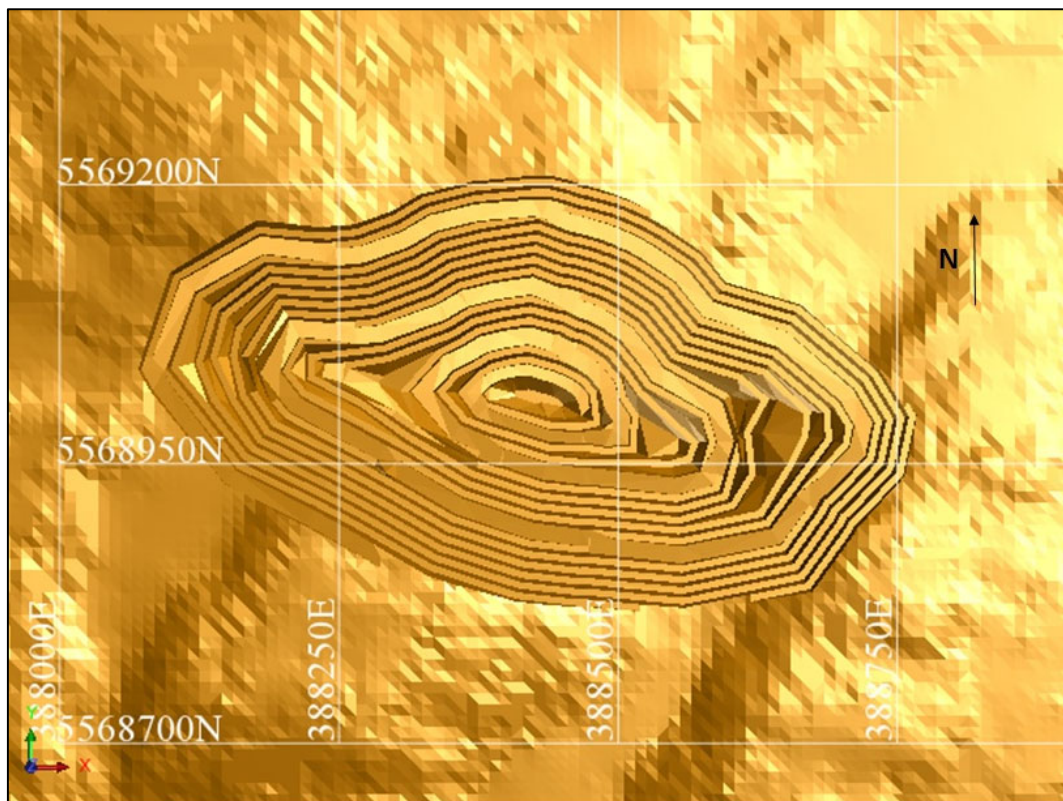
Pit optimization was undertaken using the mineral resource block model imported into Surpac™ to create a block model compatible with the pit optimization software. A preliminary optimization was performed using Whittle™ software. Cost parameters were applied to the optimization model to assess the volume of mineral resources available for economic development. The purpose of the modelling was to generate an estimate of the mineable tonnage based on the mineral resources.

The pit optimization indicated that the economic cut-off grade was approximately 1.20% Li₂O and the optimization run suggested a life of mine ("LOM") plant feed tonnage of approximately 8.6 Mt at a grade of 1.39% Li₂O.

Pit Design, Development and Schedule

A conceptual pit design was conducted from the bottom up using PEA design parameters and the selected optimum pit shell as a template. Figure 1.1 shows a plan and view of the pit design.

Figure 1.1
Plan View of the Pit Design



The proposed method of mining is by conventional open pit methods using drilling and blasting, loading with excavators and shovels and hauling with rigid dump trucks. Waste from the pit will initially be composed of overburden and will be dumped in the topsoil stockpile. As the pit is developed harder waste rock will be excavated and will be stored on separate waste dumps.

The Separation Rapids Lithium Project will be undertaken by contractor-operated equipment and labour. Preproduction waste rock will be used to construct site roads, including the main haul roads and will also be used for the construction of tailings, concentrate and settling basin dam walls.

A conceptual production schedule has been produced using MineSched™ software. The production schedule is based on mining 475,000 t/y of petalite and lepidolite mineralized material. The life of the mine is expected to be 19 years with approximately 6.2 Mt of petalite material at 1.39% Li₂O and 2.4 Mt of lepidolite mineralization at 1.41% Li₂O mined over the length of the Separation Rapids Lithium Project.

12. Processing and Recovery Operations

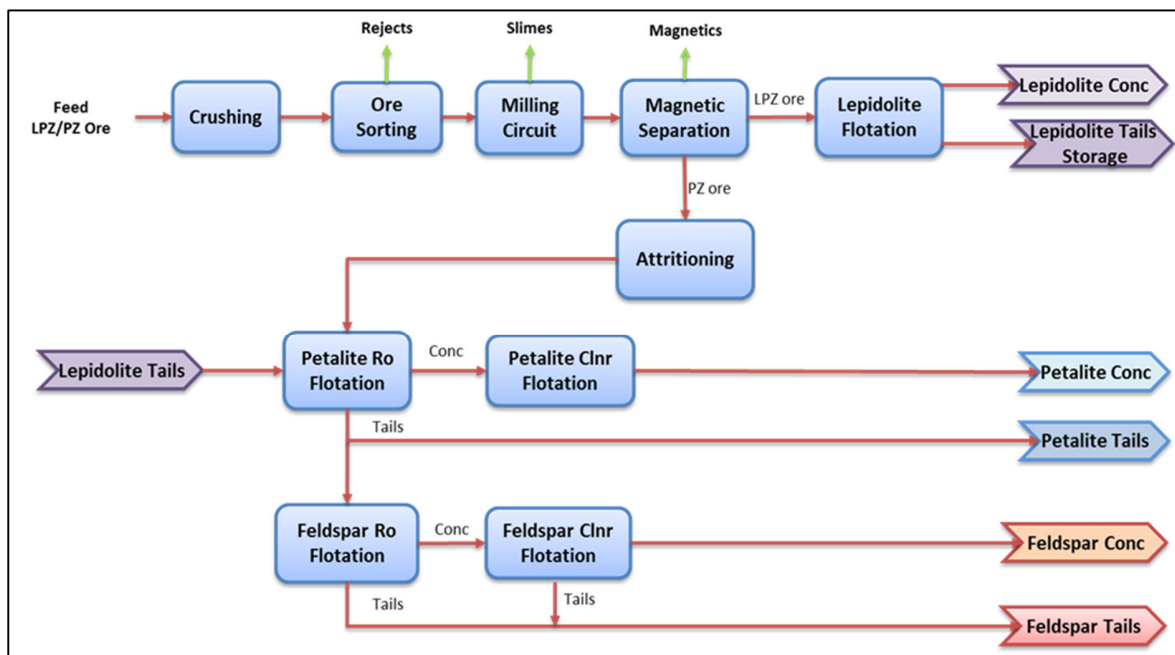
The Separation Rapids Lithium Project PEA mineral recovery flowsheet is based on the process testwork completed to-date. The process selected for the PEA comprises the mineral separation and recovery of a lepidolite concentrate, a petalite concentrate (both containing between 4.0% and 4.50% Li₂O), and thirdly, a Rb-K-feldspar industrial mineral product.

This PEA is based on the processing of 475,000 t/y of mineralized material over a 19-year mine life to produce approximately 220,000 t of lepidolite concentrate, 1.32 Mt of petalite and 1.34 Mt of feldspar. The lepidolite is to be sold into the lithium chemicals industry to customers in Canada and Asia, while the petalite will be sold to customers in the glass/ceramics industries in Europe, Asia and North America. The feldspar will be sold to customers for a range of applications in North America and Europe.

A single milling and flotation circuit is provided for processing both lepidolite/petalite ("LPZ") mineralization and petalite ("PZ") material on a campaign basis. Tailings from the flotation of lepidolite ore will be stockpiled for future reprocessing to recover petalite. Some of the final tailings from the petalite ore flotation process will feed a second, dedicated feldspar flotation circuit with the balance of the petalite tailings reporting to the tailings management facility ("TMF").

A simplified block flow diagram showing the main process steps within the overall Separation Rapids flowsheet is presented in Figure 1.2

Figure 1.2
Simplified Process Block Flow Diagram



Process Design Criteria

The process plant design, PEA report and financial evaluation are based on the following process design criteria that have been derived from the testwork results:

- Optical sorting mass waste rejection is 1.8% with lithium losses of also 1.8%.

- For petalite PZ mineralization, the mass pull to slimes after comminution and attritioning is 7.9% of mill feed with an 8.6% lithium loss. For the lepidolite LPZ mineralization, mass and lithium losses are 8.4% and 6.5% respectively.
- Mass pull to magnetics (petalite PZ only) is 13% of sorted mineralized material tonnage with lithium losses of 13.8%.
- The lepidolite concentrates contains 4.5% Li₂O while 50% of the petalite concentrate will be 4.5% (with low sodium and potassium levels) and the balance being 4.0% for an average life of mine grade of 4.25% Li₂O.
- Lithium recovery to lepidolite concentrate ("LPZ") is 78%. Lithium recovery to petalite concentrate from lepidolite tailings is 70%.
- Lithium recovery to petalite concentrate ("PZ") is 65.2% of flotation feed content.
- Mass pull to feldspar concentrate is 82.9% of feldspar flotation feed.
- Plant availabilities of 90% for the flotation plant although the crushing plant has been suitably sized to run on a single 12-hour shift per day.

13. Project Infrastructure

The property is readily accessible with a total road distance from Kenora to the site of 79 km. However, development of the project will require upgrading of the 9.5 km long Avalon Road to accommodate the mining, concentrate removal and consumable delivery trucks and this work is now in progress.

The flotation concentrator will be located at the mine site with the various concentrates (petalite, lepidolite and feldspar) being dried, bagged and trucked to an existing CN rail siding at Redditt for shipping to customers.

The site is predominately bedrock exposure with a minimum of top soil or organic cover. The site buildings are anticipated to include crusher and concentrator buildings, change room and ablution facilities, office and laboratory, electrical MMCs, maintenance building and warehouse.

Fresh water and fire water for the site will be provided from the English River. Water treatment facilities will be provided as required to supply potable water to the site.

Approximately 10 MW of (operating) power will be required during operations and this will be supplied from the existing 115 kV system running from Caribou Falls to Whitedog Falls. A stepdown transformer will be installed at the connection point to the 115-kV line and approximately 25 km of transmission line will be installed to bring the power to the mine site.

Diesel fuel storage facilities will be provided to supply the mine equipment and smaller site vehicles. A propane tank farm will also be installed to accommodate the site heating and fuel for the concentrate driers.

14. Environmental Studies, Permitting and Social or Community Impact

The Separation Rapids Lithium Project site lies in an area adjacent to the English River, a regionally significant waterbody which supports a variety of wildlife and fisheries as well as tourism. The area surrounding the mine site is undeveloped and forested.

Project Approvals and Permitting

A Project Description and comprehensive Environmental Baseline Report of the mine and concentrator site was completed in March, 2007, updated from the July, 1999 draft. The 2007 report included a preliminary environmental impact assessment and, although this was based on a different project development model to that presently envisaged, it is expected that the vast majority of this study work is still valid. Additional environmental baseline information was collected in 2017 to meet the requirements of new regulation and this data validated the results of the 2007 report.

Avalon had an advanced exploration approval based on an approved closure plan permitted for 15,000 t of material. Exploration permits for additional drilling on site were acquired for drill programs in 2016 and 2017. These programs were successfully completed without any environmental impacts. The present permit allows for nearby future expanded nearby areas of exploration on recently acquired claims. An update of the advanced exploration closure plan was requested by the regulator and was submitted for approval in 2019. This updated plan is for 5,000 tonnes of material and a significant reduction in financial assurance.

Due to the relatively small scale of the Separation Rapids Lithium Project and the site being located well away from any federally protected areas, and because the capacity of the mine and concentrator are approximately half the tonnage triggers in the Federal Environmental Assessment Act 2012, permitting under this act does not apply. As such, permitting time lines are significantly reduced.

Environmental Baseline

For the mine and concentrator site, an environmental baseline study program has been conducted, investigating regional and site-specific aspects such as water quality, hydrology, vegetation, wildlife, fisheries, archaeology, and socioeconomics. This information was updated in 2017 and 2018. The data validated the historic baseline studies in consultation with the identified communities of interest. Additional environmental baseline data was collected in 2021 that provided additional fisheries information necessary for new Fisheries and Oceans requirements.

Environmental baseline data was also collected at the aggregate quarry approved under Aggregate Act Permit Number 609561. This allowed for preliminary site design and environmental assessment for the purpose of evaluating Dense Media Separation ("DMS") in a small scale demonstration plant at the site. The plan will produce petalite concentrates for use in either glass ceramics or for further processing for battery materials. It could further assess the production of other by-products such as feldspar. The plant, potentially in the order of 200 tonnes/day, could produce up to 8,200 tonnes/annum of concentrate, provide important design parameters for a full scale plant and shows very favourable economics. This process is much more environmentally friendly relative to traditional flotation processes by eliminating reagents, allows coarser grinds, thus utilizing lower quantities of energy and water and, pending approvals, the rejects from the plant will be inert and can be utilized for road or full plant yard and infrastructure construction. The site is already approved for ore storage and crushing, which should help reduce permitting requirements, time lines and risk.

Closure and Rehabilitation

For mines located on previously undisturbed sites, ecological restoration is a fundamental component of site reclamation. The main aspects of the closure and reclamation plans for the Separation Rapids Lithium Project include:

- Flooding of the open pit following the cessation of mining, primarily through inflows of groundwater and surface water runoff.
- Closure and rehabilitation of the TMF in a safe and secure manner in full accordance with government regulations and good engineering practice.
- Progressive rehabilitation of benches and associated sediment basis of the coarse rock aggregate storage areas, particularly on the river view sides.
- Breaching and revegetation of all sediment basins associated with the TMF and the mine rock aggregate stockpiles.
- Removal for reuse, salvage or disposal of all machinery and equipment from the crusher, process plant and other ancillary facilities.
- Responsible removal or demolishing of all buildings and site infrastructure.
- Maintain the mine access road during the closure and post-closure monitoring period to provide access to the site. Following completion of post-closure monitoring, the road will be scarified and revegetated, and culverts removed. It is noted that the local Indigenous groups may prefer that the road be left for traditional harvest or for the utilization of site infrastructure beneficial to the community such as green energy production facilities, maintenance facilities or other infrastructure, but that will be the subject of future engagement.

A 3-5-year post-closure monitoring program will follow closure of the mine that includes maintenance of the revegetated areas.

The proposed Demonstration plant at the aggregate quarry would also require a closure plan, but with the potential for by-product credits and inert rejects that have other beneficial uses and tiny site footprint (estimated to be less than 10 hectares) this plan is anticipated to be relatively simple and low cost.

Community and Indigenous Peoples Engagement

Consultation with local First Nations Bands and the public was initiated during the 1999 baseline study. This continued in a reduced manner during the period of inactivity but was again ramped up in 2013. A memorandum of understanding initially signed with the Wabaseemoong Independent Nations ("WIN") in 1999 was renewed in 2013. Engagement with the Métis Nation of Ontario has also been initiated.

Avalon maintains an engagement log which records the numerous meetings held and summaries of the meeting content, and reports this annually in its Sustainability Report.

An archaeological study was completed in 1998. This will be reviewed with the communities of interest and updated, if required. There may be a requirement to complete additional traditional knowledge studies in the next phase of project development. A socioeconomic assessment of the Separation Rapids Lithium Project is included in the 2007 environmental study. This too will be updated in the next phase of the Separation Rapids Lithium Project if required.

15. Capital and Operating Costs

Capital Costs

The basis for the PEA capital cost estimate is a processing facility and related infrastructure with a nominal throughput rate of 475,000 t/y of mineralized material, comprising either petalite mineralized material ("PZ") or lepidolite mineralized material ("LPZ").

Initial capex requirements are summarized in Table 1.2. All costs are reported as Canadian dollars ("CAD"). It should be noted that, apart from the feldspar flotation plant in Years 5 and 6, provisions for what might normally be designated as "sustaining capital" are included in the operating costs.

The Separation Rapids Lithium Project is at a green fields location and so will require construction of new tailings and waste rock storage facilities as well as an upgrade to an existing access road and the installation of an electrical power supply line.

The capex for the open pit mine is assumed to be zero as the operation will engage a contract miner and all mining capex will be built into the contract mining operating costs.

The concept of having most of the plant pre-assembled off-site and delivered in modules (fully or partly assembled) has been assumed for much of the equipment (particularly the flotation plant) and facilities in order to reduce on-site construction activities.

Table 1.2
Initial Capital Cost Estimate

Area	Capex CAD x 1,000	
	Initial Plant	Feldspar Flotation (Years 5/6)
Pre-construction	500	0
Mining	0	0
Concentrator	39,696	8,450
Tailings Disposal	6,519	0
Infrastructure	5,750	0
Total Direct Costs	51,965	8,450
EPCM	3,204	845
Freight & Transportation	1,398	327
Other Indirects	5,076	1,199
Total Indirect Costs	9,677	2,371
Owners Costs	2,000	500
Buildings	1,000	250
Contingency	12,528	2,164
Total Capital Costs	77,671	13,735

16. Operating Costs

Operating costs have been determined by Avalon and reviewed by Micon and are expressed in Canadian dollars. A summary of the estimated LOM average annual operating costs is presented in Table 1.3.

**Table 1.3
Summary of Operating Costs**

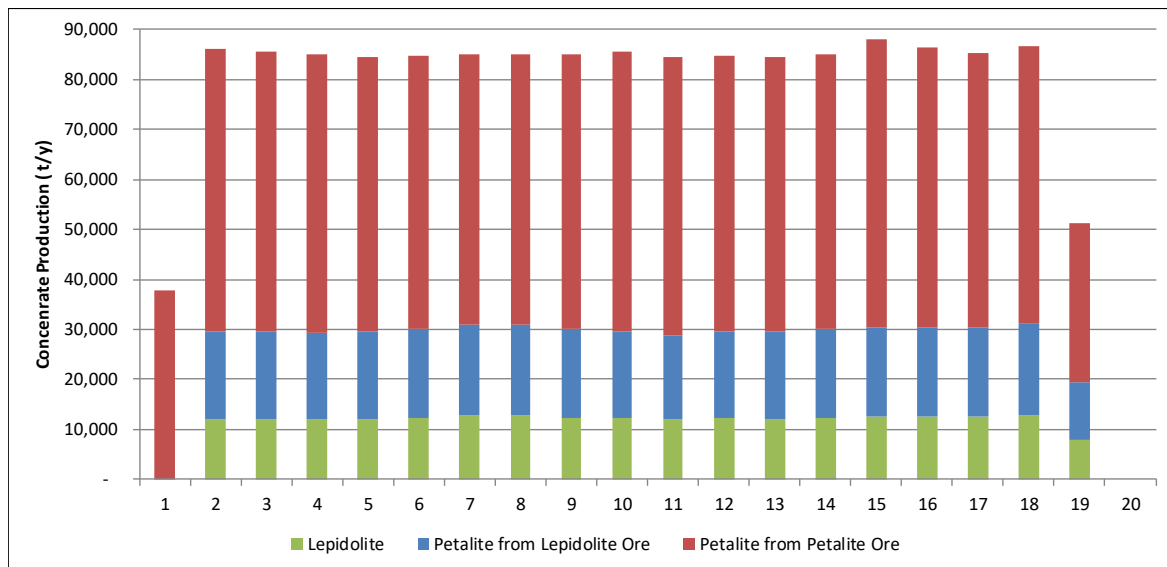
Category	Ave. Annual Costs (CAD'000)	CAD/t Milled
Petalite and Lepidolite		
Mining and Reclaim	18,181	40.0
Concentrate Production and Shipping	35,826	78.8
General and Administration	1,830	4.0
Total Production Costs CAD	55,837	122.8
Total Production Cost USD	42,951	94.4
Feldspar Production and Trucking		
CAD	9,707	87.7
USD	7,467	67.5

17. Economic Analysis

Micon has prepared this assessment of the Separation Rapids Lithium Project on the basis of a discounted cash flow model, from which Net Present Value ("NPV"), Internal Rate of Return ("IRR"), payback and other measures of project viability can be determined. Assessments of NPV are generally accepted within the mining industry as representing the economic value of a project after allowing for the cost of capital invested.

Figure 1.3 shows the annual tonnages of petalite and lepidolite produced during operations.

Figure 1.3 Annual Petalite/Lepidolite Production Schedule (tonnes)



Annual production of feldspar concentrates and intended markets are presented in Figure 1.4.

