Technical Report on the Great Atlantic Salt Project, Newfoundland and Labrador, Canada

Report for NI 43-101

Atlas Salt Inc.

SLR Project No.: 233.03447.R0000

Effective Date:

July 31, 2023

Signature Date:

October 11, 2023

As amended and restated on May 1, 2024

Prepared by:

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Making Sustainability Happen

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FINAL

Distribution: 1 copy - Atlas Salt Inc.
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1.0 Summary

1.1 Executive Summary

SLR Consulting (Canada) Ltd. (SLR) was retained by Atlas Salt Inc. (Atlas or the Company) to prepare an independent Technical Report on the Great Atlantic Salt (GAS) Project (the Project or GAS Project), located near St George's, Newfoundland, Canada. The purpose of this Technical Report is to present the results of a Feasibility Study (FS) of the Project. This Technical Report conforms to National Instrument 43-101 Standards of Disclosure for Mineral Projects (NI 43-101).

The Project is located within a block of claims totalling 7,100 ha (the GAS Property) and comprises development of an underground salt mine with decline access with an initial production capacity of 2.5 million tonnes per year (Mtpa) of rock salt. Key facilities will be sized for potential future expansion to 4.0 million tonnes per year (Mtpa). The product will be crushed salt with a minimum grade of 95% sodium chloride for the road de-icing market. All mining, crushing, and sizing facilities will be located within the underground mine. Product will be transported by conveyor 2.5 km to a dedicated storage and port facility and loaded onto ships for destination markets on the US East Coast (USEC), Québec, and the Maritime Provinces.

The effective date of the Mineral Resource estimate in the Technical Report is May 11, 2023, and the effective date of the Mineral Reserves is July 31, 2023. Information in this report is current as of the effective date of Mineral Reserves unless otherwise specified. This report has been amended from the original signature date of October 11, 2023 to May 1, 2024.

1.1.1 Conclusions

The Qualified Persons (QP) have the following conclusions by area.

1.1.1.1 Geology and Mineral Resources

- The geological setting of the deposit is well understood, with the GAS halite being constrained by a combination of exploration drilling and downhole and ground geophysical surveying. The Project is hosted within Devonian and Carboniferous strata of the Bay St George Sub-Basin of the regional Maritimes Basin of southwest Newfoundland; an extensive geological basin underlying the Gulf of St Lawrence and surrounding areas.
- The GAS halite deposit is a basin-wide, sedimentary salt deposit with wide lateral extent. The deposit is part of a stratigraphy including sedimentary strata from a range of depositional environments including marine, shallow marine and salina, to fluvial and deltaic. Salt formation within sedimentary environments occurs through the evaporation of seawater within shallow enclosed or isolated basins. The Codroy Formation of the Codroy Group represents the dominant stratigraphic unit within the Project area.
- The deposit has been intersected in a total of nine drill holes between depths of approximately 180 m and 395 m and the thickness of the deposit has been observed to vary between 68 m in the southwest and 340 m in the northeast. Geophysical information suggests that the deposit extends further laterally than what is currently classified as Mineral Resources.
- The halite is overlain by a thick succession of sandstones, siltstones, mudstones, and conglomerates, referred to as Red Beds, and is immediately underlain by a basal anhydrite, both of which form relatively sharp boundaries with the major halite horizons.

There are two interburden layers in the deposit and the salt horizons have been named as follows:

- o 1-Salt is below the red beds and overlies the first interburden layer
- o 2-Salt is between the two interburden layers
- o 3-Salt is below the second interburden layer and overlies the basal anhydrite.

- Mineral Resources at the Project conform to CIM (2014) definitions.
- As at May 11, 2023, Indicated Mineral Resources are estimated to total 383 million tonnes (Mt) averaging 96.0% NaCl containing 368 Mt of NaCl. Inferred Mineral Resources are estimated to total 868 Mt averaging 95.2% NaCl containing 827 Mt of NaCl. This estimate consists of a 5% increase in tonnage and 0.3% decrease in grade in comparison to the previous estimate for the Project, with an effective date of January 6, 2023.
- The sample preparation, analysis, and security procedures at the Project are adequate, and the quality assurance/quality control (QA/QC) results are adequate to support Mineral Resource estimation.
- The drill hole database is of sufficient quality and is suitable for use in a Mineral Resource estimate.
- The QP is not aware of any material limitations on data verification and is of the opinion that database verification procedures for the GAS Project are adequate for the purposes of Mineral Resource estimation. Verification by SLR has included a review of spatial, geological, and geochemical data in relation to the deposit, and updated geological interpretations informed by new drill hole data and reprocessed seismic survey data obtained by Atlas Salt during 2022.
- The QP is of the opinion that the block modelling methodologies and the selected block sizes are suitable for the style of mineralization and proposed mining method.
- The deposit remains open to additional exploration and further technical study, which are warranted.

1.1.1.2 Mining and Mineral Reserves

- The Probable Mineral Reserves are estimated to be 88.1 Mt grading 96.0% NaCl. There are 37.7 Mt grading 95.9% NaCl of Probable Mineral Reserves in the 2-Salt horizon and 50.3 Mt grading 96.0% NaCl of Probable Mineral Reserves in the 3-Salt horizon.
- The Probable Mineral Reserves are based on Indicated Mineral Resources only, after the application of mining plans and designs. No Inferred Mineral Resources were included in the estimate of Mineral Reserves. Inferred Mineral Resources included within the mine plan were treated as waste.
- A mining plan has been developed based upon the Probable Mineral Reserves for an initial mine life of 34 years at a rate of 2.5 Mtpa of road salt product. There are additional Indicated Mineral Resources at depth that have not been converted to Mineral Reserves.
- The deposit is planned to be accessed by two declines from surface to the plant elevation at the 240 Level (nominally 240 m below surface) and to the first production level at the 320 Level.

- Over the initial 34-year life of the Project, the declines will be extended to a further six production levels down to the 530 Level.
- Salt will be mined using continuous miners (CMs) and truck haulage in a room and pillar mining operation. Rooms will be 16 m wide; pillars will be 25 m square.
- Mining levels will be up to 20 m high consisting of four vertical cuts each five metres high. Mining levels will be separated by 15 m sill pillars.
- Mining is planned for the 2-Salt and 3-Salt horizons.
- At a block model mining cut-off grade of 90% NaCl the total production for the initial 34-year mine plan is estimated to be 88.1 Mt grading 96.0% NaCl. Mining faces will be blended to maintain the production grade higher than the minimum 95% NaCl road salt specification.
- The mine equipment will primarily comprise electric and battery electric units.
- Mine design and planning are supported by geotechnical studies and geomechanical testing.

1.1.1.3 Mineral Processing

- Processing to produce de-icing salt will take place in a processing plant that will be located underground within the mine.
- A multi-stage crushing and screening plant using roll crushers and inclined vibrating screens has been designed to minimize the generation of fines. The flow sheet comprises three crushing and four screening stages, including screening-out of product-size material before and after each crushing stage to further reduce the potential for fines generation. Regardless, a fine screening circuit has been included to allow for the removal of excessive fines if necessary.
- The process design has been based on unconfined compressive strength (UCS) tests on thirty samples from drill holes CC-8 and CC-9b completed in 2022 and 2023. The results range from 14.7 MPa to 38.8 MPa with a 75th percentile value of 28.6 MPa.
- Abrasiveness of six samples from drill holes CC-7 completed in 2022 has been assessed by CM manufacturers as “not abrasive” to “slightly abrasive”, while Bond abrasion index results from six samples from CC-7, CC-8, and CC-9b indicate that the salt’s abrasivity is very mild to mild. Additionally, Cerchar Abrasivity Index (CAI) testing on six samples from CC-8 characterized the samples’ Abrasivity as very low.
- These results indicate that the salt may be successfully processed to produce de-icing salt conforming to ASTM-D632 by conventional dry crushing and screening methods.