**Figure 1.4
Annual Feldspar Production Schedule**

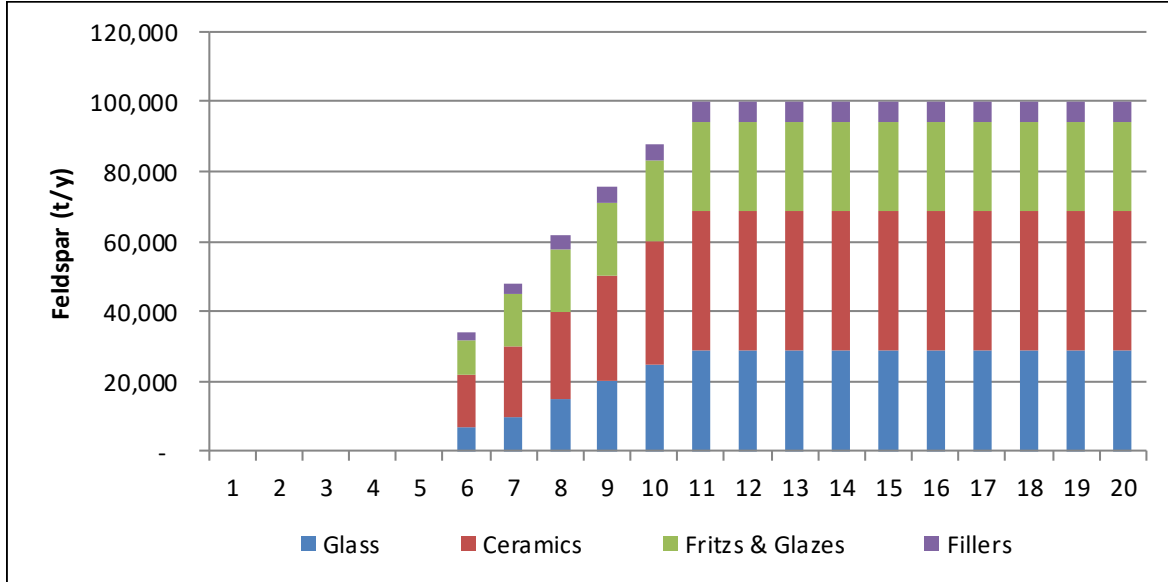
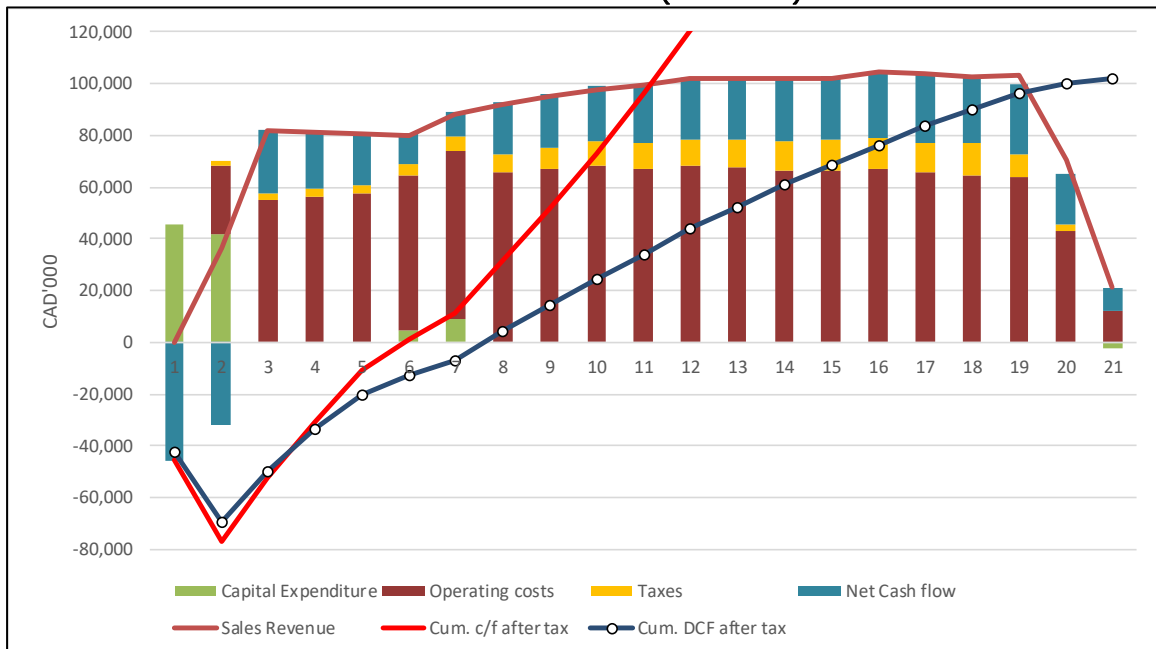


Figure 1.5 presents a summary of the Separation Rapids Lithium Project cash flow while the key project economic indicators and performance are summarized in Table 1.4.

**Figure 1.5
Net Annual Cash Flow (After Tax)**



**Table 1.4
Key Project Indicators**

Item	Units	LOM
Mine Production		
Plant feed (Pre Sorter)	t	8,567,928
Waste	t	52,344,381
Total Mined	t	60,912,309
Processing		
Mill Feed	t	8,413,705
Lepidolite Concentrate Grade	% Li ₂ O	4.50%
Lepidolite Concentrate Sold	t	218,529
Petalite Concentrate Grade	%Li ₂ O	4.25%
Petalite Concentrate Sold	t	1,322,849
Feldspar Concentrate Sold	t	1,307,500
Exchange Rate	CAD/USD	1.30
Total Sales Revenue	CAD'000	1,745,717
Operating Costs	CAD/t milled	CAD'000
Lithium Concentrate Production	122.77	1,032,979
Feldspar Production	16.79	141,236
Total Operating Costs	139.56	1,174,215
Capital Costs		CAD'000
Construction - Initial Capital		77,671
Feldspar Plant (Yrs 5&6)		13,735
Total Capital Expenditure	CAD'000	91,406
Working Capital		10,000
Site Closure		7,500
	Pre-tax	After Tax
Net Cash Flow (CAD'000)	472,595	327,758
Net Present Value (at 8% disc. rate)	155,562	102,191
Internal Rate of Return (IRR)	27.1	22.7
Payback Period (after tax, undisc.)	Years	4.4

Sensitivity analyses on product prices, recoveries, capital costs and operating costs suggest that the Separation Rapids Lithium Project is most sensitive to revenue drivers, namely price

and recovery which are essentially identical. At a discount rate of 8%, the Separation Rapids Lithium Project NPV is negative when all product prices are reduced by 20%. The Separation Rapids Lithium Project is also quite sensitive to changes in operating cost while sensitivity to capex is relatively low. Project NPV remains positive for adverse changes of up to 20% in either capital or operating costs.

(B) Current Work and Future Plans

(a) Snowbank Lithium Pegmatite Discovery

During Fiscal 2018, the Company discovered a new lithium pegmatite on the western part of the Separation Rapids Lithium Property. The new discovery, named the Snowbank Pegmatite, occurs on the 100% owned Paterson Lake claims acquired by Avalon in 2017, approximately four kilometres northwest of the main Separation Rapids lithium deposit. It was discovered in a large outcrop area traceable for over 100 metres along strike (open under overburden at both ends) averaging 6 metres wide. Like the main deposit, the lithium occurs primarily in the ore mineral petalite, which occurs as large crystals up to 15 centimetres in diameter. Individual channel samples have yielded assays of up to 2.51% Li_2O over 1.1 metres, indicating that petalite comprises approximately 50% of the mineral content in the rock sampled. The coarse grain size will make it very well-suited for making a petalite product for glass ceramics using the DMS process.

The Snowbank Pegmatite was discovered in the course of a summer geological mapping and geochemical sampling program on the Paterson Lake claims, following up on other known petalite pegmatite occurrences in the area. The new discovery illustrates how challenging even coarse grained petalite can be to recognize in the field (due to its similar appearance to common feldspar) and how much potential there may be for more discoveries in the Separation Rapids area to extend the life and production capacity for the new operation planned for the main deposit. Next steps will include a first phase drilling program tentatively planned for 2022-23.

Following the discovery, a preliminary channel sampling program was carried out, focused on the petalite mineralized areas (the results are compiled in the Company's News Release of September 4th, 2018). The main Snowbank Pegmatite zone is up to 9 metres wide, but pinches and swells with some sections bifurcating into two to three smaller parallel dykes from 1 to 3 metres in width, for a combined average width of 6 metres, over the 100 metre long exposure. Individual dykes exhibit classic pegmatite zoning features, with an internal assemblage of coarse petalite, potassium feldspar, albite and quartz, flanked by narrow albitic border and wall zones. Three channel samples collected from the petalite mineralized sections of the main Snowbank Pegmatite zone average 1.40% Li_2O , while three other parallel dykes, also sampled, locally host similar mineralization over narrower widths.

Highlights include lithium values of 1.53% Li_2O over 2.6 metres; 1.61% Li_2O over 2.3 metres; and 1.07% Li_2O over 2.9 metres - comprising six out of 11 analysed samples. The channel samples are all close to right angles to the strike of the pegmatite and thus approximate true widths. The values can be compared with the 0.6% Li_2O cutoff grade and 1.4% Li_2O resource grade at the main Separation Rapids lithium pegmatite deposit. The three channels are distributed over a strike length of just over 30 metres, with spacing averaging about 10 metres, in one discrete pegmatite dyke. Visible petalite is exposed continuously for about 100 metres. Sampling methods and analysis details are included as footnotes to the table below.

Avalon's Paterson Lake claims, contiguous with the claims and mining lease hosting the Separation Rapids lithium deposit, host three previously-known pegmatite occurrences: the Glitter, Wolf and Rattler (of which the Glitter is known to contain petalite). These occurrences fall within the same geological structure that hosts Avalon's main Separation Rapids deposit. The new Snowbank Pegmatite is located two kilometres southeast of the Glitter and four kilometres northwest of Separation Rapids, with potential for more petalite pegmatite discoveries along this minimum six kilometre trend.

The next steps for advancing Avalon's knowledge of the Snowbank Pegmatite, along with the nearby Glitter, Wolf and Rattler pegmatite occurrences, are further mapping and bedrock sampling, completed in the fall of 2021, followed by drilling of the Snowbank pegmatite now planned for December, 2022 and January, 2023. Avalon now has multiple drill targets on the western part of the property that would be most easily accessed in winter.

(b) Metallurgical Process Testwork

The new petalite flotation process developed by Avalon in late 2017, that successfully produced a high grade petalite concentrate (4.5% Li₂O) with greatly reduced levels of sodium and potassium, has attracted considerable interest from potential customers as there is no comparable product available in the market today. This high purity petalite concentrate (which the Company has branded as "Super Petalite") will be a premium quality material for certain specialty glass applications. The updated PEA has incorporated this flowsheet and product in the business model. Further optimization of the process will be carried out during a final pilot plant program, when feasibility study work commences.

The ability to upgrade the ore using dense medium separation ("DMS") technology has been investigated to reduce costs by reducing the amount of feed requiring froth flotation. Results have been positive when processing the coarse grained petalite ore and were confirmed to meet the requirements of one glass-ceramic end-user. The testwork has successfully upgraded crushed ore with a head grade of 1.98% Li₂O by over 50% to >3% Li₂O at a recovery of over 50% and a mass yield of 37%. The balance of the material remains a future feed material for recovering further mineralization.

The next step in the project's development is to proceed with a pilot plant program on the bulk sample to finalize flowsheet parameters for engineering purposes including reagent recycling and water treatment processes, after which a feasibility study can be completed. This work will also generate product samples for customer qualification and acceptance and is now expected to proceed in 2022-23 subject to arranging project financing. Discussions on financing continue with several interested parties and planning for this program has been initiated.

The use of gravity concentration and ore sorting pre-concentration methods are to be further investigated, with the objective of reducing costs for the flotation circuit, reducing water, energy and waste volumes and overall environmental impacts by reducing the amount of feed reporting to the milling circuit. Some additional drilling is also contemplated to collect more geotechnical data for pit and infrastructure design work. Continued exploration including drilling on the Paterson Lake claims in the vicinity of the new Snowbank petalite pegmatite discovery and the Glitter pegmatite is planned, subject to financing.

In its 2016 Preliminary Economic Assessment, Avalon developed a proprietary process flowsheet to produce a high purity lithium hydroxide product from petalite for the lithium battery material market. The flowsheet has the advantage of generating limited waste by the recycling of the sulphuric acid solvent.

In the glass-ceramics market, the innovation of new products is creating many new market opportunities for Avalon's petalite product. One such market requires a petalite product that has not been concentrated by froth flotation, as residual reagents on the surface of the product can compromise its performance in this specific glass-ceramic material. Recent testwork conducted at Met-Solve Laboratories, Langley, BC has successfully demonstrated that an acceptable quality petalite product to serve this market can be produced simply by using DMS. The Company's next step is to generate a larger product sample for evaluation by the many potential customers looking for a new petalite supply source after China took control of the traditional supply sources in Zimbabwe.

Other testwork underway is focused on ways to reduce processing costs and energy consumption, including alternative milling technologies. Samples from three mineralogical sub-zones within the main Separation Rapids resource have been sent to Selfrag AG in Switzerland, for testing using their patented electric pulse disaggregation ("EPD") process. EPD uses high voltage electrical pulses to fragment broken rock along internal mineral grain boundaries. The result is a crushed mass of single mineral particles, as opposed to the less selective breakage that occurs with traditional mechanical comminution methods. Avalon believes EPD is the most relevant alternative milling method for reducing over-grinding and improving overall petalite recoveries as well as reducing energy consumption.

To further optimize this flowsheet, Avalon shipped a 50 kg sample of petalite concentrate to a lab in Sudbury, Ontario to generate leach solution for use in optimizing the final stages of the process, which involves the use of electrolysis to produce lithium hydroxide. The program will focus on an improved membrane alternative and efficient crystallization of the final high purity product. The results will enable finalizing equipment selection and design. Other testwork underway is focused on ways to reduce processing costs and energy consumption, including alternative milling technologies and the use of a more environmentally sustainable Dense Media Separation Process ("DMS") to produce a petalite concentrate without the use of froth flotation. A sub-sample of the leach solution generated in Sudbury was recently used to produce some lithium sulphate monohydrate crystals for a potential customer based in the UK.

Avalon will also continue to evaluate the environmental and economic benefits of a DMS Demonstration Plant for possible incorporation in the full scale plant design. In the meantime, the Company is actively pursuing opportunities to acquire a demonstration scale DMS plant that can be used to produce initial large product samples for the customers that have expressed interest in testing it in their specific glass-ceramic formulations.

(c) Environmental Assessment, Permitting and Community Engagement Update

Avalon is committed to developing the Separation Rapids Lithium Project based on modern CSR principles and reporting on its performance in its annual Sustainability Reports. These CSR principles include commitments to minimize environmental impacts, ensuring the health and safety of employees, creating benefits for local communities and providing full transparency in its social and environmental performance. The Company and the project are well known in the local community.

The Company completed site water, sediment, fish, invertebrate and endangered species studies in June, 2017 and October, 2017 that successfully advanced the validation of the 1999 environmental baseline study and 2007 report. Initial leachate work has validated that the site rock is inert and not acid generating, and an assessment of the various potential tailings products was completed. Additional work may be required pending the final process

decisions. The original baseline environmental study prepared in 1999 and updated in 2007, required the spring and fall 2017 and summer 2018 data collection to further update this study and align it with recent regulatory changes. A Draft Project Description and Environmental Impact Assessment was produced in 2017. Additional assessment work for the new Tailings Management Area ("TMA") was completed to accommodate the updated PEA. Recent proposed project modifications will not significantly change environmental designs at the mine site, but will significantly reduce the permitting and environmental risk from processing facilities at other sites. Preliminary packer testing completed in 2018 indicates the rock around the pit area has low permeability and thus indicates a low risk of water infiltration into the pit. The proposed tailings disposal is to dry stack which is the safest option, improves in-plant recycling, and utilizes less water. Water discharged from the TMA will only be that from rainfall.

Permitting has been advanced through a multi-ministry meeting to review the completed Draft Project Description and the 2020 updated Advanced Exploration Closure Plan, discuss the provincial permitting process and to obtain regulator input into the project planning and confirm the proposed environmental work program. Separate discussions were held with federal regulators which also included the probable exemption of the project from the Canadian Environmental Assessment Act 2012 ("CEAA"), recently replaced with the 2019 Impact Assessment Act, due to the low environmental impact of the project and the fact that the project does not exceed any of the regulated triggers under the Act. Similarly, the new Federal Metal and Diamond Mines Effluent Regulation, replacing the Metal Mining Effluent Regulation, will not negatively impact the project, and recent amendments under the *Fisheries Act* (Canada) while requiring additional modeling, should streamline the approvals required under this Act. The collection of additional data necessary for the fisheries act work was initiated in 2021. Ongoing engagement is planned to coincide with the approvals process to review the simpler and lower impact business model of the recent PEA.

The Separation Rapids Lithium Project is located in the traditional land use area of the Wabaseemoong Independent Nations ("WIN") for which they have stewardship under an agreement with the Province. Avalon management has been keeping WIN leadership informed on Project activities and remains committed to fulfilling its community consultation obligations and partnering with WIN on business opportunities and providing training for community members. The Company has also initiated dialogue with the Métis Nation of Ontario ("MNO") which holds Indigenous rights in the area. Engagement is ongoing with local Indigenous communities, regulators, and local government most recently on the update of the closure plan for the planned bulk sample program and the Quarry Permit update. The WIN and MNO groups continue to be supportive of the project.

Following the completion of the Draft Project Description, positive project review meetings were held with the Wabaseemoong Chief and Council and with the Métis Nation of Ontario at a Valued Components Workshop in order to review the project and obtain guidance and comments on environmental aspects of the project. The staged development approach is also advantageous to Avalon's potential Indigenous partners by providing time to consider opportunities for direct participation in project development and time for individual members to obtain the necessary training for jobs at the site. An Ontario Mining Act Section 91 Exemption was approved by an Order in Council on September 13, 2019 to permit shipping of bulk samples outside of Canada, has since expired. The Ontario government continues to look at opportunities to reduce permitting red tape.

The development model designed for the PEA results in a smaller environmental footprint, including low GHG emissions and almost non-existent air emissions. There are no anticipated environmental impacts of concern at the project, with the mineral deposit and waste rock

being non-toxic and non-acid generating and minimal water discharge being anticipated. A dry stack tailings management facility, the lowest possible design risk option, is planned. Avalon completed the update and validation of its 2007 environmental baseline study and the tailings management system design in the context of the new development model. Avalon worked with Hydro One to determine the optimal route to deliver clean hydro-electric power to the site from one of the nearby dams on the English River. The Company is already studying the potential for beneficial new uses of the site as part of its closure strategy, including repurposing the waste areas for agricultural use such as wild rice habitat and fisheries.

Environmental studies of the proposed power transmission line route are planned and opportunities to reduce costs and GHG footprint with green energy supply are also being investigated. With the exception of the powerline route study, the environmental studies are largely complete. A plan to compensate for the small swamp area containing a small minnow population that will become part of the tailings management facility, is scheduled, but will not be required for several years following start of operations. Once applications are submitted, it is anticipated that all necessary permits for construction can be obtained in under a year. Construction activities for many project components can be initiated prior to receipt of all permits.

Avalon has a part time representative in Kenora who facilitates ongoing engagement with Indigenous Peoples, communities, regulators and politicians and that contributes to the strong support for the Separation Rapids Lithium Project. Specific engagement was carried out in 2020 related to the quarry permit update and closure plan.

A maintenance agreement and Aggregate Resource Act Permit 609561 ("Quarry Permit") from the Ministry of Natural Resources and Forestry allows for any needed road maintenance work.

During Fiscal 2020, Avalon updated its Quarry Permit and filed an updated Advanced Exploration Closure Plan for a bulk sample that is required for further testing purposes with potential customers. The Quarry Permit allows for unlimited extractions. As a result of progressive rehabilitation and design improvements, the financial assurance required from the regulator for the Closure Plan is significantly lower than already filed. Avalon received the necessary approvals to proceed with a 5,000 tonne bulk sample extraction program, originally planned for 2019, to recover petalite product samples for testing and qualification by glass and ceramic companies that have expressed interest in the high-purity petalite mineral product. This includes acceptance for filing by the Ministry of Energy, Mines and Northern Development of the Company's revised Closure Plan for Advanced Exploration dated January 22, 2020, which was received on May 29, 2020.

The 5,000 tonne sample was collected in 2021 without environmental or safety incident. The sample is presently stored in an offsite quarry in preparation for crushing and shipping for either further process testing or to an external customer for their evaluation of the ore or concentrate.

In an effort to minimize project site environmental impacts and reduce costs, the Quarry Permit amendment, approved on March 25, 2020, now also permits bulk sample crushing at the quarry site.

In 2021, additional environmental baseline data collection was initiated in order to meet new regulatory requirements and to advance the potential to utilize the Quarry site for a Demonstration Plant. The existing approval to store and crush ore at this site should reduce Demonstration Plant permitting time lines and risk at this site.

(d) Lithium Refinery

During the Year, the Company signed a binding letter of intent with RenJoules International Ltd., an Essar Group Company ("Essar"), to become a strategic partner and co-developer in support of Avalon's plans to establish a regional lithium battery materials supply chain to serve the needs of future electric vehicle and battery manufacturers in Ontario and elsewhere.

This agreement if finalized, will involve providing initial financial and development support for building a lithium refinery in Thunder Bay, Ontario that will be designed to accept lithium minerals concentrates, not only from Avalon's Separation Rapids Lithium Project north of Kenora, ON, but also from other aspiring new producers from the many lithium pegmatite resources that occur in northwestern Ontario. It will operate as a separate private business, called Avalon Lithium Inc., a newly established Avalon subsidiary in which Essar would become a co-owner, if an agreement is finalized which no longer appears to be certain. In the meantime, Avalon has received many other expressions of interest in becoming an investing partner in Avalon Lithium Inc.

Once an investor partner is secured, the key next steps will begin including; finalizing initial commercial terms and completion of final feasibility studies for both the refinery operations and lithium mineral concentrate production at the Separation Rapids site that will provide the initial feed for the refinery until other new producers also get started. This will also include acquisition of the site for the refinery in Thunder Bay and proceeding with initial site preparation work both at Separation Rapids and the Thunder Bay site.

Subsequent to the end of the Year, the Company entered into a non-binding memorandum of understanding (the "MOU") with LG Energy Solution ("LGES") to supply LGES with a battery-grade lithium hydroxide from its planned refinery starting in 2025.

Under the terms of the MOU, Avalon would commit, for five years initially, to provide LGES with at least 50% of its planned initial lithium hydroxide production from its Thunder Bay facility, with the potential to increase production as demand grows.