1.1.1.4 Infrastructure

- To develop the Project, surface infrastructure is required to augment the infrastructure that exists already in the area.
- It is proposed that a surface clearing of approximately 40 ha will be developed at the site, in an area known as the “site terrace”.
- The site terrace will be accessed by a single road approximately 1,300 m in length connecting to an existing road that is adjacent to the Property.

- In addition to the access road, approximately 3.3 km of site roads are required for access to various components of surface infrastructure such as buildings, declines, box cut, waste piles, water management areas, and substation.
- Electrical power is available from a substation owned by NL Power (a corporation that distributes power to end-users) located approximately 1,400 m from the proposed mine site. It is proposed that a 66 kV transmission line will connect from the Project to the NL Power substation.
- The Project is located within the town limits of St. George's, and it is envisaged that a connection to the town water and sewer systems would be established.
- There are limited requirements for process water at the site, given that the processing system is based on mechanical screening and separation.
- Water that has come in contact with the site will be collected in an effluent water pond, and then discharged into a local creek nearby to the Project. It is anticipated that water will require treatment only for total suspended solids. SLR has assumed that no chemical treatments are required for the effluent water.
- A variety of surface buildings and facilities are required for the Project, including administration building, light vehicle parking, mine dry (change house), minor maintenance shop, warehouse, cold storage area, perimeter fencing, truck scale, and gatehouse.
- A camp is not required for the Project, as it is assumed that the workforce would commute daily from the local area.
- A series of conveyors is required to transfer the salt from the mine to the port, including an intermediate salt storage building, and a two-kilometre overland conveyor.
- The overland conveyor requires three crossings – a 100 m length buried conveyor under Main Street, a bridge crossing at Station Road and Newfoundland T'Railway, and a second bridge crossing over the marina access road.
- Turf Point port is an existing aggregates exporting facility owned by a third party that is currently used to ship gypsum to markets in North America. SLR has assumed that the GAS Project will use the port for the shipment of salt on a contract-basis with a third party owner.
- The principal components of the port as it exists today include an aggregate storage building, outdoor aggregate storage, reclaim system feeding onto a conveyor, and a ship loader mounted on the structural steel trestle with a loading rate of nominally 1,000 tonnes per hour (tph). Vessels up to 225 m long, 32.26 m in beam and an alongside depth of 10 m can be accommodated.
- It is proposed that the existing port facilities will be augmented as part of the Project to enable the port to be suitable for exporting 2.5 Mtpa of rock salt. The following key changes proposed include modifying the existing storage building to accommodate the delivery of rock salt via overland conveyor, constructing a new 47,300 t storage building in the area of the current outdoor storage, completing a series of reclaim feeders underneath the new building to feed salt to the ship loader; and refurbishment of the existing ship loader. With the addition of the new storage building, the total storage at the port will be 60,000 t, or approximately two ship loads. The ship loader would be upgraded and refurbished to maintain its current capacity to load at a rate of 1,000 tph.

- A waste management facility is included in the design that consists of three piles. A waste pile is sized to accommodate the waste rock generated from the initial declines, box cut, and excess cut volume from the site terrace. A second pile is planned for salt excavated during the pre-production period. A third pile is planned for the organic material that will be stripped during initial excavation work.
- A tailings management facility is not required for the Project, as all processed material is either sold as product or returned to underground mined out areas.