Pursuant to the MOU, the parties will continue discussions to enter into a definitive supply agreement, which is intended to be finalized before calendar year end.

Meanwhile, the Company continues to progress towards acquisition of an industrial site in Thunder Bay that would be the location for establishing the Company's planned regional lithium battery materials refinery. An appropriate site has been identified and an offer made with the acquisition now expected to be completed in November, once debt financing has been secured.

Subsequent to the end of the Year, the Company secured a firm off-take commitment to purchase petalite concentrates produced at Separation Rapids. The off-take agreement is for a multiple number of years with a major non-Chinese international glass ceramic manufacturer. The agreement is subject to a number of conditions precedent, including the delivery and acceptance of a larger commercial sample of the petalite product. The customer has agreed to initially pay the current market price for the petalite product for at least the first year after commercial shipment commences. Now with the growing demand for petalite, there is increasing interest in securing off-take commitments at much higher prices due to the current shortage.

(e) Future Work

Growing demand for rechargeable batteries in electric vehicles and home energy storage is expected to result in continued growth in demand for lithium. There is general consensus among industry analysts that demand for lithium will at least double over the next 10 years and that a supply deficit will emerge in the market as existing producers struggle to meet the rapidly growing demand. Several companies in the lithium business have already expressed interest in participating in the future development of the Separation Rapids Lithium Project. The potential exists for the Company to serve both the glass-ceramics and the battery materials markets going forward as the petalite mineral concentrate (which represents the final product for the glass-ceramics industry) is the intermediate product for making a battery material and the lepidolite mineralization can also be used for lithium battery materials.

The potential for production of high purity lithium hydroxide was demonstrated in the 2015 work program and a scaled-up test to further evaluate this process and generate cost information for a preliminary economic assessment (a "PEA") focused on the battery materials market opportunity was subsequently completed. During Fiscal 2016 the Company designed an innovative hydrometallurgical process to produce a lithium hydroxide product from the petalite concentrate and completed a new PEA shortly thereafter.

With both the Ontario and Federal Governments confirming their interest in establishing new battery materials supply chains in the province, and potentially providing financial support, Avalon continues to work towards establishing its lithium refinery in Thunder Bay, Ontario, but has not yet made a final decision on a site for the refinery. Several vacant industrial sites on the waterfront have been evaluated with one being a preferred option and a decision expected in the first or second quarter the next fiscal year. The refinery being planned would be adaptable for producing different lithium battery materials products, and would also be expandable to increase output and accept concentrates from other aspiring producers of lithium minerals from the many pegmatite deposits that occur in northwestern Ontario.

To serve the growing interest in the petalite product from the glass-ceramics industry, the Company is looking to purchase a demonstration scale DMS plant that would allow it to start producing petalite product samples for customer evaluation. Once firm offtake commitments are secured, production can be scaled up as needed to meet the demand. The DMS demo plant would be installed on the Company's aggregate permit where most of the permitting requirements are already in place. The Ontario government, with input from Avalon, has initiated potential regulatory changes to the existing regulatory regime ("cutting the red tape") to differentiate critical minerals like lithium from traditional exchange-traded commodities and facilitate their more rapid development in Ontario as part of a new industrial strategy to support advanced manufacturing. Even without these changes, permitting under the existing regulations should take less than 1 year from the submission date.

The next step in the Separation Rapids Lithium Project's development is to proceed with a short pilot program to finalize reagent recycling and water treatment processes around the flotation circuit, after which a bankable feasibility study will be completed. This work is expected to proceed next year after offtake agreements are concluded and additional project financing is in place. It is planned to process a bulk sample, in the order of 5,000 tonnes, in order to supply large test samples of products requested by potential industrial customers for large scale testing in their glass-ceramics manufacturing processes.

Some additional drilling is contemplated to continue exploration at depth where it remains open for expansion and estimate the ultimate size of the resource. In addition, Avalon continues to explore for new lithium pegmatites, particularly on the western extension of the

property, where a number of new petalite occurrences have been identified, but never previously drilled, including the Snowbank and Glitter pegmatites.

Specific environmental studies initiated in 2021 will be completed for the compensation plan required under the Fisheries Act, as well as for the DMS plant permits at the quarry site. Additional baseline study for the hydro line route, depending on the route and power line size, are also planned. Engagement with communities of interest will be ongoing. Depending on the final process decisions, additional test work on the various products and wastes may be required.

As discussed, the development of a DMS demonstration plant for the evaluation of this environmentally friendly process and for the production of petalite concentrates is also under consideration. Initial laboratory work suggest it can successfully be utilized for the production of these concentrates and potentially for by-product production. The proposed aggregate quarry site for the plant is already approved for ore storage and crushing, significantly reducing permitting risks and time lines. This plant could also contribute economically to the plans for the full scale plant.

There continues to be significant interest in Avalon's petalite product from major international glass and ceramic manufacturers, while the Company also looks at producing a lithium battery material and establishing a business with a diversified mix of lithium products. The glass-makers now require large product samples for evaluation before making firm commitments on offtake, which the Company intends to start producing in 2023 once a suitable sized process facility is identified and the Company now has access to such a facility in the U.S..

The key factors going forward influencing the timely execution of the Separation Rapids Lithium Project are: securing sufficient product offtake commitments to support project financing; the availability of sufficient equity and/or debt financing and receipt of all requisite operating permits and approvals.

Unless otherwise noted, the technical information on the Separation Rapids Lithium Project has been reviewed and approved by Donald S. Bubar, P. Geo., President and CEO, who is a Qualified Person under NI 43-101.

5.4.2 Nechalacho Project

(A) Summary of Technical Report

1. Current Technical Report

The most recent technical report on the property is entitled "Technical Report Disclosing the Results of the Feasibility Study on the Nechalacho Rare Earth Elements Project" dated May 31, 2013, effective April 17, 2013 (the "Nechalacho Technical Report"), and prepared by Tudorel Ciuculescu, M.Sc., P.Geo. of RPA, Kevin Hawton, P.Eng. of Knight Piesold Limited, and Bernard Foo, P.Eng., Richard Gowans, P.Eng., Christopher Jacobs, C.Eng., MIMMM, and Jane Spooner, P.Geo., all of Micon, each of whom is a qualified person pursuant to NI 43-101.

As described above section "5.1.1.1 Nechalacho Project", during the year ended August 31, 2020, Avalon completed a sale of the rights to the near-surface dominantly light rare earth mineral resources above a depth of 150 metres at the Nechalacho Project to Cheetah Resources Pty Ltd.. These zones are not part of the resources which are contemplated to be

developed in the Nechalacho Technical Report, and any direct references to these zones have been omitted from this summary.

2. Property Description, Location and Access

The Nechalacho Deposit is situated on the Company's Thor Lake property, located in Canada's Northwest Territories ("NWT"), 100 kilometres southeast of the capital city of Yellowknife and five kilometres north of the Hearne Channel on the East Arm of Great Slave Lake. The property is within the Mackenzie Mining District of the NWT and Thor Lake is shown on National Topographic System ("NTS") map sheet 85I/02 at approximately 62°06'30"N and 112°35'30"W (Zone 12, 6,886,500N, 417,000E - NAD83).

There is no road access into the Nechalacho site. It is accessible by barge during the summer months, ice road in the winter and year-round by aircraft. The site has been serviced by float planes and ski planes with helicopter support over freeze-up and break-up. A 30.4 m wide by 305 m long airstrip provides all-year fixed-wing service to the site, if necessary. In addition, ice roads on Great Slave Lake have been utilized to mobilize equipment to the site in winter as and when required.



The Thor Lake property consists of five contiguous mineral leases (totalling 4,249 hectares or 10,449 acres) and three claims (totalling 1,869 hectares, or 4,597 acres). The claims were staked in 2009 to cover favourable geology to the west of the mining leases.

The mining leases have a 21-year life and each lease is renewable in 21-year increments. Annual payments of \$4.94 per hectare (\$2.00 per acre) are required to keep the leases in good standing. Avalon owns the leases subject to various legal agreements described below. The mineral claims are in good standing with the next renewal date as of the FS being October 24, 2015. As the required work is \$5 per hectare, the total required annually on the claims is \$9,301.31 and the fee due is \$465.07.

Two underlying royalty agreements were inherited with the title to the Thor Lake property: the Murphy Royalty Agreement and the Calabras/Lutoda Royalty Agreement. The Murphy Royalty Agreement is a 2.5% NSR royalty and has a provision for Avalon to buy out the royalty at the principal amount of \$150,000 compounded annually at the average Canadian prime rate from May 2, 1982 to the buyback date. The Calabras/Lutoda Royalty Agreement totals 3% NSR. In June, 2012, 8110131 Canada Inc., a wholly owned subsidiary of the Company, acquired the NSR under the Calabras/Lutoda Royalty Agreement for \$2.0 million.

3. Exploration History

The Thor Lake area was first mapped by J. F. Henderson and A. W. Joliffe of the Geological Survey of Canada ("GSC") in 1937 and 1938. According to National Mineral Inventory records of the Mineral Policy Sector, Department of Energy, Mines and Resources, the first staking activity at Thor Lake dates from July 1970 when Odin 1-4 claims were staked by K. D. Hannigan for uranium.

In 1971, the GSC commissioned an airborne radiometric survey over the Yellowknife region that outlined a radioactive anomaly over the Thor Lake area (GSC Open File Report 124). Simultaneously, A. Davidson of the GSC initiated mapping of the Blachford Lake Intrusive Complex. It has subsequently become clear that this radiometric anomaly is largely due to elevated thorium levels in the T Zone.

In 1976, Highwood Resources Ltd., ("Highwood") in the course of a regional uranium exploration program, discovered niobium and tantalum on the Thor Lake property and the property was staked in 1976 and 1977. From 1976 to 1979, exploration programs included geological mapping, sampling and trenching on the Lake, Fluorite, R, S and T Zones. Twenty-two drill holes were also completed, seven of these on the Nechalacho Deposit (referred to as the "Lake Zone" in the historic reports). This work resulted in the discovery of significant concentrations of niobium, tantalum, yttrium and REE.

Recognizing a large potential resource at Thor Lake, Placer Development Ltd. ("Placer") optioned the property from Highwood in March 1980 to further investigate the tantalum and related mineralization. Placer conducted geophysical surveys on the Nechalacho Deposit. Eighteen holes were drilled in 1980 and 1981. Preliminary metallurgical scoping work was also conducted, but when the mineralization did not prove amenable to conventional metallurgical extractions of tantalum, Placer relinquished its option in April 1982.

From 1983 to 1985, work on the property was concentrated on the T Zone and included geochemical surveys, surface mapping, significant drilling, surface and underground bulk sampling, metallurgical testing and a detailed evaluation of the property by Unocal Canada. Five holes were also drilled in the Nechalacho Deposit to test for high grade tantalum-niobium mineralization and to determine zoning and geological continuity. Two additional holes were completed at the northeast end of Long Lake to evaluate high yttrium and REE values obtained from nearby trenches.

In August 1986, the property was joint ventured with Hecla Mining Company of Canada Ltd. ("Hecla"). In 1988, earlier holes were re-assayed, and 19 more holes were drilled into the Nechalacho Deposit, primarily in the southeast corner, to further test for yttrium and REE.

However, in 1990, after completing this and considerable work on the T Zone, including some limited in-fill drilling, extensive metallurgical testing and conducting a marketing study on beryllium, Hecla withdrew from the project. In 1990, control of Highwood passed to Conwest Exploration Company Ltd. ("Conwest") until 1996, at which time Conwest divested itself of its mineral holdings. Mountain Minerals Company Ltd. ("Mountain"), a private company controlled by Royal Oak Mines Ltd. ("Royal Oak"), acquired the 34% controlling interest of Highwood.

In late 1999, the application was withdrawn. Royal Oak's subsequent bankruptcy in 1999 resulted in the acquisition of the control block of Highwood shares by Dynatec Company ("Dynatec"). In 2000, Highwood initiated metallurgical, marketing and environmental reviews by Dynatec.

In 2001, Navigator Exploration Corp. ("Navigator") entered into an option agreement with Highwood. Navigator's efforts were focused on conducting additional metallurgical research at a third party geotechnical consultant firm in order to define a process for producing a marketable tantalum concentrate from the Nechalacho Deposit. These efforts produced a metallurgical grade tantalum (Ta)/zirconium (Zr)/niobium (Nb)/yttrium (Y) /REE bulk concentrate. The option was dropped in 2004, however, in view of falling tantalum prices and low tantalum content in the bulk concentrate.

Beta Minerals Inc. ("Beta") acquired Highwood's interest in the Thor Lake property in November 2002 under a plan of arrangement with Dynatec. No work was conducted at Thor Lake by Beta and in May of 2005 Avalon purchased from Beta a 100% interest and full title, (subject to royalty interests), to the Thor Lake property.

4. Geology and Mineralization

The Nechalacho rare metals deposit is hosted by the peralkaline Blachford Lake intrusion, an Aphebian-age ring complex emplaced in Archean-age supracrustal rocks of the Yellowknife Supergroup. The principal rock types in the intrusion are syenites, granites and gabbros and associated pegmatitic phases hosting rare metal mineralization. The key rock units in the vicinity of the mineralization are the Grace Lake Granite, the Thor Lake Syenite and nepheline-sodalite syenite referred to by Avalon as the "Nechalacho Nepheline Syenite". The Grace Lake Granite surrounds the Thor Lake Syenite with the two separated by the enigmatic "Rim Syenite". The host of the Nechalacho Deposit mineralization, the Nechalacho nepheline syenite, is within and below the Thor Lake Syenite, and exposed locally in the northwest part of the Thor Lake Syenite.

Five distinct zones or deposits of rare metal mineralization have been identified as being of potential economic interest: the Nechalacho Deposit and smaller North T, South T, S and R Zones. The Nechalacho Deposit is the largest, containing significant yttrium, tantalum, niobium, gallium and zirconium mineralization. The Nechalacho Deposit is particularly notable for its enrichment in the more valuable HREEs such as europium, terbium and dysprosium, relative to light rare earth elements ("LREEs") such as lanthanum and cerium and its enrichment in zirconium.

The Nechalacho Nepheline Syenite that hosts the Nechalacho Deposit has the following key distinctive features which contrast it to the Thor Lake Syenite and Grace Lake Granite:

- It has a distinct chemical composition showing undersaturation in quartz, with nepheline and sodalite variously as rock-forming minerals.
- It has cumulate layering.
- It contains zircon-silicates including eudialyte.

- It is the host to the Nechalacho zirconium-niobium-tantalum-rare earth mineralization.

This syenite is only exposed at surface in a window through the Thor Lake Syenite in the area encompassing Long Lake to Thor Lake. It is believed to dip underneath the Thor Lake Syenite in all directions. This is supported by drilling north of Thor Lake, within and close to Cressy Lake. Also, the Nechalacho Deposit mineralization, which occurs in the top, or apex, of the syenite, is also present in throughout this window through the Thor Lake Syenite. This unnamed syenite is referred to in the AIF as the "Ore (Nechalacho) Nepheline Sodalite Syenite".

The Nechalacho Deposit is a part of layered peralkaline intrusion with some near surface hydrothermal alteration that extends from surface to depths of approximately 200m, characterized by alternating sub-horizontal layers of relatively high and lower grade REE mineralization with varying mineralogy. HREEs are present in the Nechalacho Basal Zone Deposit in fergusonite ((Y, HREE) NbO₄) and zircon (ZrSiO₄), whereas the LREEs are present in bastnaesite, synchysite, allanite and monazite in the near-surface resources (Upper Zone). Niobium and tantalum are hosted in columbite as well as fergusonite.

There is a gradual increase in HREE from surface to depth within the Nechalacho Deposit with the lowermost sub-horizontal layer, which is also the most laterally continuous, being referred to as the Basal Zone. Accordingly typical proportions of heavy rare earth oxides ("HREO") relative to total rare earth oxides ("TREO") in Upper Zone can be 6% to 10%, but in the Basal Zone averaging over 20% and reaching as high as 50% in individual samples. There is also a tendency for the Basal Zone, which undulates to some extent, to increase in HREO with depth.

The Nechalacho Nepheline Syenite consists of a layered series of increasingly alkaline rocks with depth. A consistent downward progression is observed from hanging wall sodalite cumulates, through coarse grained to pegmatitic nepheline aegirine syenites which are locally enriched in zircon-silicates, to foyaitic syenite with a broad zone of altered "pseudomorphs-after-eudialyte" cumulates (referred to above as the "Basal Zone"). This upper sequence is strongly to intensely hydrothermally altered by various sodic and iron-rich fluids. Pre-existing zircon-silicates (eudialyte) are completely replaced by zircon, allanite, bastnaesite, fergusonite and other minerals. Below the Basal Zone cumulates, mineralization decreases rapidly, but alteration decreases more gradually, with relict primary mineralogy and textures increasingly preserved. Aegirine and nepheline-bearing syenites and foyaitic syenites progress downward to sodalite foyaites and naujaite. Drilling has not extended beyond this sodalite lithology to date. Minerals related to agpaitic magmatism identified from this lower unaltered sequence include eudialyte, catapleite, analcime, and possibly mosandrite.

The part of the Nechalacho Deposit alteration system that is enriched in REEs varies between 80 metres and 190 metres in vertical thickness, with the alteration usually starting from the surface. The whole alteration system is enriched to varying degrees in rare earth elements, zirconium ("Zr"), niobium ("Nb") and tantalum ("Ta"), relative to unaltered syenite, with average values over the whole approximately 200 metres thick alteration package of approximately 0.75% to 1.0% total rare earth oxides.

Within this alteration envelope, there are sub-horizontal zones of increased alteration accompanied by increased REE enrichment alternating with less enriched REE zones. Within the more intensely altered zones, the effect is that the original textures and mineralogy of the host rock are no longer apparent.

These zones of increased alteration, which can vary in thickness from a few metres to tens of metres, can frequently contain TREO grades in the range of 2% and higher. The lowermost

band, referred to as the Basal Zone, contains the highest proportion of HREO. Overall, the HREO proportion of the TREO within the 80 metres to 190 metres thick alteration system is typically between 7% and 15%. However, within the Basal Zone, this proportion is typically greater than 20% and can locally exceed 30% over the full width.

5. Exploration

In 2005, Avalon conducted extensive re-sampling of archived Nechalacho Deposit drill core to further assess the yttrium and heavy REE resources on the property. In 2006, TetraTech-WEI (formerly Wardrop Engineering Inc.) ("TetraTech") was retained to conduct a Preliminary Economic Assessment of the Nechalacho Deposit (Preliminary Economic Assessment on the Thor Lake Rare Metals Project, NT Wardrop Document No. 0551530201-REP-R0001-03). In 2007, Avalon commenced further drilling of the Nechalacho Deposit. Apart from support of geoscience graduate theses which included mapping of the property, Avalon's exploration activities at the site were confined to drilling.

6. Drilling

Avalon has carried out the following drilling on the Nechalacho Deposit, summarized to August 31, 2015:

Year	Diameter	Drill holes	Metres
2007	BTW	13	2,440.47
	TOTAL	13	2,440.47
2008	NQ2	70	14,033.65
	TOTAL	70	14,033.65
2009	HQ	43	8,794.32
2009	NQ	26	5,476.78
	TOTAL	69	14,271.10
2010	HQ	86	23,840.43
2010	PQ	20	3,754.00
	TOTAL	106	27,594.43
2011	HQ	43	10,967.22
2011	NQ	21	3,923.96
2011	PQ	46	10,864.60
	TOTAL	110	25,755.78
2012	HQ	73	18,100.90
2012	PQ	13	3,160.45
	TOTAL	86	21,261.35
2013	HQ	16	2,977.30
	TOTAL	16	2,977.30
2014	HQ	15	3,135.00
2014	PQ	7	1,773.00
	TOTAL	22	4,908.00
Total to August 31, 2015		492	113,242.08

Minor differences to previous tables disclosing historic drilling statistics are due to previous errors and decisions by the data compilers as whether to exclude or include abandoned holes with no assays.

Mineral resource estimates with the effective date of May 3, 2013 included drill results up to August 27, 2012 and the updated mineral resource estimates, completed after the FS, included drill results up to March 2, 2013. See "Nechalacho Project - Mineral Resource Update". There was no drilling done in 2015.

7. Sampling, Analysis and Security of Samples

A comprehensive core logging and sampling protocol was established for the July 2007 drilling program. This protocol has been strictly applied for all of the drilling programs since 2007. In addition, a comprehensive geotechnical logging protocol was introduced at the start of the summer 2009 drill program. The Company's former Vice President, Exploration, William Mercer, Ph.D., P.Geol. (Ontario), P. Geol. (NWT), provided overall direction on the project and is responsible for monitoring the QA/QC protocol for the laboratory analyses and provided overall direction on the project.

Core sizes range from BTW diameter for the initial 2007 drill program to NQ2 in the winter/summer 2008 program and NQ2 or HQ in 2009 and 2010. Since 2011, a second rig recovering very large PQ sized core was mobilized to site to maximize the amount of material available for the bulk sample while the first rig continued with HQ equipment.

Core is placed in standard wooden core boxes at the drill by the driller helper, with a wooden marker placed at the end of each core run marking the metreage from the surface. Throughout the BTW-NQ programs drill rods were imperial lengths of 10 feet, and core markers were written in feet on one side of the wooden block, and using a metric conversion chart, written in metres on the opposite side of the block. The HQ drilling initially used both imperial and metric rods, so markers were in both feet and metres to ensure proper measurement.

In general, in the mineralized zones, core recovery is very high, effectively 100%. As a result, core handling is not expected to materially affect the results in terms of accuracy or reliability. In addition, as the mineralization is disseminated, there is not expected to be a significant sampling effect on accuracy or reliability.

After inspection by the geologist at the drill, the boxes are closed with wooden lids and taken to the core logging facility at the camp by snowmobile in the winter and by boat and ATV in the summer. At camp, the boxes are opened by the geologist on outdoor racks. In good weather, logging and other geotechnical measurements are done outside; in poor weather and in winter, core is processed in a heated core shack. Core is initially measured to determine recoveries, and marked incrementally every metre. This marking serves as a guide for magnetic susceptibility, rock quality determinations ("RQD"), and density measurements. Magnetic susceptibility is measured every metre with a hand-held 'KT- 10 magnetic susceptibility meter'. Density is measured every five metres by weighing a section of drill core in air and then weighing by submersing the sample in water and comparing the difference between dry and submersed weight. A typical core sample for density measurement averages 10 centimetres in length. Geotechnical logging, comprising RQD, are performed for each run.

Core is generally very clean when brought to camp, and requires no washing except for occasional sprays of water when mud is present. The geologist marks out major rock units and completes a written description for the entire core sequence. Frequent readings using a Thermo-Scientific Niton® XLP-522K hand held analyzer act as a guide to areas of mineralization and general chemistry of a specific interval. The final task is to mark out with a china marker specific sample intervals for the length of the entire drill hole. On average, assay samples are two metres long except where, in the geologist's opinion, it is advisable to follow lithological boundaries. Due to the long widths of mineralization with the Basal Zone averaging over 20 m thick, even spaced sampling is not considered a significant factor in resource estimation. Consequently, individual samples can vary in length when encountering

lithological changes, as efforts are made not to split across well-defined lithological boundaries. A list is made of all sample intervals as a record and also a guide to the core splitting technicians. All geological, geophysical and geotechnical data was originally entered into a custom designed database, provided and maintained by an external consulting firm.

Subsequently, starting in 2012, Avalon started using Maxwell Geoservices software (LogChief and DataShed) to enter and control data into the DataShed database.

At the first step of data entry, the data is checked for corrected and completed required fields which are necessary to import into LogChief. Adjusted procedures for different fields in LogChief can be considered control manager on data entry and possible available errors. Those parts of the data which includes errors are rejected and sent back to field geologists for correction. The data is then synchronized from LogChief to DataShed. An exception to the sampling process described above is that for PQ core. Due to the weight of the core, about 18 kgs per metre, and for safety reasons related to lifting heavy samples, samples were restricted to 1 metre core lengths.

Due to the hydrothermal alteration of all lithologies, identifying specific precursor lithologies has proven quite difficult, particularly in the early drill programs. Early lithological coding tended to incorporate hydrothermal alteration, commonly making it difficult to correlate units between drill holes. As more information became available from deeper drilling and specific textures and lithologies were compared to other unaltered, alkaline deposits elsewhere, such as Illimausaq in Greenland, a new lithological code was produced using, as a basis, the recognizable precursor lithologies. This has greatly advanced the understanding of the lithology, mineralogy, and to a lesser degree the petro-genesis of the deposit.

After all tests and core observations are completed, and prior to splitting, the core is photographed outdoors using a hand-held digital camera. Down-hole distance and hole number are marked so as to be visible in all photos. Core is generally photographed in groups of six boxes. Starting in the 2009 summer drill program, drill core was also logged for geotechnical characteristics. This was initiated with the guidance of external geotechnical consultants. Some of the holes were logged from top to bottom, while others were logged above, below, and within the Basal Zone, to determine rock quality characteristics of both the mineralized zones and country rocks. Efforts were made to select holes with varying orientations to provide comprehensive orientation characteristics of planar structural features. The geotechnical logging was done on core logging sheets and entered electronically into a custom-designed Excel spreadsheet provided by the geotechnical consultants. A total of 385 holes were logged in whole or in part. Holes which were partially logged included the Basal Zone and a minimum 10 metre interval above and below. When the core has been logged and photographed, it is stored in core racks outside the core splitting tent, from which they are then brought into the core shack to be split and sampled. Core photos are stored on the camp computer in addition to an external hard drive.

For all core except PQ, the core splitter would break the core into smaller lengths to fit into the mechanical core splitter, split the core in half, and placed one half in a plastic sample bag with the other half placed back into the core box in sequence to serve as a permanent record. In programs after 2009, for mineralized intervals, the core was split initially into halves and then one half into quarters. One quarter was utilized as an assay sample, a second quarter retained as a library sample, and the full half core bagged in intervals identical to the sample interval, as a metallurgical sample. The sample interval is marked on a sample tag in a three-part sample book and a tag with the corresponding sample number is placed in the sample bag. The sample bag is also marked with the corresponding sample number using a felt marker. The bag is then either stapled or zip-tied closed, and placed in a rice bag with two other samples. Most rice bags contain three samples to keep weight to a manageable level.

The rice bag is then marked on the outside with corresponding sample numbers contained within, and a second number identifying the rice bag itself. A sample shipment form is then completed, generally in increments of 50 rice bags, which constitutes a single shipment. The sample form is enclosed in an appropriately marked rice bag, with a duplicate paper copy kept in camp, and also kept on electronic file.

Starting in winter 2010, a second drill was added, also using HQ core. This core was sampled as above. From July 2010 on, this rig was converted to PQ diameter core in order to obtain more metallurgical sample. This core, weighing about 18 kg per metre, was initially sawn in order to acquire an assay sample of about 1.5 kg, with a second cut for a library sample of about 1.5 kg, leaving about 14 kg for metallurgical purposes. However, due to the hardness of the rock, it was deemed that sawing the core was impractical due to low productivity. Consequently, a test was completed of coarse crushing the whole core to 3.3 mm in 1 metre samples. Then an assay sample and a library sample were split out and the remaining 3.3 mm material retained for metallurgical purposes. The results of the test that studied the particle size distribution and the homogeneity of the sample indicated that this was a satisfactory procedure for both assaying and metallurgy, and for mineralized intervals this PQ core procedure continued to be followed. For unmineralized core, a section was sawn off weighing about 3-5 kg per sample to avoid the cost of crushing whole core and the remaining core stored at site.

Standards are inserted routinely every 15th sample with the primary laboratory and every 35th sample with the secondary laboratory. Blanks, composed of split drill core of unaltered and un-veined diabase dyke intersected in drilling beneath Thor Lake, are inserted every 40th sample. Samples are shipped by air from Thor Lake to Yellowknife. The standard shipment is 50 rice bags, or a total of 150 samples per shipment. The rice bags are zip-tied for security, and are met and unloaded in Yellowknife by a representative of a third-party expediter. The expediter takes the samples to its warehouse and inventories all samples and produces a manifest which is sent electronically to Thor Lake camp, and accompanies the shipment. The samples are then taken by the expediter to the core processing lab facilities. At this point, the laboratories take custody of the samples. Core is sent to the preparation laboratory with specification that all core should be crushed to 90% passing 10 mesh with a supplementary charge if necessary. For samples from drill holes completed in 2007, every sample pulp was duplicated and sent to the secondary laboratory for check analyses. Subsequent to this (2008 to 2009), approximately every tenth pulp was sent for duplicate analysis in the secondary laboratory. Standards are inserted in the duplicate sample stream by Avalon employees prior to shipping to the secondary laboratory.

Any assay results obtained prior to 2007 (holes 1 to 51) are referred to as the "older holes". These did not have internal Quality Assurance/Quality Control ("QA/QC") and were analyzed for a limited set of elements; however, six of the old holes were re-assayed in 2008 for the complete suite of elements. Avalon has changed the laboratories used for analysis over time. For the first year of drilling by Avalon (2007), the primary laboratory was an independent laboratory located in Ancaster, Ontario ("Lab 1"), and the secondary laboratory was in Vancouver, British Columbia ("Lab 2"). Samples were shipped to the Lab 1 facility in Ancaster, Ontario for preparation, and a duplicate pulp was submitted to Lab 2 in Vancouver for complete check analysis.

For the 2008 winter and summer programs, the preparation laboratory was a different laboratory in Yellowknife, Northwest Territories ("Lab 3") and the primary analytical laboratory was Lab 2 in Vancouver, British Columbia. A split of every tenth sample reject was sent to a different independent laboratory in Vancouver, British Columbia ("Lab 4") for check analyses. All core was analyzed by Lab 2 using two analytical packages: Group 4A and Group 4B. Lab 4 analyzed the samples with the MS81 method. Lab 2's Group 4A is a whole rock

characterization package comprising four separate analytical tests. Lab 2's Group 4B is a Total Trace Elements by Inductively Coupled Plasma-Mass Spectrometry ("ICP-MS"). This package comprises two separate analyses. For 2008, secondary samples, comprising roughly every tenth reject sample supplied by Lab 2, were shipped to Lab 4, where the samples were analyzed by the package MS81. This is a combination of lithium metaborate/ICP atomic emission spectrometry ("ICP-AES") for whole rock values, lithium borate/ICP-MS for refractory mineral values and other elements, and aqua regia/ICP-MS for volatile elements.

Starting with the winter 2009 drilling campaign, all samples were prepared at a different preparation facility in Yellowknife, Northwest Territories ("Lab 5"), and a subsample shipped and analyzed at Lab 4 in Vancouver, British Columbia by lithium metaborate/tetraborate fusion and dilute nitric acid digestion, followed by whole rock and 45 element multi-element ICP analysis (Lab 4 sample method ME-MS81). All samples contained within intercepts above the 1.6% cutoff criteria and any additional samples exceeding analytical limits or of geological significance are rerun using similar Lab 4 method ME-MS81H for higher concentration levels. ME-MS81H is a similar method but with greater dilution in the analytical procedure. Every tenth sample has a duplicate pulp prepared from the sample reject which, with inserted standards and blanks, was sent to Lab 2 in Vancouver, British Columbia for check analyses. Results were monitored for key elements, and in cases of QA/QC issues, re-analysis was requested. Values were reported by the laboratories in parts per million ("ppm") and converted to rare earth and rare metal oxides by Avalon geologists.

Since 2007, Avalon has commissioned a specialist laboratory from British Columbia to generate standards called AVL-H, AVL-M or AVL-L (2007), S0409 (2010) (sometimes referred to as H2) and S229 and S236 (2010). For the 2007 standards and S0409, Avalon then commissioned an independent consultant to review the round robin and assess the quality of the data and for S239 and S236 another independent consultant was similarly commissioned.

Statistics on QA/QC samples submitted during the period January 2011 to August 2012 are presented below.

QA/QC Samples Submitted From January, 2011 to August, 2012			
QC Category	DH Sample Count	QC Sample Count	Ratio of QC Samples to DH Samples
Company Standards	16,914	1,117	1:15
Company Blanks	16,914	453	1:37
Laboratory Duplicates	16,914	2,019	1:8
Field Duplicates	16,914	88	1:192

The following table shows the interlab comparison for the period June 2010 and December 2011.

Laboratory Comparison Results for All Elements (ppm)								
Element	No. of Samples	Mean 1 (Lab 4)	Mean 2 (Lab 2)	SD 1 (Lab 4)	SD 2 (Lab 2)	CV 1 (Lab 4)	CV 2 (Lab 2)	RPHD% ⁽¹⁾
La	453	1996.72	1882.70	1153.64	1076.56	0.58	0.57	2.69
Ce	451	4398.52	4184.67	2535.14	2392.85	0.58	0.57	2.24
Pr	453	558.23	518.04	331.16	300.76	0.59	0.58	3.21
Nd	453	2166.97	2069.39	1297.18	1223.40	0.60	0.59	1.97
Sm	453	456.80	422.45	290.66	265.58	0.64	0.63	3.56
Eu	453	52.32	49.91	34.33	32.65	0.66	0.65	2.07
Gd	453	357.29	359.70	257.90	256.03	0.72	0.71	-0.80
Tb	453	48.63	48.37	44.61	43.68	0.92	0.90	0.01
Dy	452	240.93	235.89	258.54	252.82	1.07	1.07	1.05
Ho	453	41.09	38.98	50.96	50.06	1.24	1.28	5.24
Er	453	101.74	96.24	137.84	132.60	1.35	1.38	4.59
Tm	453	13.25	13.25	18.48	18.48	1.39	1.39	-0.44
Yb	453	80.59	81.97	112.45	112.15	1.40	1.37	-3.44
Lu	453	11.37	11.08	15.76	15.32	1.39	1.38	-0.39
Y	453	964.62	914.19	1144.75	1072.82	1.19	1.17	2.22
Zr-ICPMSH	451	16794.83	16441.79	11635.23	11661.55	0.69	0.71	1.51
Zr-XRF	497	22748.89	20472.55	11023.60	9747.00	0.48	0.48	5.16
Nb-ICPMSH	452	2045.91	1937.76	1173.36	1158.36	0.57	0.60	2.82
Nb-XRF	228	3645.18	3169.35	1189.18	994.35	0.33	0.31	7.00
Ta	453	217.29	207.36	169.17	157.83	0.78	0.76	1.45
Hf	453	380.31	369.85	274.54	268.91	0.72	0.73	1.47

NOTES:

(1) RPHD: Relative Percent Half Difference

Avalon monitors the results of its internal standards during routine analysis of drill core. Due to the large number of elements involved, it would be impractical to apply a normal logic table of failures where an analysis batch is failed on the basis of issues with one element. Avalon followed the following procedure for assessing analytical data:

Batches were not failed if the samples analysed were clearly far below any economic levels (not mineralized), unless the standards results were very grossly out.

The results of the standards were reviewed to see how many elements were out of acceptable range as recommended in the standard certification, and if four elements were out of range (greater than three standard deviations), but two high and two low, and the remaining 14 elements were in range, the batch was accepted.

If five elements or more elements were out of acceptable range (greater than three standard deviations), and all in the same direction, either biased all high or all low, then the batch was re-analysed.

More recently, subsequent to the May 3, 2013 resource estimate, Avalon added an additional criterion as follows:

If the overall Net Metal Return ("NMR") of the standard is outside the range of +/-10% of the recommended value, then the batch is considered for reanalysis.

8. Mineral Processing and Metallurgical Testing

Extensive metallurgical testwork has been completed at a number of different laboratories and a large number of testwork reports have been issued to summarize this work. Much of the pertinent metallurgical and mineralogical development studies have been undertaken using bulk composite samples that represent the Nechalacho deposit mineralization spatially and in terms of lithology. These selected composite samples tended to be selected to represent mineralization at different depths in the deposit in terms of elevation. The composites designated UZ were from Upper Zone mineralization and BZ were from Basal Zone mineralization.

Since 2010, Avalon has completed four flotation pilot plant tests at two different labs. All of these pilot plant tests were conducted using bulk samples sourced from drill core.

Mineralogy

The mineralogy of the Nechalacho deposit has been studied using QEMSCAN®, a scanning electron microscope ("SEM") and an electron microprobe ("EMP"). Nechalacho mineralization is hosted in nepheline syenite that has been extensively hydrothermally altered in areas of mineralization. The payable elements of the Nechalacho Basal Zone deposit are typically hosted in a number of minerals, summarized as follows:

- LREEs dominantly occur in bastnaesite, synchisite, monazite and allanite.
- HREEs dominantly occur in zircon, fergusonite and rare xenotime.
- Zirconium (Zr), along with HREE, niobium and tantalum occurs in zircon and other zircono-silicates (eudialyte).
- Niobium and tantalum occur in columbite and ferrocolumbite, fergusonite and zircon.

The mineralogy of the Nechalacho Basal Zone ore is complex and guides metallurgical development and performance.

Hydrometallurgical Testwork

Six hydrometallurgical pilot plant campaigns were conducted between June and October, 2012. The main objectives of these campaigns were to:

- Test a continuous version of the hydrometallurgical flowsheet.
- Optimize REE extraction in the pregnant solution.
- Remove target contaminants (iron, uranium and thorium).
- Ensure the final mixed rare earth precipitate product had an acceptable grade of REE while reducing the uranium and thorium contents below 500 ppm.
- Ensure the concentrations of species in the filtrate from the tailings circuit met target environmental levels.

The final pilot plant campaign, which operated between September 24 and October 5, 2012, demonstrated the technical viability of the process and provided crucial input for the final hydrometallurgical flowsheet, process design criteria and process engineering adopted for the FS.

Refinery

The refinery comprises two plants, the leaching and the separation plants. The leaching plant removes impurities from the hydrometallurgical precipitate in order to attain a purified feed to the separation plant where the individual rare earth products will be produced.

A large number of testwork reports have been issued to summarize the testwork that has been undertaken at a number of different laboratories. All relevant testwork has been completed using the rare earth precipitate produced during the hydrometallurgical pilot plant testwork program.

9. Mineral Resource and Mineral Reserve Estimates

Mineral Resource Estimate in the Feasibility Study

The mineral resource estimate for the Nechalacho Project presented in the FS based on the block model prepared by Avalon was audited originally by Roscoe Postle Associates Inc. ("RPA") on November 21, 2012. Subsequent to this, Avalon updated the database and re-estimated the resource as of May 3, 2013. The update included correction of some minor assay data entry errors and drill hole locations. The net effect of these changes is considered immaterial as the resource change was less than 1% in most individual parameters. The largest changes were for ZrO₂ grade, and the effect was an increase in grade in Measured and Indicated resources of between 0.1% and 3.2% of the overall grade in the various categories.

The mineral resource estimated by Avalon and accepted by RPA that was the basis for the mineral reserves estimate given below (See "Nechalacho Project – Mineral Reserve Estimate") for the Nechalacho deposit is summarized in the table below. The mineral resource is reported at a cut-off value of US\$320/t. The effective date of the mineral resource estimate is May 3, 2013. This resource has been subsequently updated as of August 15, 2013 (See "Nechalacho Project – Mineral Reserve Estimate"). The tables of the May 3, 2013 mineral resource have been provided for completeness purposes.

Nechalacho Deposit Mineral Resource Estimate as at May 3, 2013 ⁽⁸⁾							
Category	Zone	Tonnes (million)	TREO (%)	HREO (%)	ZrO ₂ (%)	Nb ₂ O ₅ (%)	Ta ₂ O ₅ (%)
Measured	Basal	10.86	1.67	0.38	3.23	0.40	0.04
Indicated	Basal	55.81	1.55	0.33	3.01	0.40	0.04
Measured and Indicated	Basal	66.67	1.57	0.34	3.05	0.40	0.04
Inferred	Basal	61.09	1.29	0.25	2.69	0.36	0.03

1. CIM definitions were followed for Mineral Resources.
2. Mineral Resources are estimated at an NMR cut-off value of US\$320/t. NMR is defined as "Net Metal Return" or the in situ value of all payable metals, net of estimated metallurgical recoveries and off-site processing costs.
3. An exchange rate of US\$1=CAD1.05 was used.
4. Heavy rare earth oxides ("HREO") is the total concentration of: Y₂O₃, Eu₂O₃, Gd₂O₃, Tb₂O₃, Dy₂O₃, Ho₂O₃, Er₂O₃, Tm₂O₃, Yb₂O₃ and Lu₂O₃.
5. Total rare earth oxides ("TREO") is HREO plus light rare earth oxides ("LREO"): La₂O₃, Ce₂O₃, Pr₂O₃, Nd₂O₃ and Sm₂O₃.
6. Rare earths were valued at an average net price of US\$62.91/kg, ZrO₂ at US\$3.77/kg, Nb₂O₅ at US\$56/kg, and Ta₂O₅ at US\$256/kg. Average REO price is net of metallurgical recovery and payable assumptions for contained rare earths, and will vary according to the proportions of individual rare earth elements present. In this case, the proportions of REO as final products were used to calculate the average price.
7. ZrO₂ refers to zirconium oxide, Nb₂O₅ refers to niobium oxide and Ta₂O₅ refers to tantalum oxide.
8. Note references to the Upper Zone have been omitted. Please see section 1.

Mineral Resource Estimate Grades of Individual Rare Earth Oxides and Specific Gravity ⁽⁸⁾										
Category	Zone	Tonnes (million)	La ₂ O ₃ (ppm)	Ce ₂ O ₃ (ppm)	Pr ₂ O ₃ (ppm)	Nd ₂ O ₃ (ppm)	Sm ₂ O ₃ (ppm)	Eu ₂ O ₃ (ppm)	Gd ₂ O ₃ (ppm)	Tb ₂ O ₃ (ppm)
Measured	Basal	10.86	2,629	5,878	745	2,928	652	82	594	91
Indicated	Basal	55.81	2,522	5,605	701	2,761	596	73	529	80
Measured and Indicated	Basal	66.67	2,539	5,649	708	2,788	605	75	539	82
Inferred	Basal	61.09	2,110	4,760	608	2,390	487	60	439	63
Category	Zone	Tonnes (million)	Dy ₂ O ₃ (ppm)	Ho ₂ O ₃ (ppm)	Er ₂ O ₃ (ppm)	Tm ₂ O ₃ (ppm)	Yb ₂ O ₃ (ppm)	Lu ₂ O ₃ (ppm)	Y ₂ O ₃ (ppm)	SG
Measured	Basal	10.86	471	84	221	29	174	24	2,061	2.85
Indicated	Basal	55.81	413	72	182	24	141	20	1,813	2.88
Measured and Indicated	Basal	66.67	422	74	189	25	147	20	1,853	2.88
Inferred	Basal	61.09	315	55	132	18	106	15	1,327	2.83

1. CIM definitions were followed for Mineral Resources.
2. Mineral Resources are estimated at an NMR cut-off value of US\$320/t. NMR is defined as "Net Metal Return" or the in situ value of all payable metals, net of estimated metallurgical recoveries and off-site processing costs.
3. An exchange rate of US\$1=CAD1.05 was used.
4. Heavy rare earth oxides ("HREO") is the total concentration of: Y₂O₃, Eu₂O₃, Gd₂O₃, Tb₂O₃, Dy₂O₃, Ho₂O₃, Er₂O₃, Tm₂O₃, Yb₂O₃ and Lu₂O₃.
5. Total rare earth oxides ("TREO") is HREO plus light rare earth oxides ("LREO"): La₂O₃, Ce₂O₃, Pr₂O₃, Nd₂O₃ and Sm₂O₃.
6. Rare earths were valued at an average net price of US\$62.91/kg, ZrO₂ at US\$3.77/kg, Nb₂O₅ at US\$56/kg, and Ta₂O₅ at US\$256/kg. Average REO price is net of metallurgical recovery and payable assumptions for contained rare earths, and will vary according to the proportions of individual rare earth elements present. The proportions are based on the actual planned production from the Nechalacho project.
7. ZrO₂ refers to zirconium oxide, Nb₂O₅ refers to niobium oxide, and Ta₂O₅ refers to tantalum oxide.
8. Note references to the Upper Zone have been omitted. Please see section 1.