1.1.1.5 Marketing

- The sole product produced from GAS will be rock salt used for de-icing purposes.
- The target market with the highest potential for GAS to penetrate is Quebec and the Maritimes, New England, and the US East Coast (USEC) (collectively, the High Potential Market). The combined annual consumption of road salt in these markets ranges from 11.0 million tonnes per annum (Mtpa) to 16.0 Mtpa.
- The deposit will be developed for a production rate of 2.5 Mtpa of saleable product as a base case, achieved in Year 3 of operations after a two-year ramp up period. At 2.5 Mtpa, this would position GAS to supply 16% to 23% of the High Potential Market by the time it achieves full production. It is intended this market penetration would be achieved by first supplanting rock salt that is imported from overseas markets, followed by displacement of production from aging rock salt mines in the St. Lawrence Basin.
- Key material handling infrastructure such as the process plant, decline conveyor, and overland conveyor, has been sized for 4.0 Mtpa from the beginning, to facilitate potential future expansion.
- Based on a review of both publicly available information and commissioned studies, the economic analysis for the FS is based on a price of C$72.24/dmt for road salt FOB Turf Point (with a Q3 2023 basis).

1.1.1.6 Environment

- The Company initiated baseline studies in 2022 which focussed on water and ecology components.
- A comprehensive environmental assessment has not yet been conducted for the Project. To support the FS, subject matter experts carried out desktop work which included reviewing the available baseline information and the Project description to identify potential environmental and social impacts as well as mitigation measures and made recommendations for further work to support Project development and environmental approval processes.
- Mitigation measures have been incorporated into the Project design such as the conveyor which will be buried where it passes close to communities and the conveyor and transfer points above ground will be fully enclosed, which should mitigate most dust and noise impacts. The buried section and two bridges will also offer passage opportunities. A water management plan has been developed to manage dewatering water, to divert clean water around the Project infrastructure area and to contain runoff from infrastructure areas in water management conveyance infrastructure and a settling pond to minimize impacts on the receiving environment. Other design mitigation includes lining of the pre-development (temporary) salt stockpile, and adequate protection from erosion at the discharge point from the settling pond.

- An environmental approval and permit register and high-level schedule has been developed for the Project. The Project requires registration pursuant to the NL Environmental Protection Act and the approval process under this legal framework. No federal environmental assessment is anticipated. Several environmental permits will be required.
- The Project is located within the town limits of St George's. The Qalipu Mi'kmaq First Nation has a community in St George's.
- Atlas maintains a list of stakeholders and Indigenous communities and have engaged with local communities. Atlas, in association with independent consultants, has developed engagement plans for the Project to be implemented as the Project progresses and to support the environmental approval processes.
- Conceptual closure planning and a high-level closure costing has been developed as part of the FS for the Project and will be the starting point to develop a Rehabilitation and Closure Plan as part of the mine development plan approval process.

1.1.1.7 Risks and Opportunities

- Through the risk review process undertaken as part of the FS, no major unique risks were identified that expose the Project Base Case to unreasonable risk. The risks identified are typical of large capital projects in the mining industry.
- The principal technical risk is an uncontrolled inflow of water into the mine, either through the declines, or into the salt workings.
- Some of the risks associated with the Project, such as the penetration into the market, price of salt, and lead times on critical equipment, are open ended or beyond the control of the Project at this stage.
- A number of opportunities were identified that can only be realized during the Front-End Engineering and Design (FEED), Implementation and Operational phases of the Project.
- SLR considers the most significant opportunity to be the extension of the mine life based upon the conversion of Inferred Mineral Resources at depth and beyond the current resource extents.

1.1.2 Recommendations

The outcome of this FS shows that the Project has significant economic potential. The QPs recommend that the Project be advanced to the next level of study, and that the environmental permitting process be further advanced. The QPs offer the following recommendations by work area. In certain areas, the recommendations have been split between those that are recommended as part of the next level of study, and those that are intended for longer-term Project development.

1.1.2.1 Geology and Mineral Resources

The QP recommends the following be considered as part of the next level of study, or future drilling programs and Mineral Resource updates:

1 During 2022, the QP independently verified geological logging of CC-2, CC-4, and CC-8 drill holes. The QP recommends that this be repeated for CC-1 and CC-5 as further verification of previously obtained geological data. The QP recommends that CC-1 and CC-5 core be re-photographed.