The cutoff grade was determined using both rare metals and rare earths as they all contribute to the total revenue of the Nechalacho deposit. An economic model was created, using metal prices that were updated from those used in the pre-feasibility study, flotation and hydrometallurgical recoveries, the effects of payable percentages, and any payable Net Smelter Return ("NSR") royalties. The payable percentages of elements (Zr, Nb, Ta) contained within the Enriched Zirconium Concentrate ("EZC") were also included. The net revenue generated by this model is termed the NMR. The mineral resource estimate is based on the minimum NMR value being equal to an operating cost of US\$320/t, a break-even cut-off value.

Mineral Resource Database

The database for the November 21, 2012 mineral resource estimate for the Nechalacho deposit contained 490 drill holes totalling 104,918.7 m. The database included 51 historic drill holes amounting to 5,588 m and 439 recent drill holes with a total length of 99,330.6 m. The estimate was based on 33,236 samples assayed for rare metals, rare earths, and other elements, from 450 drill holes, 48 historical and 402 recent. Samples from 41 historical drill holes have incomplete or no REE assays results. Only 21 of the historical drill holes sampled the Basal Zone, as it was not a target at that time.

The updated database and re-estimated resource for the Nechalacho Deposit made by the Company as of May 3, 2013 are based upon detailed core logging, assays and geological interpretation by Avalon geologists and independently audited by RPA. The only change from

the November 2012 Update is correction of some minor errors in the database that had no material effect, except to change some numbers in the second decimal place as noted above. The drill holes and their related assays form the basis for the creation of two domains of REE mineralization: an upper LREE-enriched domain ("Upper Zone") and a lower HREE enriched domain ("Basal Zone").

Mineral Resource Classification

For all domains, blocks populated using a 240m X 240m X 120m search ellipse and up to 120 m away from a drill hole were classified as Inferred.

Within the Basal Zone, blocks populated using a 60m X 60m X 30m search ellipse and up to 60 m away from a drill hole were classified as Indicated. A manually digitized contour was used to select and reclassify isolated blocks or patches of Indicated material to the Inferred category. In the Basal Zone, two separate areas supported by diamond drilling spaced at 25 m were manually digitized to define the Measured blocks.

The classification details are outlined in the table below.

Zone	Classification	Distance to Nearest Drill hole	Minimum Number of Drill holes
Basal	Measured	≤30m (by manually digitized contour)	1
	Indicated	≤60m	1
	Inferred	≤120m	1

Note that references to the Upper Zone have been omitted. Please see section 1.

Mineral Reserve Estimate

The mineral reserve estimate for the Nechalacho Project presented in the feasibility study was estimated from the block model prepared by Avalon and audited originally by RPA on November 21, 2012 which was updated and re-estimated as of May 3, 2013. The mineral reserve estimate is derived from this block model by applying the appropriate technical and economic parameters to extraction of the REE with proven underground mining methods.

The mineral reserve has been estimated based on conversion of the high-grade mineral resources at a cut-off value greater than US\$320/t NMR. Payable elements include the REE, zirconium, niobium and tantalum. No Inferred mineral resources were converted to mineral reserves. The high-grade mineral resources are 34.7% and 14.7% of the total Measured and Indicated mineral resources, respectively.

The key design criteria set for the Nechalacho mine are:

- Initial design based on a 20-year life-of-mine ("LOM") of high-grade material.
- Mechanized cut or drift and fill and long hole mining methods with paste backfill.
- Minimum mining thickness of 5 m.
- Extraction ratio of 94.2%.
- Internal dilution of 8.5%.
- External dilution of 5% applied to all stopes.
- Estimated total average dilution for the life of mine of approximately 11%.
- Production rate of 2,000 t/d ore (730,000 t/y).
- Ore bulk density of 2.91 t/m³.

The mineral reserve estimate for the Nechalacho Project shown in the table below has an effective date of May 3, 2013. The figures in the table are rounded to reflect that the numbers

are estimates. The conversion of mineral resources to mineral reserves includes technical information that requires subsequent calculations or estimates to derive sub-totals, totals and weighted averages. Such calculations or estimations inherently involve a degree of rounding and consequently introduce a margin of error. Where these occur, Micon International Limited ("Micon") does not consider them to be material.

Mineral Reserve Estimate as at May 3, 2013			
Description	Mineral Reserve Category		
	Proven	Probable	Proven and Probable
Tonnage (Mt)	3.68	10.93	14.61
TREO (%)	1.7160	1.6923	1.6980
HREO (%)	0.4681	0.4503	0.4548
HREO/TREO	27.28%	26.61%	26.78%
La ₂ O ₃	0.256%	0.256%	0.256%
Ce ₂ O ₃	0.570%	0.567%	0.568%
Pr ₂ O ₃	0.072%	0.071%	0.071%
Nd ₂ O ₃	0.284%	0.283%	0.283%
Sm ₂ O ₃	0.065%	0.065%	0.065%
Eu ₂ O ₃	0.008%	0.008%	0.008%
Gd ₂ O ₃	0.062%	0.061%	0.061%
Tb ₂ O ₃	0.010%	0.010%	0.010%
Dy ₂ O ₃	0.058%	0.056%	0.056%
Ho ₂ O ₃	0.011%	0.010%	0.010%
Er ₂ O ₃	0.029%	0.027%	0.028%
Tm ₂ O ₃	0.004%	0.004%	0.004%
Yb ₂ O ₃	0.023%	0.022%	0.022%
Lu ₂ O ₃	0.003%	0.003%	0.003%
Y ₂ O ₃	0.259%	0.249%	0.251%
ZrO ₂	3.440%	3.309%	3.342%
Nb ₂ O ₅	0.425%	0.413%	0.416%
Ta ₂ O ₅	0.046%	0.045%	0.045%

1. CIM definitions were followed for Mineral Reserves.
2. Mineral Reserves are based on Mineral Resources published by Avalon in News Release dated November 26th, 2012 and audited by Roscoe Postle Associates Inc., and modified as of May 3, 2013.
3. Mineral Reserves are estimated using price forecasts for 2016 for rare earth oxides given below.
4. HREO grade comprises Y₂O₃, Eu₂O₃, Gd₂O₃, Tb₂O₃, Dy₂O₃, Ho₂O₃, Er₂O₃, Tm₂O₃, Yb₂O₃, and Lu₂O₃. TREO grade comprises all HREO and La₂O₃, Ce₂O₃, Nd₂O₃, Pr₂O₃, and Sm₂O₃.
5. Mineral Reserves are estimated using an NMR cash cost cut-off value of US\$320/t.
6. Rare earths were valued at an average net price of US\$62.91/kg, ZrO₂ at US\$3.77/kg, Nb₂O₅ at US\$56/kg, and Ta₂O₅ at US\$256/kg. Average REO price is net of metallurgical recovery and payable assumptions for contained rare earths, and will vary according to the proportions of individual rare earth elements present. In this case, the proportions of REO as final products were used to calculate the average price.
7. Mineral reserves calculation includes an average internal dilution of 8.5% and external dilution of 5% on secondary stopes.
8. The mine plan was developed by Avalon Advanced Materials Inc. engineers and reviewed by Micon International Limited. The Qualified Person for this Mineral Reserve is Barnard Foo., P. Eng., M. Eng., MBA, Senior Mining Engineer, Micon International Limited.

Micon believes the key assumptions, parameters and methods used to convert mineral resource to mineral reserve are appropriate. To the best of Micon's knowledge there are no

known mining, metallurgical, infrastructure, permitting or other relevant factors that may materially affect the mineral reserve estimate.

Mineral Resource August 15, 2013 Update

Subsequent to the FS, an internal resource update was completed and released on August 15, 2013. This update reflects the improved understanding of the geometry of the resource. It incorporates drill results from the eight-hole winter 2013 drill program and the final 41 holes from the 2012 summer drill program. These holes were not incorporated into the resource model used in the FS.

The estimated Measured Mineral Resources in the base case now stand at 12.56 million tonnes averaging 1.71% TREO, 0.38% HREO and 22.5% HREO/TREO. The only change of consequence in methodology from the November 26, 2012 Resource estimate was that the base case cut-off grade, expressed as Net Metallurgical Return ("NMR"), increased from US\$320 to US\$345 per tonne due to minor changes in estimated operating costs, as per the FS. Work is continuing on optimizing the mine plan to incorporate more of the high-grade ore identifiable at higher NMR cut-offs into the early years of production.

The mineral resource estimate was prepared by a senior resource geologist employed by Avalon Advanced Materials Inc., under the supervision of the Company's former Vice-President, Exploration, William Mercer, Ph.D., P.Ge. (Ont), P. Geo. (NWT) who is the qualified person for Avalon for this resource estimate. Dr. Mercer also provided overall direction on the project and monitoring of the QA/QC on the laboratory analyses.

Nechalacho Deposit Mineral Resources as at August 15, 2013 above a US\$345/tonne NMR Cut-Off ⁽¹¹⁾								
Category	Zone	Tonnes (millions)	TREO (%)	HREO (%)	HREO/TREO (%)	ZrO ₂ (%)	Nb ₂ O ₅ (%)	Ta ₂ O ₅ (%)
Measured	Basal	12.56	1.71	0.38	22.50	3.20	0.405	0.0404
Indicated	Basal	49.33	1.62	0.35	21.27	3.07	0.405	0.0398
Measured and Indicated	Basal	61.90	1.64	0.35	21.53	3.10	0.405	0.0399
Inferred	Basal	58.16	1.38	0.26	18.89	2.80	0.380	0.0351

1. CIM definitions were followed for Mineral Resources.
2. The Qualified Person for this Mineral Resource estimate is William Mercer, PhD, P.Ge. (Ontario), P. Geo. (NWT), VP, Exploration, Avalon Advanced Materials Inc..
3. HREO (Heavy Rare Earth Oxides) is the total concentration of: Y₂O₃, Eu₂O₃, Gd₂O₃, Tb₄O₇, Dy₂O₃, Ho₂O₃, Er₂O₃, Tm₂O₃, Yb₂O₃ and Lu₂O₃.
4. TREO (Total Rare Earth Oxides) is HREO plus: La₂O₃, CeO₂, Pr₆O₁₁, Nd₂O₃ and Sm₂O₃.
5. Rare earths were valued at an average net price of US\$62.91/kg, ZrO₂ at US\$3.77/kg, Nb₂O₅ at US\$56/kg, and Ta₂O₅ at US\$256/kg. Average REO price is net of metallurgical recovery and payable assumptions for contained rare earths, and will vary according to the proportions of individual rare earth elements present. In this case, the proportions of REO as final products were used to calculate the average price.
6. The changes in methodology from the November 26, 2012 Resource were the cut-off grade and the interpolation method. The cut-off grade, expressed as Net Metallurgical Return ("NMR"), increased from US\$320 to US\$345 per tonne. NMR is defined as "Net Metal Return" or the in-situ value of all payable metals, net of estimated metallurgical recoveries, and in the case of Nb, Ta and Zr, off-site processing costs. The revised interpolation method utilized the elevation above the lower contact of the Basal Zone to provide better geologic continuity of the ore zone. The effect on overall tonnage and grade is not material.
7. ZrO₂ refers to Zirconium Oxide, Nb₂O₅ refers to Niobium Oxide, Ta₂O₅ refers to Tantalum Oxide.
8. See the table below for individual rare earth oxide details.
9. See the table for Basal Zone tonnes and TREO grades at higher NMR cut-off values.
10. Values for HREO/TREO may differ due to rounding.
11. Note that references to the Upper Zone have been omitted. Please see section 1.

**Nechalacho Deposit Measured, Indicated and Inferred Rare Earth Oxide Grades as at August 15, 2013
above a US\$345/tonne NMR Cut-Off⁽¹⁾**

Category	Zone	Tonnes (millions)	La ₂ O ₃ (%)	CeO ₂ (%)	Pr ₆ O ₁₁ (%)	Nd ₂ O ₃ (%)	Sm ₂ O ₃ (%)	Eu ₂ O ₃ (%)	Gd ₂ O ₃ (%)	Tb ₄ O ₇ (%)	Dy ₂ O ₃ (%)	Ho ₂ O ₃ (%)	Er ₂ O ₃ (%)	Tm ₂ O ₃ (%)	Yb ₂ O ₃ (%)	Lu ₂ O ₃ (%)	Y ₂ O ₃ (%)
Measured	Basal	12.56	0.266	0.622	0.078	0.295	0.066	0.0082	0.060	0.0094	0.047	0.008	0.022	0.003	0.017	0.002	0.207
Indicated	Basal	49.33	0.258	0.603	0.074	0.283	0.061	0.0076	0.055	0.0084	0.043	0.007	0.019	0.002	0.015	0.002	0.187
Measured and Indicated	Basal	61.90	0.260	0.607	0.075	0.285	0.062	0.0077	0.056	0.0086	0.043	0.008	0.019	0.003	0.015	0.002	0.191
Inferred	Basal	58.16	0.223	0.528	0.066	0.252	0.051	0.0064	0.046	0.0067	0.033	0.006	0.014	0.002	0.011	0.002	0.136

1. Note that references to the Upper Zone have been omitted. Please see section 1.

**Nechalacho Deposit Measured, Indicated and Inferred Mineral Resources for Basal Zone by
NMR Cut-Off Value as at August 15, 2013 at NMR Cut-off Values over \$345/tonne**

Zone	NMR Cut-Off (\$USD)	Tonnes (millions)	TREO (%)	HREO (%)	HREO/TREO (%)	ZrO ₂ (%)	Nb ₂ O ₅ (%)	Ta ₂ O ₅ (%)
Measured								
Basal	≥345	12.56	1.71	0.38	22.50	3.20	0.405	0.0404
Basal	≥600	8.28	1.98	0.48	24.29	3.79	0.468	0.0480
Basal	≥800	5.11	2.20	0.58	26.17	4.23	0.520	0.0544
Basal	≥1000	2.49	2.49	0.68	27.38	4.77	0.586	0.0620
Indicated								
Basal	≥345	49.33	1.62	0.35	21.27	3.07	0.405	0.0398
Basal	≥600	28.66	1.95	0.45	23.21	3.68	0.472	0.0479
Basal	≥800	16.15	2.20	0.55	24.87	4.13	0.521	0.0542
Basal	≥1000	6.99	2.52	0.66	26.03	4.66	0.583	0.0614
Measured and Indicated								
Basal	≥345	61.90	1.64	0.35	21.53	3.10	0.405	0.0399
Basal	≥600	36.94	1.96	0.46	23.46	3.70	0.471	0.0479
Basal	≥800	21.27	2.20	0.55	25.19	4.15	0.521	0.0543
Basal	≥1000	9.48	2.52	0.66	26.38	4.69	0.584	0.0616
Inferred								
Basal	≥345	58.16	1.38	0.26	18.89	2.80	0.380	0.0351
Basal	≥600	22.41	1.74	0.37	21.09	3.40	0.453	0.0431
Basal	≥800	6.68	2.04	0.49	24.26	3.84	0.502	0.0506
Basal	≥1000	1.81	2.42	0.61	25.31	4.17	0.547	0.0570

The main change in estimation method utilized in this resource estimate was relative elevation. This methodology is one way to adapt the estimation method to the rolling nature of the bottom of the Basal Zone.

10. Mining Operations

Underground mining of the Measured and Indicated mineral resource of the Basal Zone was investigated for the FS. The majority of the mineral resource of the Basal Zone contemplated for development lies directly beneath and to the north of Long Lake, approximately 200 m below surface. Thus, the deposit is to be mined using underground mining methods.

The planned mine production rate is 2,000 t/d (730,000 t/y) of ore and the mine life based

on that portion of the mineral resources that have been defined in sufficient detail to qualify as mineral reserves is 20 years.

Geotechnical information for the mine design was based on geotechnical data collection completed in conjunction with Avalon's ongoing exploration drill program. The analysis indicated that excavations 15 m wide, 5 m high and 100 m in length will be stable with the proper installation of ground support and mitigation strategies.

The deposit at the Nechalacho Project is relatively flat lying and will be mined with a combination of longhole stoping, and cut and fill methods. The mine will be accessed through a mine portal located near the concentrator. The dimensions of the 1,600 metre main ramp were designed to accommodate the overhead conveyor system and access for men and equipment.

Sub-zones less than 10 metres thick will be mined by cut or drift and fill methods in a primary and secondary mining sequence. Sub-zones over 10 metres thick will be mined with longhole stoping. Secondary stopes would be mined after the adjoining primary stopes have been filled. The mining of the secondary stopes would be the same as the mining of the primary stope.

Blasted material would be mucked and transported by rubber tired equipment to the crusher station. The crushed ore would be transported to the surface by conveyor.

Paste backfill will be used to improve the overall mine stability, reduce the surface footprint for the Nechalacho TMF, and enable the extraction of secondary stopes for increased mining recovery.

11. Processing and Recovery Operations

The metallurgical processing described below is that in the FS.

Processing – Flotation Concentrator

The grinding circuit was designed to be a conventional rod mill/ball mill operation. The rod mill will be operated in open circuit, and the ball mill in closed circuit with classifying hydrocyclones. A final grind p80 of 38µm is targeted.

The cyclone overflow was designed to gravitate to two stages of magnetic separation, followed by a desliming circuit. The magnetics from the magnetic separation circuit and the fines from desliming will be routed to tailings. The deslimed slurry will feed the flotation circuit.

This flotation circuit design comprises three stages of bulk flotation, four stages of cleaner flotation and a single cleaner scavenger stage. Flotation concentrate would be pumped to a gravity separation circuit for further enrichment before being thickened and filtered to final product concentrate. The light material (gravity tailings) would be recycled to the bulk rougher flotation circuit.

Concentrate production will be stored in a covered bulk storage facility and shipped to the hydrometallurgical processing plant each summer using barges to cross Great Slave Lake at the rate of 145,000 wet tonnes per year (10% moisture is assumed).

The tailings will be thickened, the overflow from which will be pumped to the process water tank although a portion will be fed to a water treatment plant to remove impurities. The

tailings thickener underflow will be directed to either the TMF or the paste backfill plant. The paste backfill plant has been designed to produce 1,738 t/d of backfill using concentrator tailings.

Processing – Hydrometallurgical Plant

A hydrometallurgical plant in the FS was designed to be built at Pine Point to produce mixed rare earth concentrate from the flotation concentrate at the planned rate of 49,900 tonnes per year (at approximately 16.5% TREO and a secondary product of EZC at the rate of approximately 103,800 tonnes per year (containing 12.5% Zr).

The hydrometallurgical plant designed for Pine Point comprises the following process sections:

- Pre-leach.
- Sulphuric acid bake.
- Water leach.
- Neutralization and impurity removal.
- Impurity removal re-dissolution.
- Rare earth precipitation.
- Waste water treatment.
- Tailings neutralization.

The concentrate barged from Nechalacho would be fed to the pre-leach section of the plant where excess sulphuric acid produced in the water leach section will be used to neutralize the base materials. The product from the pre-leach circuit would be filtered and the solids fed to the acid bake system while the filtrate would feed the iron reduction circuit.

The filter cake from the pre-leach circuit would be mixed with concentrated sulphuric acid and fed into the acid baking rotary kiln where the REE in the concentrate would be converted to sulphates at a temperature of 220°C. The discharge from the acid bake kiln would be leached in water to recover approximately 80% of the LREE and 50% of the HREE. The solids containing the balance of the REE, along with most of the zirconium, niobium and tantalum, would be filtered, washed, neutralized and dried to approximately 8% moisture. This dried product would be packaged and shipped to customers as EZC.

The rare earth filtrate from the water leach process would be cleaned through several neutralization and impurity removal steps. The resulting slurry would be filtered and washed, and the final rare earth precipitate dried to approximately 8% moisture.

In order to minimize process water usage in the plant, tailings water would be recycled into the water leach circuit. Pilot plant results showed no negative changes in REE recoveries with recycled tailings water.

The mixed rare earth concentrate is envisioned in the FS to be shipped in 35-40 tonne capacity sealed containers and taken by truck to the rail head at Hay River and then by rail to a REE Separation Plant and Refinery in Geismar, Louisiana. The Company has investigated the potential for sales of EZC directly to customers, primarily in China.

Tailings from the hydrometallurgical process would be stored in a tailings management facility to be constructed within a historic open pit. Decant water from the tailings management facility will be discharged to an adjacent historic open pit for natural infiltration into the groundwater aquifer.

Rare Earth Separation Plant and Refinery

In August 2011, the Company concluded that rare earth separation and refining should be a part of its development plan and a PFS on the rare earth separation plant and refinery was commissioned and subsequently completed in March 2012. The FS also included a rare earth separation plant and refinery.

In the FS, the separation plant and refinery are planned to be situated adjacent to an existing industrial facility in Geismar, Louisiana where Avalon had a purchase option on a suitably-sized property. Electrical power, fresh water, sodium hydroxide and hydrochloric acid would be supplied via tie-in to an adjacent third party chemical production facility and rail spurs connected to the existing rail line in the adjacent facility would accommodate shipment of concentrate feed stock to and shipment of marketable product from the separation plant. The design capacity in the FS has been based on the PFS capacity of 10,000 tonnes per year of TREO although forecast average annual production from the FS would be approximately 6,800 tonnes of TREO.

The rare earth refinery design consists of two key sections, the leaching plant to remove impurities, and the separation plant where products are separated and refined to the quality required for the customers.

The leaching plant design comprises a series of processes, including re-dissolution of the mixed rare earth precipitate, re-precipitation, solvent extraction and selective precipitation. Impurities, principally uranium and thorium, would be removed in a series of dissolution, selective precipitation, filtration and solvent extraction steps.

The separation plant design uses solvent extraction circuits based on the common Chinese configuration of stages and is divided into 16 extraction steps, each with a specific number of stages for loading, extraction, washing and stripping, and sized according to the feed composition. The design of entire extraction circuits comprises a total of approximately 1,000 mixer/settlers.

The separation plant design will produce 10 different pure rare earth oxides products in accordance with the specifications indicated in the following table.

List of Products from the Rare Earth Separation Plant and Refinery			
Product	Design Plant Production (t/y)	Product Distribution (%)	Feasibility Study Specification ⁽¹⁾
La Oxide	1,583	16.0	3 N
Ce Oxide	3,572	36.0	3 N
Pr Oxide	451	4.0	3 N
Nd Oxide	1,783	18.0	3 N
Sm Oxide	391	4.0	2 N
Eu Oxide	49	0.5	4 N
Gd Oxide	371	4.0	3 N
Tb Oxide	54	0.5	4 N

List of Products from the Rare Earth Separation Plant and Refinery			
Dy Oxide	271	3.0	4 N
Y Oxide	1,170	11.0	5 N
Lu Oxide	14	0.1	3 N
Er/Ho/Tm/Yb Carbonate Mix ⁽²⁾	292	3.0	2 N
Total	10,000	100.0	

NOTES:

- (1) "N" stands for the number of nines purity produced as final product, for example 3 N = 99.9%.
- (2) This stream containing four different rare earth carbonates for which there is limited market at the present time will be stockpiled initially and eventually disposed of if markets are not forthcoming.

A kerosene mixture is used as the extracting agent for most separations. Hydrochloric acid is used as the stripping agent. Deionized water is added in the washing and stripping stages to dilute and adjust the reagent concentrations.

The purified strip solution from the respective solvent extraction stage would feed the atmospheric precipitation tanks where soda ash or oxalic acid is added in order to precipitate the pure REE as carbonates or oxalates, respectively. The slurry streams containing the precipitates are thickened, filtered, dried and calcined to produce pure rare earth oxides. The filtrate is then forwarded to the water treatment facility. The mixed holmium, erbium, thulium, and ytterbium stream will be precipitated as carbonate and, hence, would not be calcined.

The dry rare earth oxide or carbonate products are cooled and then packaged in drums ready for shipment to customers. The product storage facility would provide two weeks capacity, to interface between plant production and continuous product dispatch via rail, air or ocean transportation.

12. Infrastructure, Permitting and Compliance Activities

Permit Status and Environmental Issues

The Nechalacho property is situated in an area known as the Akaitcho Territory, an area which is subject to a comprehensive land claim negotiation involving four communities of the Dene Nation. The area is also subject to a settled Land Claim of the Tli Cho Government who refer to the area as the Monfwe overlap.

Under the Mackenzie Valley Resource Management Act ("MVRMA") and Regulations, the Mackenzie Valley Land and Water Board ("MVLWB") administers land use permits and water licenses. Upon completion of a preliminary screening process, projects deemed to potentially have significant adverse impacts are referred to the Mackenzie Valley Environmental Impact Review Board ("MVEIRB") to initiate an environmental assessment process. The MVRMA allows local and particularly Indigenous input into land and water use permitting. The MVRMA establishes a three-part environmental assessment process:

- Preliminary screening (MVLWB)
- Environmental assessment (MVEIRB)
- Environmental impact review (MVEIRB, if necessary)

Subsequent to the acquisition of the Thor Lake property, and continuation of community engagement meetings, Avalon applied to the MVLWB for an exploration permit, and a two year permit was granted as of July 2007. It was under this permit that the drilling programs in 2007 to April 2009 were conducted. Avalon applied for an extension of this permit in early 2009, and a two year extension was granted by the MVLWB making the permit valid to July 2011. In December 2009, Avalon applied for an addendum to the existing exploration permit to allow for a second drill unit to be added to the program and the construction of a short take-off and landing ("STOL") airstrip. The permit addendum and a separate airstrip land use permit were granted and issued in January 2010 and valid to July 2011. The land use permit for the construction of the airstrip has since been satisfactorily concluded. Current exploration activities at Thor Lake are under a new land use permit issued by the MVLWB on June 23, 2011, that was originally issued for a period of five years beginning on July 5, 2011. However, on July 7, 2016, the MVLWB granted Avalon an extension of this permit to July 4, 2018. On June 19, 2019, a new exploration (Type B) land use permit was issued, valid until 2023, which also included the extension of the airstrip.

On April 23, 2010, Avalon submitted a land use and water license permit application through the MVLWB, for the mining, flotation processing and hydrometallurgical processing in the NWT. Upon completion of the MVLWB preliminary screening process, the Nechalacho Project was referred to the MVEIRB on June 11, 2010, for environmental assessment.

On May 20, 2011, the Company submitted the Developers Assessment Report ("DAR"), (more commonly referred to as an Environmental and Social Impact Statement). In November, 2011, the DAR was deemed by MVEIRB to be in conformity with the terms of reference. First Round information requests were received and addressed from November 2011 to May 2012. In mid-August 2012, Avalon participated in the environmental assessment process technical sessions organized by MVEIRB for various regulators and community representatives. Subsequently, Avalon completed and submitted all additional work and undertakings requested by MVEIRB and other regulators for clarification purposes at the technical sessions. Avalon then entered and completed the Second Round Information Requests stage. The environmental assessment process ended with public hearings held on February 18 – 20, 2013 in Yellowknife, NWT and February 22, 2013 in Fort Resolution, NWT. The final Report of Environmental Assessment (the "Report of EA") was released by MVEIRB on July 26, 2013, recommending approval by the responsible Ministers. This approval was received on November 4, 2013. Applications for the necessary construction and operating permits and licences were submitted in December 2013, and were subsequently amended into a two phase permitting process of 1) low impact site preparation activities and 2) the full construction and operations permits. A Class A Land Use Permit and Class B Water Licence were approved on April 24, 2014 and May 22, 2014 respectively for identified low impact activities including site preparation, early camp erection, portal development and associated infrastructure such as roads, power and water treatment expected to take up to a full year, pending financing. Avalon submitted a \$50,000 security payment for the first phase of this activity and completed the site clearing phase of the project. The additional phases may proceed with the filing of additional site security. The permitting process for the full construction and operating permits continued to advance, including public Technical Review Sessions held in Yellowknife July 22-24, 2014. Responses to intervener comments were initiated in 2014; however, since these technical review sessions the work on these permits has since been progressing intermittently to conserve resources. Approximately 4-6 months would be required to finalize these permits, once the Company commences the final application process. This would not in any way limit the first year of pre-construction activity as approved under the existing permits, qualified by the filing of identified financial assurance. In 2019, the Class A Land Use Permit was renewed, and similarly, the Class B Water License was renewed. In 2020, these permits were again renewed to include both the previously approved Avalon Early Works and to include the

Cheetah/Vital Metal Demonstration plant, following Avalon's review and approval. Cheetah filed the additional financial assurance agreed to with the MVLWB for the Demonstration Plant. The updated Land Use Permit MV2020D0013 now expires in November 29, 2025 and the updated Water License expires November 29, 2027. There is no negative impact to the Avalon project.

In its 220 page Report of EA, MVEIRB set out five measures that, when implemented, will mitigate any predicted environmental impacts so that they are no longer significant. These measures require the Company to:

- Ensure through comprehensive monitoring that the water released from the Nechalacho Project into the receiving environment does not cause significant impacts;
- Develop and implement a wildlife and wildlife habitat protection plan and wildlife effects monitoring program, with an emphasis on caribou, and mitigation if required; and
- Complete a socio-economic agreement with the Government of the Northwest Territories ("GNWT") before construction begins.

Work on advancing plans to implement the measures identified above has been well advanced, including engagement with the Company's Indigenous partners and regulators. As part of its philosophy of open and transparent communications, engagement with Indigenous partners on the environmental management plans required as part of the permitting process was initiated prior to submission to the regulators, helping to both improve the quality of the plans and facilitate the permitting process. Following the technical review sessions with regulators and the communities of interest, the Company has submitted proposed and updated water quality monitoring programs, wildlife and wildlife habitat protection plans and a wildlife effects monitoring program for which discussions are ongoing. The socio-economic agreement has been put on hold pending finalizing of the project designs. Updates to plans were submitted in late 2014 in response to intervener comments and annual reports are submitted to the government as per the water license requirement.

Similarly, in 2020 and 2021, Vital Metals updated the environmental management plans impacted by the Demonstration Plant to manage the associated activities, following the review and approval of Avalon. There is no negative impact to Avalon associated with these changes. Since then, the Avalon project has benefited by the maintenance and upgrade of the camp, roads and infrastructure improvements.

A copy of all information submitted by the Company can be found on MVEIRB's public registry at www.reviewboard.ca.

Avalon has received a letter from Transport Canada that confirmed that the water bodies located within the tailings management facility ("TMF") are not considered navigable and do not require any additional authorizations from Transport Canada. A section 35(2) fisheries authorization or letters of advice from the Department of Fisheries and Oceans ("DFO") under the *Fisheries Act* (Canada) may be required, though the ponds within the TMF are not considered as fisheries habitat (do not contain fish). In addition, a response from DFO to the MVEIRB stated that "DFO has not identified any activities or components of the project that require an authorization or permit under the Fisheries Act". The TMF is included in the Project approval.

Past exploration activity on the Thor Lake property included underground bulk sampling, drilling and trenching on a separate rare metals resource called the North T deposit. Stockpiles of waste rock from underground development have been progressively reclaimed

by Avalon without obligation. Three old construction camp trailers were sent to Yellowknife for disposal while three remaining trailers have been refurbished for future use by Avalon, and a building is being used to store equipment. Recently, an additional trailer deteriorated and was also sent to Yellowknife for disposal. There is little surface disturbance from historical exploration activities apart from miscellaneous buildings, a 60,000 gallon capacity fuel tank farm (empty), a tent camp and a core storage area left on the Thor Lake property. There are no significant environmental liabilities left by past exploration activities. The diesel fuel remaining in the tank farm was consumed during the 2007 and 2008 exploration programs. The Company has undertaken extensive general cleanup of material left from previous exploration utilizing First Nations labour. During 2014, a fire break was constructed around the property and a fire sprinkler system installed in the core storage area as a precaution against forest fires concerns during the year. In 2017 and again in 2019, a site maintenance and cleanup campaign was completed at the exploration camp. Commentary was submitted to the Government of the NWT related to proposed regulatory initiatives with potential to impact the project and the draft caribou management plan on an ongoing basis.

Accessibility, Climate, Physiography and Planned Infrastructure

The Thor Lake property is characterized by low relief, between 230 m and 255 m above sea level and relatively subdued topography. The area is a typical boreal forest of the Canadian Shield and is primarily covered by open growths of stunted spruce, birch, poplar and jack pine which mantle isolated, glaciated rocky outcrops. Approximately one third of the property is occupied by lakes and swamps. Thor Lake is generally shallow with typical depths of the order of three to four metres.

Topography is typical of the Canadian Shield, gently rolling with abundant bedrock exposure with glacial till cover, and numerous shallow lakes. Vegetation is dominated by spruce and poplar which do not grow to a size to be harvested economically.

Air temperature at the Nechalacho site recorded from June, 2008 to October, 2010 displayed typical seasonal fluctuations, with warm temperatures occurring from late May to August, with the coldest period occurring from December to February. The monthly average temperatures expected at site range from -26°C in January to 16°C in July. Monthly average temperatures rise above 0°C for significant periods of time in May and fall below 0°C for significant periods in October.

Average annual total precipitation at Thor Lake is approximately 275 mm. Rainfall predominates during May to October, and snowfall predominates during October to April. Six snow courses were established throughout the Nechalacho site in March, 2009. Mean snow depths varied from 31.3 cm to 66.6 cm in the vicinity of Thor Lake. Forested areas that were generally less exposed to wind had a tendency to accumulate the thickest snowpacks.

Relative humidity is generally highest during the winter months, while summers are generally drier.

The dominant wind direction at the site is from the east-northeast during November to June. Wind directions had a tendency to be more dispersed from July to October; however, an east-northeast trend was still evident. The average hourly wind speed at 20 m above ground level is 4.54 m/s. Wind speeds at 20 m above ground are generally in the range of 2 to 6 m/s, with occasional wind speeds exceeding 10 m/s.

The Thor Lake site has no road access from Yellowknife, although there is a historical 5 kilometre road from the Thor Lake site to the shore of Great Slave Lake. This road is presently used to haul supplies shipped by barge or trucked on an ice road to the Thor Lake site. At the present time, year round access is primarily achieved by aircraft. The use of winter ice

roads on Great Slave Lake is also feasible, but is not included as an integral part of the FS. A temporary barge dock and a materials storage area will be constructed on the shore of Great Slave Lake. A camp, offices, shops, yards, diesel tank farm, propane storage facility, and access roads to the tailings management facility and the barge dock on Great Slave Lake will be developed. Electrical power at the site will be initially provided by a diesel power generating station, supplemented if possible by renewable energy sources including solar power. The diesel plant design is based upon having spare capacity at any given time. Opportunities for the construction of a road to site will continue to be monitored due to the associated reduction in capital and operating costs, and social and safety benefits, though this would be the subject of an additional environmental assessment process. A mine optimization study to evaluate the application of available underground electrification will be completed to further reduce capital and operating costs and reduce green house gas generation.

An ice road was constructed in 2021 to allow Cheetah to ship equipment, supplies and the sensor based sorter to the site, demonstrating its viability and potential benefit to Avalon.

The proposed location of the hydrometallurgical plant contemplated in the FS is at Pine Point, NWT, which is a brownfield site formerly used as a lead/zinc mining operation located 90 kilometres east of Hay River in the NWT. This proposed site is accessible by all-weather roads and highways. A temporary barge dock and yard at the shore of Great Slave Lake would be developed for the movement of concentrate and supplies. Offices, shops, yards, and access roads to the tailings management facility and the temporary barge dock on Great Slave Lake would need to be developed. Clean (low greenhouse gas ("GHG")) electrical power would be obtained from the southern NWT power grid, from the Taltson Dam hydroelectric facility. The use of diesel generators to supplement the grid power is planned for times when hydroelectric power availability is limited at the expanded production rate.

13. Capital and Operating Costs

Capital Cost Estimate

A summary of the FS capital cost estimate for the Nechalacho Project is presented in the following table.

Nechalacho Project Capital Cost Summary			
Cost Category	NWT⁽¹⁾ (\$ million)	LA⁽²⁾ (\$ million)	Total (\$ million)
Mine development	81.58	-	81.58
Main process facilities	351.24	192.51	543.75
Infrastructure	150.68	78.82	229.50
EPCM	119.27	38.57	157.84
Indirect construction costs	175.56	27.25	202.81
Owner's costs	36.76	18.95	55.71
Contingency	120.91	44.90	165.81
Closing costs / bond	13.00	3.16	16.16
Pre-production capital cost	1,049.00	404.16	1,453.16

Nechalacho Project Capital Cost Summary			
Cost Category	NWT ⁽¹⁾ (\$ million)	LA ⁽²⁾ (\$ million)	Total (\$ million)
Sustaining capital	102.72	19.12	121.84
Total capital cost	1,151.72	423.28	1,575.00

NOTES:

- (1) NWT – Costs applicable to the Nechalacho and Pine Point sites in the Northwest Territories.
(2) LA – Costs applicable to Geismar, Louisiana.

The scope of the estimate encompasses the engineering, administration, procurement services, construction, pre-commissioning and commissioning of the project. The estimate was completed to a level consistent with an ACEI (Association of Advanced Cost Engineering International) Class 3 estimate with target accuracy level of $\pm 15\%$, based on second quarter 2012 prices, excluding escalation.

The total estimated pre-production capital cost is \$1.453 million. The life-of-mine sustaining capital is estimated at \$122 million.

Operating Cost Estimate

A summary showing the average annual and life-of-mine unit operating costs by project cost area is presented below.

Life of Mine Average Operating Costs per Project Cost Area		
Project Section	Average Annual Costs (\$ million)	LOM Average Unit Costs (\$/t milled)
Reagents & Consumables	97.2	133.20
Fuel & power	50.7	69.48
Labour	36.7	50.26
Freight	29.4	40.31
G&A	26.8	36.74
Other	23.7	32.29
Project total	264.5	362.28

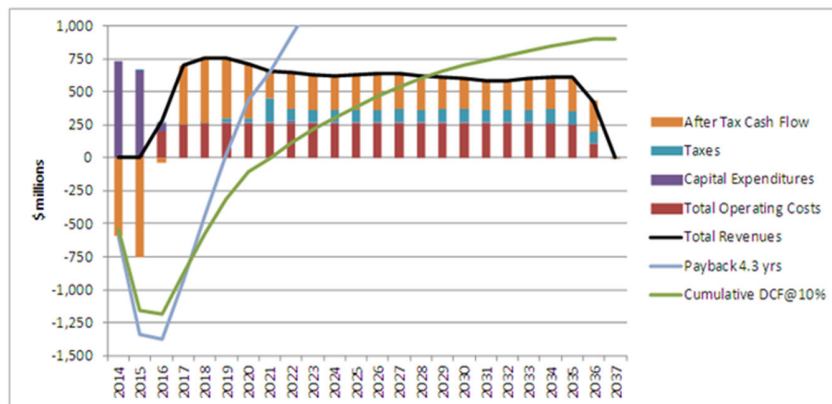
The FS operating cost estimates have been prepared on an annual basis for the life of the mine. The operating cost estimate has been prepared with an estimated level of accuracy of $\pm 15\%$ based on the design of the plant and facilities as described in detail in the FS.

Cash Flow Analysis

An assessment of the project has been prepared on the basis of a discounted cash flow model, from which net present value ("NPV"), internal rate of return ("IRR"), payback and other measures of project viability can be determined. Assessments of NPV are generally accepted within the mineral industry as representing the economic value of a project after allowing for the cost of capital invested. A 10% discount rate is commonly used for the base case.

A summary of the Life of Mine cash flows and the cumulative discounted and undiscounted

cash flows is presented below.



The table below shows the results of the economic evaluation of the FS projected cash flows.

Feasibility Study Economic Evaluation				
	Discount rate (%/year)	Pre-Tax \$ million	After Tax \$ million	Payback (years)
Undiscounted Cash Flow		6,052	4,381	4.3
Net Present Value	8	1,833	1,262	5.5
	10	1,351	900	6.3
	12	981	620	7.2
Internal Rate of Return		22.5%	19.6%	

The FS estimates that the Nechalacho Project provides a payback of 4.3 years on the undiscounted cash flow, or 6.3 years on the cash flow discounted at 10%/year, leaving a considerable reserve "tail". The cash operating margin is seen to remain positive over the whole Life of Mine period, and is particularly strong in the first four years of full production.

14. Exploration, Development and Production

Optimization of the FS

During the course of executing the FS, Avalon had identified a number of opportunities for project optimization that may improve project economics, reduce technical risk, enhance metallurgical recoveries, improve operational efficiencies and to meet environmental requirements. These include:

- Reviewing the current mine plan and design in particular the crusher location, access ramp and paste backfill system.
- Optimization of the crushing and grinding circuit, plant layouts and materials of construction.

- Laboratory testwork on the concentrator flowsheet to further improve reagent selection and flotation recoveries.
- Improvements to the hydrometallurgical plant processes.
- Alternative impurity removal scenarios.
- Potential to separate lanthanum and cerium at the hydrometallurgical plant and stockpile for future sales.
- Potential to reintroduce cracking of zircon to increase direct production of HREE and separate the by-products from the EZC.
- Potential sales of magnetite by-product from the concentrator.
- Potential to defer construction of the refinery and toll process mixed rare earth concentrate through a refinery or refineries built and operated by others.
- Potential to use excess capacity in the refinery to toll process third party production and reduce operating costs.
- Updated environmental studies, including water treatment testing to demonstrate compliance with regulatory requirements.
- Energy options and other potential cost reductions associated with road access.

These opportunities are under consideration and will continue to be investigated as the Nechalacho Project proceeds.

(B) Current Work and Future Plans

Subsequent to the completion of the FS in April 2013, the Company has been investigating optimization opportunities identified in the FS and conducting testwork/technical studies necessary to confirm potential benefits and with a view to potentially updating the development model of specific opportunities among those noted above. A number of design optimization activities were initiated that have focused primarily on improving project economics, improving operation efficiency and reducing project risk. These include the following:

- Underground mine plan, including mining method, underground equipment and facilities;
- Nechalacho site and concentrator building layout and design;
- Hydrometallurgical plant location;
- Concentrate handling and shipping; and
- Metallurgical process development for both the concentrator and hydrometallurgical plant.

In addition, two further drill programs were completed in winter (HQ rig) and summer (PQ rig), 2014. These programs, totalling 22 holes and 4,908 metres, were mainly for the purpose of collecting further mineralized drill core for metallurgical purposes. The geological drill database has been updated but no new resource has been estimated.