2 Where possible, future drill holes should be completed at a larger drill core diameter to provide greater material for sampling and to reduce issues with core splitting and sampling.

3 The QP offers the following recommendations with respect to future QA/QC:

   a) Increase the frequency of laboratory repeats to account for the difficulty in the collection of reliable field duplicates due to issues with core splitting.

   b) Obtain appropriate blank material, for example equivalent material used internally by Actlabs, for blind insertion into the sample stream by Atlas. This could be a commercially available blank or inert material obtained locally and crushed by Atlas.

   c) Obtain additional infill and/or check samples in drill hole CC-5. Current Mineral Resource classifications consider that grade continuity between CC-5 and CC-2, spaced at approximately 600 m, is more variable than observed between other closely spaced drill holes.

1.1.2.2 Mining and Mineral Reserves

For the next level of study, the QP recommends the following:

1 Advance the Project planning towards construction and production through further engineering and definition of the capital and operating costs.

2 Review of the mining sequences to maximize the productivity of the mining operation and refine blending requirements.

3 Review of the room and pillar dimensions, including the suitability for selected production equipment.

4 Review of sill and barrier pillar dimensions to maximize the extraction ratio.

5 Review of the CM and haul truck productivity and battery life.

6 Undertake further geomechanical and hydrogeological investigations including:

   a) Additional packer testing in Red Beds in the areas of the planned declines.

   b) Installation of wells for continuous, long-term monitoring of groundwater levels.

   c) Transient groundwater modelling.

   d) Incorporate updated hydrogeological conditions into decline geotechnical design.

   e) Near surface geotechnical investigation around the mine terrace and box cut area.

7 Ongoing definition of the location and character of the interburden layers and larger mudstone inclusions.

8 Update the estimate of inflows and subsequent development plans for the handling of ground water inflows in the decline.

As part of ongoing project development, the QP recommends the following:

9 As part of mine optimization work, consider automation systems including:

   a) Truck dispatch systems to optimize production.

   b) Automated control of the CM alignment (horizontal and vertical).

10 Develop plans and procedures for:

a) Determination of the salt grades for production planning.

b) Grade control to meet product specifications.

11 Implement InSar surface deformation monitoring two years prior to the commencement of mining.

12 Develop a ground control manual for development and operations.

13 Evaluate of the ventilation requirements based upon a waste heat analysis.

14 Consider “ventilation on demand” to supply fresh air when and where required to suit the mining activities.

15 Establish ventilation monitoring and control systems to demonstrate that the air quality is suitable and to reduce fan operation.

16 Complete detailed design of the process plant ventilation system.

17 Complete detailed design of the auxiliary ventilation at the continuous mining units.

18 Re-evaluate the possibility of mining the 1-Salt horizon after the 1-Salt is exposed in the mine access development.

1.1.2.3 Mineral Processing

While the engineering completed during the feasibility study is sufficient to support the capital cost estimate at AACE Class 3 level, the QP recommends that the following be considered as part of the next level of engineering:

1 Refine the process plant layout while considering the configuration of all transfer points – vertical drops through chutes into crushers and onto screens and conveyors should be avoided to minimize fines generation and airborne dust. Chutes should be designed to provide sloped transfers at a high enough angle that will prevent the chutes from blocking up, while at a low enough angle to minimize impacts by ensuring that transfers are by sliding rather than falling streams. Consideration should be given to the possible need for low-friction linings in all transfer chutes.

2 Further develop detailed constructability and operability parameters of the processing plant and conveying and storage infrastructure to ensure that the construction schedule is realistic and that the process plant can be safely and efficiently maintained and operated.

3 Develop the processing plant, and pre-processing and post processing conveying and storage engineering designs to a level that is adequate to obtain equipment costs and quantity estimations to support progression of the capital cost estimate to an AACE Class 2 capital cost estimate and refine the operating cost estimate.