Underground Mine

An initial study was carried out to determine the most appropriate mining method to be used. Particular consideration was given to the mining cost, the undulating floor of the Basal Zone, the changing Basal Zone thickness, and the need to be able to maintain a relatively constant grade of ore. A hybrid mining method consisting of "drift and fill" primary stopes, and "up-hole" bulk mining (uppers for the secondary stopes) was selected and a new mine plan developed accordingly for a 2,000 tonnes of ore per day, 20 year life-of-mine operation. Opportunity exists to reduce mine capital and operating costs with electrification of

underground operations using proven technology for this size of operation. Avalon continues to monitor green energy production technology in hope of even more green energy utilization.

Concentrator Plant

The crushing and milling circuits have also been re-examined. The milling circuit can be revised to include a SAG mill allowing the removal of secondary and tertiary crushing and resulting in more energy efficient comminution circuit. A further study concluded that there were both cost and operability advantages in moving the primary crusher from the underground location previously considered, to an above ground location near the SAG mill. This change also included replacing the conveyor system with haul trucks to bring the ore to the surface.

Laboratory testwork and a pilot plant trial of an updated Concentrator flowsheet have also been completed. This work has confirmed a potential overall improvement in REE flotation recoveries to approximately 89% (compared to approximately 78% in the FS) using a simpler and easier to operate flowsheet.

These results were achieved using a flowsheet without de-sliming ahead of flotation, with no gravity enrichment of final concentrate and with zero recycling of tailings from the four stages of cleaner flotation; all of which will result in a simpler plant to operate. The principal change has been the introduction of a superior reagent suite together with an increase in the flotation mass pull from 18.0% to 21.4%.

Environmental testing of the new tailings composition from the modified reagent suite has indicated no negative impacts on environmental performance. A simplified flowsheet is anticipated to improve environmental performance through reduced energy use, reduced carbon dioxide emissions and improvements in water treatment efficiencies.

As part of the optimization work, potential modifications are expected to be made to the site layout and the concentrator including revising the milling equipment and developing the surface ore handling/crushing area, modifying the equipment layout in the concentrator building and reducing the required size and volume of the building.

Hydrometallurgical Plant Flowsheet

Significant modifications to the Hydrometallurgical Plant flowsheet are now envisaged based on the extensive testwork program undertaken since the FS.

This flowsheet optimization work for the Hydrometallurgical Plant has resulted in the development of an alkali cracking process to potentially replace the sulphuric acid baking used to treat the flotation concentrate in the FS. Optimization of this flowsheet is nearly completed with the details around reagent recovery and recycling being the only outstanding items. Work here has indicated an 80% reduction in hydrochloric acid ("HCl"), 90% reduction in magnesium oxide and almost 100% reduction in calcium carbonate could be achievable.

The sulphuric acid baking process utilized in the FS resulted in approximately 47% of the HREE contained in the flotation concentrate (as well as the niobium and tantalum) remaining trapped in the Enriched Zirconium Concentrate ("EZC") specialty by-product. The alkali cracking process successfully alters (or "cracks") the zircon in the flotation concentrate which enables the contained HREE (and most of the zirconium) to be released into solution. Total HREE recoveries reporting to the Refinery could now be in excess of 90% of the HREE in the flotation concentrate, as opposed to the approximately 52% recovery contemplated in the FS.

In addition, the alkali cracking process would allow for the recovery of zirconium in a form for which there is already established markets.

A further benefit of this alternative process is that the hydrochloric acid will be recovered without the use of sulphuric acid and the production of large volumes of gypsum waste. Instead, a clean sodium chloride (salt) waste product is produced which is easier to dispose of and could potentially be of some use. The reduction in HCl transport achieved through recycling is an additional cost and sustainability advantage.

Light rare earth element ("LREE") leach recoveries are also generally improved with the updated flowsheet (with the exception of cerium which becomes oxidized during the cracking process, making it less amenable to the acid leaching).

Hydrometallurgical Plant Location

Several sites in western Canada are under consideration for the location of a potential new Hydrometallurgical Plant design. The original design contemplated in the FS was planned to be located in Pine Point, NWT, but this area has insufficient infrastructure to support the new potential plant design. Geismar was also considered as a potential location, but costs for transporting the concentrate to Louisiana remain high. Eventually a number of potential sites meeting the necessary infrastructure requirements were identified in Saskatchewan and Alberta and these are now undergoing further evaluation. An excellent potential site was identified in Saskatchewan, but nothing has yet been finalized.

The potential for relocating the Hydrometallurgical Plant outside the Pine Point, NWT area would likely require the shipment of concentrate by rail from Hay River, NWT. The entire shipping process has been carefully looked at including the containers required both for barge shipment and rail shipment, the concentrate loading requirements at Nechalacho, barging across Great Slave Lake, rail car requirements for shipment from Hay River, and a storage/trans-shipment facility at Hay River. A concept has been developed to include all of the shipping components from container loading at Nechalacho to railcar loading in Hay River in a single contract, potentially reducing project capital costs and simplifying the shipping operation.

It is noted that these changes have been presented to the regulators, Indigenous groups and other communities of interest and due to the environmental benefits of these changes associated with lower energy use, fewer reagents and water treatment benefits, are not considered significant and will not impact on the permitting process in the NWT.

Metallurgical Process Development

Recent work has focused on various optimization opportunities within the FS base case flowsheets for the Concentrator and in particular for the Hydrometallurgical Plant.

A further integrated pilot plant campaign has been planned, but will only proceed when funding becomes available. This is designed to fully evaluate process performance particularly with the incorporation of the acid recovery circuit(s) and associated recycle streams and would include all unit operations from crushing of ore right through to the generation of a mixed rare earth precipitate. The total bulk sample of ore required for this pilot plant is approximately eight tonnes. The material is being stored in Yellowknife, until such time as the funding becomes available to proceed with the pilot plant work, presently estimated at approximately \$4.0 million. There is no firm timeline for when this work will be carried out.

Efforts to recover the niobium and tantalum from the solid residue after acid leaching have so far proved unsuccessful and work in this regard has been placed on hold. This latest work has confirmed that total HREE recoveries of approximately 93% can be achieved in the hydrometallurgical plant directly from the flotation concentrate.

The final economics for the potential revised process are still being determined. However, initial estimates of increased power and reagent consumption associated with the processes and logistical issues have necessitated consideration of alternative locations for the hydrometallurgical plant with better infrastructure and reagent availability.

In Fiscal 2016 Avalon conducted metallurgical testwork investigations related to the potential recovery of zirconium and production of marketable quality zirconium basic sulphate ("ZBS") and zirconium oxychloride ("ZOC") products.

Refinery

In early 2014 the Company entered into an agreement which would have had Solvay toll-process the Company's rare earth concentrate into separated and purified rare earth oxides rather than the Company building its own refinery. In early 2016 Avalon and Solvay mutually terminated their refining agreement and left the door open to initiate discussions on an updated refining toll contract when market conditions became favorable for such discussions to take place.

Mineral Reserves

As part of its annual procedures the Company analyzes price trends and other factors as they may impact the determination of its mineral reserves. As part of this analysis, the Company obtained a new price forecast from a third party, which indicates that the long term REE average net price forecast would be now approximately US\$93/kg compared to the US\$62.91/kg used in the resource estimate. Furthermore, the exchange rate used in the resource estimate was US\$1=CAD\$1.05 and current forecasts for the exchange rate are closer to US\$1=CAD\$1.30. As all of the projected revenues, and less than a third of the projected costs are expected to be denominated in US dollars, this has a significantly beneficial effect on the determination of the mineral reserves. Refined zirconium prices are also currently in the US\$9.64/kg range compared to the US\$3.77/kg used in the mineral estimate. Niobium and Tantalum do not have a significant impact on the resource estimate. The Company also updated its expected capex and opex costs by using a variety of public inflation factors. Accordingly, the Company is of the opinion that its determination of its mineral reserves is still valid.

Current Development and Permitting Plans

Avalon and Cheetah closed the sale of the near-surface resources in Fiscal 2020. Avalon and Cheetah formed a jointly-owned corporation to hold the exploration permits and related authorizations related to Nechalacho. Avalon and Cheetah also entered into a co-ownership agreement governing each party's activities and management at site. Cheetah has implemented maintenance and additional infrastructure development at site that are of benefit to Avalon, and future additional development could further reduce Avalon's future development costs on its own portion of the Nechalacho Project. Cheetah has filed financial assurance that was approved by the NWT regulator for all their activities in the T Zone, which reduces Avalon's overall site closure liability.

The property is situated in an area referred to as the Akaitcho Territory, an area which is subject to comprehensive native land claim negotiations between the Government of Canada

and the Treaty 8 Tribal Corporation, which consists of the Yellowknives Dene First Nation ("YKDFN"), the Deninu K'ue First Nation ("DKFN") and the Lutsel K'e Dene First Nation ("LKDFN"). The Company has signed an Accommodation Agreement with the DKFN. The Company also recognizes that the Tłı̄cho First Nation ("TFN") has a settled land claim with the Government of Canada which provides for certain harvesting rights in the area of the Nechalacho site. The general area around the Nechalacho site is subject to Indigenous rights asserted by two Métis organizations: the Northwest Territory Métis Nation ("NWTMN") and the North Slave Métis Alliance ("NSMA"). During 2014, Avalon concluded a Participation Agreement with the NWTMN and commenced discussions with the NSMA.

Avalon completed a brief geological program in July 2019 at the project on behalf of Cheetah. This work assisted in drill targeting for a drill program planned and completed by Avalon in September-October, 2019 on behalf of Cheetah. Cheetah has successfully initiated production on the T-Zone resource, such that Avalon anticipates future opportunities to expand production at the site by reactivating work on its heavy rare earth rich Basal Zone resource.

Avalon's next steps are primarily focused on continuing its process optimization work and new product development, with a view toward producing an updated technical report incorporating the results of such work. Other goals include completing the acquisition of the operations land use permit and water license, carrying out an additional pilot plant trial of the new hydrometallurgical plant flowsheet (to confirm reagent recycle performance), finalize detailed plant designs and engineering, assess electrification of its underground operations to reduce green house gas emissions and to lower capital and operating costs, securing commitments on offtake and arranging project financing. Avalon continues to monitor regulatory changes in the NWT in order to prepare for and facilitate permitting for its development of the project. Avalon is working with Cheetah to update environmental management plans to ensure alignment with regulatory changes, to the benefit of both companies. Avalon is also monitoring and lobbying for the development of infrastructure in the NWT along with interested Indigenous stakeholders. A road and power line to or near to the mine site from Yellowknife for example, could have multiple benefits to the NWT as well as significantly reducing capital and operating costs while improving the social benefits of the project.

While the Nechalacho Project has been relatively inactive since 2014, the Company continues to monitor REE markets closely and there is now renewed demand with supplies being limited and still largely controlled by China. The anticipated increase in demand for electric vehicles ("EV"s) in the coming years, and the need for high strength permanent magnets in the electric motors for these vehicles have sparked a significant increase in price for the "magnet rare earths" neodymium ("Nd") and praseodymium ("Pr") in recent years. In Fiscal 2019 and 2020, interest in creating new rare earth supply chains outside China has revived due to the ongoing uncertainty around security of supply in the wake of the recent US-China "trade war" and permitting issues Lynas Corporation has faced in maintaining operations with its Rare Earth Separation Plant and Refinery in Malaysia.

There is also growing interest in new supply sources of zirconium in North America because zirconium metal is a critical material in nuclear reactor technology. With small modular reactors ("SMRs") now in demand as a clean energy alternative to diesel generators at remote sites in North America, a new supply source is needed to serve the growing demand creating an additional opportunity for re-activating the Nechalacho Basal Zone Project.

The key factors going forward influencing the timely execution of the Nechalacho Project are securing one or more strategic or financial partners, securing sufficient binding agreements for offtake to support project financing, the availability of equity and debt financing at a

reasonable cost and receipt of all requisite construction and operating permits.

6. Dividends

To date, the Company has not paid any dividends on its common shares and anticipates that it will retain all future earnings and other cash resources for the future operation and development of its business. The Company does not intend to declare or pay any cash dividends in the foreseeable future. Payment of any future dividends will be at the discretion of the Company's Board of Directors after taking into account many factors, including the Company's operating results, financial condition and current and anticipated cash needs.

7. Description of Capital Structure

Avalon's authorized share structure consists of an unlimited number of common shares, of which 406,948,106 common shares were outstanding as at August 31, 2022 and 25,000,000 preferred shares, of which 950 have been issued and none were outstanding as at August 31, 2022. As of the date of this AIF, Avalon had 417,473,214 common shares issued and outstanding and no preferred shares were outstanding.

Common Shares

All issued and outstanding common shares are fully paid and non-assessable. Holders of common shares of the Company are entitled to receive notice of any meetings of shareholders of the Company, to attend and to cast one vote per common share of the Company at all such meetings. Holders of common shares of the Company do not have cumulative voting rights with respect to the election of directors and, accordingly, holders of a majority of the common shares of the Company entitled to vote in any election of directors may elect all directors standing for election. Holders of common shares are entitled to receive on a pro-rata basis such dividends, if any, as and when declared by the Board of Directors of the Company at its discretion from funds legally available therefore and upon the liquidation, dissolution or winding up of the Company are entitled to receive on a pro-rata basis the net assets of the Company after payment of debts and other liabilities, in each case subject to the rights, privileges, restrictions and conditions attaching to any other series or class of shares ranking senior in priority to or on a *pro-rata* basis with the holders of common shares of the Company with respect to dividends or liquidation. The common shares of the Company do not carry any pre-emptive, subscription, redemption or conversion rights, nor do they contain any sinking or purchase fund provisions.

Series A1 Preferred Shares

The holder of the Series A1 Preferred Shares (the "Holder") then outstanding shall not be entitled to receive any dividend on Series A1 Preferred Shares. The Holder may not transfer, sell or trade the Series A1 Preferred Shares. The Series A1 Preferred Shares redemption value that starts at \$5,000 per share and increases by \$250 per share each quarter over a 24 month period ending on March 10, 2019, to a cap of \$6,750 per share. The Holder may convert the Series A1 Preferred Shares into common shares from time to time at a price per common share equal to 85% of the five-day volume weighted average price of the common shares on the TSX immediately prior to the date that notice of conversion is given. The Holder is entitled to certain adjustments if there shall occur any reorganization, recapitalization, reclassification, consolidation, arrangement, subdivision, amalgamation or merger involving the Company. In certain circumstances, the Holder is entitled to accelerate its conversion right to the full amount of the redemption value applicable at such time, or demand repayment of the applicable redemption value per share in cash, upon the occurrence of certain events

(the "Redemption Events"). The triggering Redemption Events include certain key financial and non-financial conditions, which include change of control, insolvency and liquidity conditions. These Redemption Events also limit the Company from obtaining other debt or preferred share financings that are not junior to the Preferred Shares other than certain project-related financings, as well as other at-the-market, equity lines or credit type of common share offerings, or convertible security financings where the price of the common share is not fixed at a predetermined price. In addition, if the Redemption Event is a change of control event, the redemption amount will be equal to 110% of the applicable redemption amount at that time. The Company has the right to redeem all of the outstanding Series A1 Preferred Shares at any time at a 5% premium to the redemption value. The Company also has floor price protection such that if any conversion results in an effective conversion price of less than \$0.10 per common share, then the Company has the right to deny the conversion and instead redeem the Series A1 Preferred Shares that were subject to that conversion for the redemption amount in cash plus a 5% premium.

Series B1 Preferred Shares

The holder of the Series B1 Preferred Shares (the "B1 Holder") then outstanding shall not be entitled to receive any dividend on Series B1 Preferred Shares. The B1 Holder may not transfer, sell or trade the Series B1 Preferred Shares. The Series B1 Preferred Shares redemption value that starts at \$5,000 per share and increases by \$250 per share each quarter over a 24 month period ending on January 15, 2020, to a cap of \$6,750 per share. The B1 Holder may convert the Series B1 Preferred Shares into common shares from time to time at a price per common share equal to 85% of the five-day volume weighted average price of the common shares on the TSX immediately prior to the date that notice of conversion is given. The B1 Holder is entitled to certain adjustments if there shall occur any reorganization, recapitalization, reclassification, consolidation, arrangement, subdivision, amalgamation or merger involving the Company. In certain circumstances, the B1 Holder is entitled to accelerate its conversion right to the full amount of the redemption value applicable at such time, or demand repayment of the applicable redemption value per share in cash, upon the occurrence of certain events (the "Redemption Events"). The triggering Redemption Events include certain key financial and non-financial conditions, which include change of control, insolvency and liquidity conditions. These Redemption Events also limit the Company from obtaining other debt or preferred share financings that are not junior to the Preferred Shares other than certain project-related financings, as well as other at-the-market, equity lines or credit type of common share offerings, or convertible security financings where the price of the common share is not fixed at a predetermined price. In addition, if the Redemption Event is a change of control event, the redemption amount will be equal to 110% of the applicable redemption amount at that time. The Company has the right to redeem all of the outstanding Series B1 Preferred Shares at any time at a 5% premium to the redemption value. The Company also has floor price protection such that if any conversion results in an effective conversion price of less than \$0.10 per common share, then the Company has the right to deny the conversion and instead redeem the Series B1 Preferred Shares that were subject to that conversion for the redemption amount in cash plus a 5% premium.

Series C1 Preferred Shares

The holder of the Series C1 Preferred Shares (the "C1 Holder") then outstanding shall not be entitled to receive any dividend on Series C1 Preferred Shares. The C1 Holder may not transfer, sell or trade the Series C1 Preferred Shares. The Series C1 Preferred Shares redemption value that starts at \$5,000 per share and increases by \$250 per share each quarter over a 24 month period ending on June 29, 2020, to a cap of \$6,750 per share. The C1 Holder may convert the Series C1 Preferred Shares into common shares from time to time

at a price per common share equal to 85% of the five-day volume weighted average price of the common shares on the TSX immediately prior to the date that notice of conversion is given. The C1 Holder is entitled to certain adjustments if there shall occur any reorganization, recapitalization, reclassification, consolidation, arrangement, subdivision, amalgamation or merger involving the Company. In certain circumstances, the C1 Holder is entitled to accelerate its conversion right to the full amount of the redemption value applicable at such time, or demand repayment of the applicable redemption value per share in cash, upon the occurrence of certain events (the "Redemption Events"). The triggering Redemption Events include certain key financial and non-financial conditions, which include change of control, insolvency and liquidity conditions. These Redemption Events also limit the Company from obtaining other debt or preferred share financings that are not junior to the Preferred Shares other than certain project-related financings, as well as other at-the-market, equity lines or credit type of common share offerings, or convertible security financings where the price of the common share is not fixed at a predetermined price. In addition, if the Redemption Event is a change of control event, the redemption amount will be equal to 110% of the applicable redemption amount at that time. The Company has the right to redeem all of the outstanding Series C1 Preferred Shares at any time at a 5% premium to the redemption value. The Company also has floor price protection such that if any conversion results in an effective conversion price of less than \$0.10 per common share, then the Company has the right to deny the conversion and instead redeem the Series C1 Preferred Shares that were subject to that conversion for the redemption amount in cash plus a 5% premium.

8. Market for Securities

8.1 Trading Price and Volume

Avalon's common shares became listed and posted for trading on the TSX on February 28, 2008 under the trading symbol "AVL", prior to which they were listed on the TSX Venture Exchange under the same trading symbol. Effective November 22, 2018, the Company's common shares are traded on the OTCQB Venture Market in the United States under the symbol "AVLNF", prior thereto they were traded on the OTCQX Best Market commencing on December 18, 2015, under the same trading symbol. The Company's common shares were listed on the NYSE American in the United States also under the trading symbol "AVL" from December 22, 2010 until December 17, 2015. The Company's common shares are also traded on the Frankfurt Stock Exchange in Germany under the symbol "OU5".

The following table sets out the range of the market price and trading volumes of the common shares on the TSX for the most recently completed fiscal year:

Period	High (\$)	Low (\$)	Volume
2022			
August	0.150	0.110	11,347,522
July	0.130	0.100	6,139,500
June	0.130	0.110	6,115,526
May	0.180	0.120	8,067,333
April	0.235	0.145	24,886,073
March	0.185	0.105	12,089,160

Period	High (\$)	Low (\$)	Volume
February	0.140	0.110	4,290,532
January	0.150	0.105	8,229,204
2021			
December	0.115	0.090	6,397,286
November	0.135	0.100	6,468,635
October	0.135	0.105	6,007,085
September	0.125	0.105	5,764,116

8.2 Prior Sales

Not applicable.

9. Escrowed Securities and Securities Subject to Contractual Restrictions on Transfer

Not applicable.

10. Directors and Officers

10.1 Name, Occupation and Security Holdings

The name, province or state and country of residence of each executive officer and director of Avalon, including their positions with Avalon, committee memberships and principal occupation for the past five years, the period during which each has served as a director of Avalon (as applicable), as of the date of this AIF are as follows:

Name, Province/State and Country of Residence	Position with the Company	Principal Occupation	Director Since
Donald S. Bubar Ontario, Canada	Director, President and CEO	President and CEO of the Company	February 17, 1995
Alan Ferry ⁽¹⁾⁽²⁾ Ontario, Canada	Director, Chair of the Board	Self-employed businessperson; Director, Plateau Energy Metals Inc. 2006-2021; Director, Guyana Goldfields Inc. 1998-2019.	February 24, 2000
Naomi Johnson ⁽²⁾ Ontario, Canada	Director	Self-employed businessperson; Practice Manager- Extractives, World Bank 2022- present; Social Performance Principal, Anglo American 2021-2022; Vice President of Community Relations at Titan Mining Corporation from	September 10, 2019

Name, Province/State and Country of Residence	Position with the Company	Principal Occupation	Director Since
		April 2018 to January 2019, prior thereto Partner and Senior Director, Community Relations, Barrick Gold Corporation, January 2016 to November 2017;	
John E. Fisher ⁽¹⁾⁽²⁾ Ontario, Canada	Director	Retired businessperson; prior thereto President and CEO, Walker Industries Holdings Limited	February 25, 2020
Marilyn Spink ⁽¹⁾ Ontario, Canada	Director	Self-employed businessperson; prior thereto Head of Project Systems, Ausenco, September, 2021 to September, 2022, prior thereto Manager, DMC Mining, July 2018 to April 2019; prior thereto Project manager/Pm Coach, Isherwood, February 2014 to July 2018	June 8, 2020
Harvey L. A. Yesno Ontario, Canada	Director	Self-employed businessperson; Chief of the Eabametoong First Nation 1991-2021	December 29, 2021
R. James Andersen Ontario, Canada	Vice President, Finance, CFO and Corporate Secretary	Officer of the Company since June 2001	Not applicable
Zeeshan Syed Ontario, Canada	Vice President, External Affairs	Officer of the Company since January 2022; prior thereto employee of the Company since January 2021; prior thereto consultant to the Company since November 2019; prior thereto self-employed businessperson	Not applicable

Notes:

(1) Member of the Audit Committee.

(2) Member of the Corporate Governance and Nominating Committee.

The directors and executive officers of the Company, as a group, beneficially own, control or direct, directly or indirectly, 9,990,800 common shares of the Company, representing 2.4% of the issued and outstanding common shares of the Company as of the date hereof.

The term of office for each director expires at the next annual meeting of shareholders at which his successor is elected unless, prior thereto, a director resigns or is removed from office or otherwise ceases to be qualified as a director, in each case in accordance with the CBCA.

10.2 Cease Trade Orders, Bankruptcies, Penalties or Sanctions

To the Company's knowledge, no director or executive officer of the Company is, as of the date hereof, or was within ten years before the date hereof, a director, chief executive officer or chief financial officer of any company (including the Company) that:

- (i) was subject to a cease trade order, an order similar to a cease trade order, or an order that denied the relevant company access to any exemption under securities legislation, that was in effect for a period of more than 30 consecutive days (an "Order") that was issued while the director or executive officer was acting in the capacity as director, chief executive officer or chief financial officer; or
- (ii) was subject to an Order that was issued after the director or executive officer ceased to be a director, chief executive officer or chief financial officer and which resulted from an event that occurred while that person was acting in the capacity as director, chief executive officer or chief financial officer.

To the Company's knowledge, no director or executive officer of the Company, or a shareholder holding a sufficient number of the securities of the Company to affect materially the control of the Company:

- (i) is, as at of the date hereof, or has been, within the ten years before the date hereof, a director or executive officer of any company (including the Company) that, while that person was acting in that capacity, or within a year of that person ceasing to act in that capacity, became bankrupt, made a proposal under any legislation relating to bankruptcy or insolvency or was subject to or instituted any proceedings, arrangement or compromise with creditors or had a receiver, receiver manager or trustee appointed to hold its assets; or
- (ii) has, within the ten years before the date hereof, become bankrupt, made a proposal under any legislation relating to bankruptcy or insolvency, or become subject to or instituted any proceedings, arrangement or compromise with creditors, or had a receiver, receiver manager or trustee appointed to hold the assets of the director, executive officer or shareholder.

To the Company's knowledge, no director or executive officer of the Company, or a shareholder holding a sufficient number of securities of the Company to affect material control of the Company, has been subject to:

- (i) any penalties or sanctions imposed by a court relating to securities legislation or by a securities regulatory authority or has entered into a settlement agreement with a securities regulatory authority, or
- (ii) any other penalties or sanctions imposed by a court or regulatory body that would likely be considered important to a reasonable investor in making an investment decision.

10.3 Conflicts of Interest

To the best of the Company's knowledge, and other than as disclosed in this AIF, there are no known existing or potential conflicts of interest between the Company and any director or officer of the Company, except that certain of the directors and officers serve as directors and officers of other public companies, and therefore it is possible that a conflict may arise between their duties as a director or officer of the Company and their duties as a director or officer of such other companies. See "Risk Factors".

11. Promoters

Not applicable.

12. Legal Proceedings and Regulator Actions

12.1 Legal Proceedings

Not applicable.

12.2 Regulatory Actions

Not applicable.

13. Interest of Management and Others in Material Transactions

Not applicable.

14. Transfer Agent and Registrar

The Company's transfer agent and registrar is TSX Trust Company, with its principal office at 100 Adelaide Street West, Suite 301, Toronto, ON M5H 1S3.

15. Material Contracts

Not applicable.

16. Interests of Experts

16.1 Names of Experts

Unless otherwise stated, the technical information set forth herein relating to the Nechalacho Project, is substantially derived from and in some instances extracted from the Nechalacho Technical Report prepared by Tudorel Ciuculescu, M.Sc., P.Geo. of RPA, Kevin Hawton, P.Eng. of Knight Piesold Limited, and Bernard Foo, P.Eng., Richard Gowans, P.Eng., Christopher Jacobs, C.Eng., MIMMM, and Jane Spooner, P.Geo., all of Micon, each of whom is a qualified person pursuant to NI 43-101.

Unless otherwise stated, the technical information set forth herein relating to the Separation Rapids Lithium Project is substantially derived from and in some instances extracted from the Separation Rapids Technical Report prepared by Steven R. Aiken, P.Eng. and Kevin E. Hawton, P.Eng. of Knight Piesold Limited, Richard Gowans, P.Eng., Christopher Jacobs, CEng, MIMMM, EurIng, Bruce Pilcher, CEng, FIMMM, FAusIMM(CP) and Jane Spooner, P.Geo, all of Micon, and William Mercer, Ph.D., P.Geo, each of whom is a qualified person pursuant to NI 43-101.

Unless otherwise stated, the technical information set forth herein relating to the East Kemptville Tin-Indium Project is substantially derived from and in some instances extracted from the technical report entitled "The East Kemptville Tin Production and Site Remediation Project Preliminary Economic Assessment, Nova Scotia, Canada" dated August 30, 2018, effective July 24, 2018 and prepared by Richard Gowans, P.Eng., Christopher Jacobs, CEng, MIMMM, Dayan Anderson, M.S., MMSA and Jane Spooner, P.Geo, all of Micon, Donald H. Hains, BSc, MBA, P. Geo of Hains Engineering Company Limited, Reid Smith, M.A.Sc. P.Geo. of Stantec Consulting Ltd. and William Mercer, Ph.D., P.Geo, each of whom is a qualified person pursuant to NI 43-101.

Donald S. Bubar, P. Geo., President and Chief Executive Officer of the Company, is the qualified person who prepared or supervised the preparation of, or reviewed and approved, as applicable, the technical information (including the technical information relating to mineral processing and metallurgy) contained in this AIF.

16.2 Interests of Experts

Other than 8,726,100 common shares of the Company held by Mr. Bubar, the aforementioned firms and persons held either less than one percent or no securities of the Company or of any associate or affiliate of the Company at or following the time when they prepared the technical reports, or prepared or supervised the preparation of, or approved, as applicable, the technical information contained in this AIF, and either did not receive any or received less than a one percent direct or indirect interest in any securities of the Company or of any associate or affiliate of the Company in connection with the preparation, supervision of the preparation, or approval, of such disclosure.

Other than Mr. Bubar, who is currently an officer and director of the Company, none of the aforementioned persons, nor any directors, officers or employees of such aforementioned firms, is currently expected to be elected, appointed or employed as a director, officer or employee of the Company or of any associate or affiliate of the Company.

Ernst & Young LLP, Chartered Professional Accountants ("Ernst & Young") is the independent auditor of the Company in respect of the audited consolidated financial statements of the Company for the year ended August 31, 2022, and the auditor's report thereon. Ernst & Young has advised the Company that it is independent within the meaning of the Rules of Professional Conduct of the Chartered Professional Accountants of Ontario.

17. Additional Information

Additional information relating to the Company can be found under the Company's profile on the SEDAR website at www.sedar.com. Additional information, including directors' and officers' remuneration and indebtedness, principal holders of the Company's securities and securities authorized for issuance under equity compensation plans, if applicable, is contained in the Company's information circular for its most recent annual meeting of shareholders. Additional financial information is provided in the Company's audited consolidated financial statements and management's discussion and analysis for its most recently completed financial year.

18. Audit Committee Information

18.1 Charter

The responsibilities and duties of the audit committee (the "Audit Committee") of the Board

of Directors of the Company are set out in the Audit Committee’s Charter (the “Charter”), the text of which is set forth in Appendix A to this AIF.

18.2 Composition

Name	Independent Yes/No	Financially Literate Yes/No
Alan Ferry, Chair	Yes	Yes
John E. Fisher	Yes	Yes
Marilyn Spink	Yes	Yes

18.3 Relevant Education and Experience

Mr. Ferry is a retired Chartered Financial Analyst with over 25 years of experience as a mining analyst with various investment dealers. He holds a B.Sc. in Geology and serves on the board of directors of one publicly traded company and the audit committee of one publicly traded company.

Mr. Fisher is a retired business person who has worked in base and precious metals exploration in western and northern Canada for companies including Noranda Exploration and United Keno Hill Mines. He has an Honours Bachelor of Science degree in Geology from Queen’s University (1981) and a Master of Business Administration (finance) degree from McMaster (1984). He has extensive experience in the construction materials and waste management industries, most recently acting as President & CEO of Walker Industries, a private aggregates, waste disposal, and specialty chemical manufacturing company with over a thousand employees.

Ms. Spink is a professional engineer with over 30 years of experience in operations and global project delivery experience in the mining, minerals, metals and heavy industrial sector. Ms. Spink holds a Bachelor of Applied Science, Materials and Metallurgical Engineering from Queen’s University. An experienced corporate director, technical business leader and dynamic strategist committed to collaboratively supporting an organization to meet its strategic objectives employing governance best practices with a particular focus on human capital strategy, cultural transformations and business systems implementation. She has previously led an organization change management initiative while overseeing a team of 20 working on a \$1 billion project to develop the first high profile mine in the UK in the past 40 years.

18.4 Reliance on Certain Exemptions

Not applicable.

18.5 Reliance on the Exemption in Subsection 3.3(2) or Section 3.6

Not applicable.

18.6 Reliance on Section 3.8

Not applicable.

18.7 Audit Committee Oversight

Not applicable.

18.8 Pre-Approval Policies and Procedures

The Audit Committee is required to pre-approve all non-audit engagements of the external auditors prior to the commencement of the engagement.

18.9 External Auditor Service Fees

The following table provides details in respect of audit, audit related, tax and other fees paid by the Company to Ernst & Young, LLP for professional services:

Reporting Period	Audit Fees ⁽¹⁾	Audited-Related Fees ⁽²⁾	Tax Fees ⁽³⁾	All Other Fees ⁽⁴⁾
August 31, 2022	\$80,000	\$Nil	\$Nil	\$Nil
August 31, 2021	\$110,000	\$Nil	\$Nil	\$Nil

Notes:

- (1) "Audit Fees" include the aggregate professional fees billed by the Company's auditor for the audit of the annual financial statements and other regulatory audits and filings.
- (2) "Audit-Related Fees" include professional fees billed by the Company's auditor related to assurances and related services related to the performance of the audit or review of financial statements not included in "Audit Fees".
- (3) "Tax Fees" include the aggregate fees billed for professional services rendered for tax compliance, tax advice and tax planning.
- (4) "All Other Fees" include the aggregate fees billed for products and services other than as set out under the headings "Audit Fees", "Audit Related Fees" and "Tax Fees".

Appendix A - Charter of the Audit Committee

AVALON ADVANCED MATERIALS INC. Audit Committee Charter

1. PURPOSE

- (a) The Audit Committee ("Committee") is a committee of the board of directors (the "Board") of Avalon Advanced Materials Inc. (the "Company"). Its primary function shall be to assist the Board in fulfilling its oversight responsibilities with respect to:
- (i) the financial reporting process and the quality, transparency and integrity of the Company's financial statements and other related public disclosures;
 - (ii) the Company's internal controls over financial reporting;
 - (iii) the Company's compliance with legal and regulatory requirements relevant to the financial statements and financial reporting;
 - (iv) ensuring that there is an appropriate standard of corporate conduct for senior financial personnel and employees including, if necessary, adopting a corporate code of ethics;
 - (v) the external auditors' qualifications and independence; and
 - (vi) the performance of the internal audit function (if any) and the external auditors.
- (b) The function of the Committee is oversight. The members of the Committee are not full-time employees of the Company. The Company's management is responsible for the preparation of the Company's financial statements in accordance with applicable accounting standards and applicable laws and regulations. The Company's external auditors are responsible for the audit or review, as applicable, of the Company's financial statements in accordance with applicable auditing standards and laws and regulations.

2. COMPOSITION

- (a) The Committee shall be appointed by the Board annually on the recommendation of the Compensation, Governance and Nominating Committee and shall be comprised of a minimum of three directors. If an appointment of members of the Committee is not made as prescribed, the members shall continue as such until their successors are appointed. The Board may remove a member of the Committee at any time in its sole discretion by resolution of the Board.
- (b) All members of the Committee shall be directors whom the Board has determined are independent and "financially literate", taking into account the applicable rules and regulations of securities regulatory authorities and/or stock exchanges.
- (c) The Chair of the Committee will be designated by the Board from among the members of the Board appointed to the Committee. Such Chair shall serve as a liaison between members and senior management. If for any reason a Chair of the Committee is not appointed by the full Board, members of the Committee

may designate a Chair of the Committee by majority vote of the full membership of the Committee.

3. MEETINGS

- (a) The Committee shall have a minimum of four meetings per year, to coincide with the Company's financial reporting cycle. Additional meetings will be scheduled as considered necessary or appropriate, including considering specific matters at the request of the external auditors or the head of internal audit.
- (b) The time and place of the meetings of the Committee, the calling of meetings and the procedure in all things at such meetings shall be determined by the Chair of the Committee. A meeting of the Committee may be called by notice, which may be given by written notice, telephone, facsimile, email or other communication equipment, given at least 48 hours prior to the time of the meeting provided that no notice of a meeting will be necessary if all of the members are present either in person or by means of conference telephone or if those absent waive notice or otherwise signify their consent to the holding of such meeting.
- (c) A majority of members of the Committee will constitute a quorum at each meeting.
- (d) The Committee will hold an in-camera session without any senior officers present at each meeting, as required.
- (e) The Committee will keep minutes of its meetings, which shall be available for review by the Board.
- (f) The Committee may appoint any individual, who need not be a member, to act as the secretary at any meeting.
- (g) The Committee may invite such directors, senior officers and other employees of the Company and such other advisors and persons as is considered appropriate to attend any meeting of the Committee.
- (h) Any matter to be determined by the Committee will be decided by a majority of the votes cast at a meeting of the Committee called for such purpose. Each Member will have one vote and decisions of the Committee will be made by an affirmative vote of the majority. The Chair will not have a deciding or casting vote in the case of an equality of votes. Any action of the Committee may be taken by an instrument or instruments in writing signed by all of the members of the Committee (including in counterpart) and any such action will be as effective as if it had been decided by a majority of the votes cast at a meeting of the Committee called for such purpose.
- (i) The Committee will report its determinations and recommendations to the Board.

4. RESOURCES AND AUTHORITY

- (a) The Committee has the authority to:

- (i) engage, at the expense of the Company, independent counsel, accounting and other experts or advisors as considered advisable in its sole discretion which shall provide adequate funding for such purposes;
- (ii) determine and pay the compensation for any independent counsel, accounting and other experts or advisors retained by the Committee;
- (iii) conduct any investigation in the Company's business or affairs that it considers appropriate; and
- (iv) request unrestricted access to the books and records of the Company, management, the external auditors and the head of internal audit, including private meetings, as it considers necessary or appropriate to discharge its duties and responsibilities.

5. DUTIES AND RESPONSIBILITIES

- (a) The responsibilities of a member of the Committee shall be in addition to such Member's duties as a member of the Board.

Financial Reporting and Disclosure

- (b) The Committee has the duty to determine whether the Company's financial disclosures are complete, accurate, are in accordance with applicable generally accepted accounting principles and auditing standards, including international financial reporting standards, and fairly present the financial position and risks of the organization. The Committee should, where it deems appropriate, resolve disagreements, if any, between management and the external auditor, and review compliance with laws and regulations and the Company's own policies.
- (c) Review and discuss with management and the external auditor at the completion of the annual examination:
 - (i) the Company's audited financial statements and related notes;
 - (ii) the external auditor's audit of the annual financial statements and their report thereon;
 - (iii) any significant changes required in the external auditor's audit plan;
 - (iv) any serious difficulties or disputes with management encountered during the course of the audit; and
 - (v) other matters related to the conduct of the audit, which are to be communicated to the Committee under generally accepted auditing standards.
- (d) Review and discuss with management and, where authorized by the Board, the external auditor at the completion of any review engagement or other examination of the Company's quarterly unaudited financial statements:
 - (i) the Company's unaudited financial statements and related notes;
 - (ii) any significant changes required in the external auditor's audit plan resulting from the preparation of the unaudited financial statements;
 - (iii) any serious difficulties or disputes with management encountered during the course of the preparation of the unaudited financial statements; and
 - (iv) other matters related to the preparation of the unaudited financial statements, which are to be communicated to the Committee.

- (e) Make recommendations to the Board regarding the approval of the unaudited financial statements and the notes thereto and the Company's management discussion and analysis with respect to such financial statements.
- (f) Review and discuss with management the annual reports, the quarterly reports, the related Management Discussion and Analysis, the annual information form, any prospectus and other disclosures and, if thought advisable, recommend the acceptance of such documents to the Board for approval.
- (g) Review disclosure respecting the activities of the Committee included in the Company's annual filings.
- (h) Review and discuss with management any guidance being provided to shareholders on the expected future results and financial performance of the Company and provide their recommendations on such documents to the Board.
- (i) Inquire of the auditors the quality and acceptability of the Company's accounting principles, including the clarity of financial disclosure and the degree of conservatism or aggressiveness of the accounting policies and estimates.
- (j) Meet independently with the external auditor and management in separate executive sessions, as necessary or appropriate.
- (k) Ensure that management has the proper systems in place so that the Company's financial statements, financial reports and other financial information satisfy legal and regulatory requirements. Based upon discussions with the external auditor and the financial statement review, if it deems appropriate, provide the Board with such recommendations and reports with respect to the financial disclosures of the Company.
- (l) Review and approve any significant amendments to the Company's Disclosure Policy and periodically assess the procedures in place for the review of public disclosure of financial information extracted or derived from the issuer's financial statements.
- (m) Review and if appropriate, ratify the mandate of the Disclosure Committee.

External Auditor

- (n) Retaining and terminating, and/or making recommendations to the Board and the shareholders with respect to the retention or termination of, an external auditing firm to conduct review engagements on a quarterly basis and an annual audit of the Company's financial statements.
- (o) Communicating to the external auditors that they are ultimately accountable to the Board and the Committee as representatives of the shareholders and that they must report directly to the Committee.
- (p) Obtaining and reviewing an annual report prepared by the external auditors describing: the firm's internal quality-control procedures; any material issues raised by the most recent internal quality-control review, or peer review, of the firm, or by any inquiry or investigation by governmental or professional authorities, within the preceding five years, respecting one or more

independent audits carried out by the firm, and any steps taken to deal with any such issues.

- (q) Evaluating the independence of the external auditor and any potential conflicts of interest and (to assess the auditors' independence) all relationships between the external auditors and the Company, including obtaining and reviewing an annual report prepared by the external auditors describing all relationships between the external auditors and the Company.
- (r) Approving, or recommending to the Board for approval, all audit engagement fees and terms, as well as pre-approving all non-audit engagements of the external auditors prior to the commencement of the engagement.
- (s) Reviewing with the external auditors the plan and scope of the quarterly review and annual audit engagements.
- (t) Setting hiring policies with respect to the employment of current or former employees and partners of the current or former external auditors.

Internal Controls and Audit

- (u) Reviewing and discussing with management, the external auditors and the head of internal audit (if any) the effectiveness of the Company's internal controls over financial reporting, including reviewing and discussing any significant deficiencies in the design or operation of internal controls, and any fraud, whether or not material, that involves management or other employees who have a significant role in the Company's internal controls over financial reporting.
- (v) Discussing the Company's process with respect to risk assessment (including fraud risk), risk management and the Company's major financial risks and financial reporting exposures, all as they relate to internal controls over financial reporting, and the steps management has taken to monitor and control such risks.
- (w) Reviewing and discussing with management the Company's Code of Business Conduct and Ethics and anti-fraud program (if any) and the actions taken to monitor and enforce compliance.
- (x) Establishing procedures for:
 - (i) the receipt, retention and treatment of complaints regarding accounting, internal controls or auditing matters, including reviewing and discussing Whistleblower Policy with management; and
 - (ii) the confidential, anonymous submission by employees of the Company of concerns regarding questionable accounting, internal controls or auditing matters.
- (y) Reviewing and discussing with management, the external auditors and the head of internal audit (if any) the responsibilities and effectiveness of the Company's internal audit function (if any), including reviewing the internal audit mandate, independence, organizational structure, internal audit plans and adequacy of

resources, receiving periodic internal audit reports and meeting privately with the head of internal audit on a periodic basis.

- (z) Approving in advance the retention and dismissal of the head of internal audit.

Other

- (aa) Reporting regularly to the Board, as applicable.
- (bb) Reviewing and assessing its mandate and recommending any proposed changes to the Compensation, Governance and Nominating Committee of the Board on an annual basis.
- (cc) Evaluating the functioning of the Committee on an annual basis, including with reference to the discharge of its mandate, with the results to be reported to the Compensation, Governance and Nominating Committee, which shall report to the Board.
- (dd) Review periodically, together with the Compensation, Governance and Nominating Committee, the directors' and officers' liability insurance and indemnities of the Company and consider the adequacy of such coverage.

Approved by the Board of Directors on October 21, 2020