1.1.2.4 Infrastructure

As part of the next level of study, the QP recommends the following:

1 Conduct further geotechnical investigations around the area of the proposed site terrace, to determine the suitability of this area to host the site infrastructure and mine access locations, specifically in the locations of the planned waste piles.

2 Conduct geochemical testing of the overburden and red beds, to determine whether there are any deleterious elements that could impact the water effluent treatment system.

3 Review possible effluent discharge locations in the vicinity of the Project.

4 Continually update the site-wide water balance.

5 Complete hydrogeological testing of the red beds and overburden in the area of the surface facilities.

6 Review overland conveyor alignment routes and site access routes, and determine whether any easements, right of ways, or land purchases are required to achieve the selected alignment.

As part of ongoing project development, the QP recommends the following:

7 Conduct studies to identify suitable road construction material in the vicinity of the Project.

8 Conduct a logistics and traffic study to determine the impact of construction on the town.

9 Conduct further discussions with NL Power to determine any modifications required at the St. George's substation.

10 Conduct further review with the town of St. George's, to confirm suitability for the Project to connect services to the municipal sewer and water systems.

11 Install a weather station at the Project to gain site-specific meteorological conditions, which will assist in infrastructure planning.

12 Develop a commercial agreement with the port owners that summarizes the terms on which Turf Point port can be used by Atlas to export salt.

1.1.2.5 Marketing

In order to further develop the marketing and logistics plan in the next level of study, the QP recommends the following:

1 Meet with potential customers and arrange letters of intent or other documentation that will lead to formal supply contracts.

2 Meet with Canadian and international shipping companies to develop letters of intent or contracts for shipping and logistics.

3 Further investigate transportation and distribution options to customers inland of the destination ports, particularly in USEC markets.

1.1.2.6 Environment

As part of ongoing project development, the QP recommends the following:

1 Complete recommended further studies and baseline work identified by the subject matter experts to supplement baseline data, assess potential impacts and develop management plans. This will be required as part of the provincial approval process.

2 Ensure all the required environmental and approvals are obtained prior to commencement of the Project by implementing a permitting and approvals plan as part of the Project Execution Plan (PEP) and schedule, which should include engagement with relevant regulators.

3 Confirm with the Impact Assessment Agency of Canada (IAAC) that the Project will not require environmental review under the federal Impact Assessment Act (IAA).

4 Confirm with Environment and Climate Change Canada that Metal and Diamond Mining Effluent Regulations (MDMER) are not applicable to the Project.

5 Engage with the relevant provincial regulators to initiate the provincial approval process and discuss the planned studies and work identified by the subject matter experts, as well as the aim of the Project Team to provide sufficient information in an EPR report.

6 Compile a Project Registration document to formally initiate the provincial approval process.

7 Implement the Indigenous community engagement plan and the general community and stakeholder (including relevant regulators) engagement plan. Ensure that sufficient information is provided to the Qalipu Mi'kmaq First Nation, communities, and stakeholders regarding potential Project effects during the engagement process.

8 Develop frameworks for community support and agreements, investments and initiatives with local councils and organizations. These should be aimed at responding to the community needs and concerns related to the Project.

9 Develop agreements with local band councils and Qalipu First Nation.

10 Compile a Rehabilitation and Closure Plan and ensure the financial assurance is in place prior to commencement of the Project. The conceptual closure planning and costing provided in the Feasibility Study and summarised in this report should be the starting point to develop the Rehabilitation and Closure Plan.

1.1.2.7 Budget

To move the Project forward, the following budget is proposed, as shown in Table 1-1.

Table 1-1: Proposed Work Budget

Item	Program	Cost (C$ '000)
1	Initial Engineering and Procurement Planning	2,000
2	Geotechnical and Hydrogeological Program	1,000
3	Environmental and Social Studies	1,500
4	Owner's Team	1,500
	Total	**6,000**

It is noted that the capital cost described in the FS are inclusive of items #1 and #4, and exclusive of items #2 and #3.

1.1.2.8 Project Execution Plan

It is recommended that the core Atlas Salt Project team be resourced and established as soon as possible to advance the project execution planning following the completion of the FS. The key activities of the project team will be the following:

1 Establish a detailed short term 100 day and 300 day plan

2 Continue developing the environmental permitting documents

3 Complete an external peer review of the feasibility study

4 Establish a safety plan and associated systems for safe and successful project execution
5 Establish a Procurement, Logistics, and Warehousing Plan
6 Advance and develop more detail to the FS schedule and cost estimates
7 Execute applicable recommendations from the FS in advance of the next phase of engineering.
8 Establish a detailed contracting strategy by work package level.
9 Identify early work package engineering and execution in advance of the box cut construction and electrical substation installations.
10 Complete value engineering studies on:
    a) EPCM vs integrated project team execution models.
    b) Mining development rates and methodologies.
    c) Conveyor advancement with decline drives.
11 Detail the Atlas Salt QA/QC strategy.
12 Detail the Operational Readiness planning.
13 Order key long lead equipment based on advanced engineering designs.

The purpose of the recommended tasks is to reduce the risk to safety, schedule, cost and quality during the project execution period.

1.2 Economic Analysis

The economic analysis contained in this Technical Report is based on information available to SLR as of Q3 2023. For the purposes of the cash flow model, SLR has assumed that the Project would commence construction in 2025 and be operational in 2028. An after-tax Cash Flow Projection has been generated from the LOM production schedule and capital and operating cost estimates and is summarized in Table 1-2. A summary of the key criteria is provided below.

1.2.1 Economic Criteria

1.2.1.1 Revenue

- Two-year ramp-up to achieve steady state production, with Year 1 production of 1.6 Mtpa, Year 2 production of 2.1 Mtpa, followed by 2.5 Mtpa from Year 3 onward to Year 33, and 2.0 Mtpa in Year 34.
- Product grade maintained greater than 95% NaCl for the entirety of operations, with no premium applied for higher grade material.
- Average price per tonne FOB Turf Point – C$72.24 (Q3 2023 basis).
- Price escalated at 4% from 2023 to 2028 and 2% per year thereafter, which is a consistent approach to other publicly available technical reports on major North American rock salt mines.
- Price adjustment factor of a 2% premium applied every fifth year to account for higher product demand associated with adverse meteorological conditions.

- 3% net production royalty payable to Vulcan Minerals.
- Revenue is recognized at the time of production.

1.2.1.2 Costs

- Initial capital period for economic modeling: 48 months based on the commencement of some early works engineering and procurement of long-lead items, with 36 months assumed for construction, and mine life of 34 years.
- Capital and operating costs as of Q3 2023 basis.
- Capital and operating costs escalated at 2% per year from 2023.
- Pre-production capital cost of C$480.1 million (including escalation).
- LOM sustaining capital of C$599.9 million (including escalation).
- Reclamation and closure cost of C$30.2 million (including escalation).
- Average operating cost over the mine life is C$35.46 per tonne shipped FOB Turf Point (including escalation).

1.2.1.3 Taxation and Royalties

The cash flow includes a 3% royalty to Vulcan Minerals calculated as 3% of the gross revenue less port charges. Taxes include the NL Mining Tax plus federal and provincial income taxes. SLR has relied on Atlas and its advisors for the calculation of taxes.

Table 1-2: After-Tax Cash Flow Summary

SLR - Cash Flow Summary
Atlas Salt - Great Atlantic Salt

Date: Aug 2023	UNITS	TOTAL	YR -4	YR -3	YR -2	YR -1	YR 1	YR 2	YR 3	YR 4	YR 5	YR 6	YR 7	YR 8	YR 9	YR 10	Total YR 11-15	Total YR 16-20	Total YR 21-25	Total YR 26-30	Total YR 31-34
MINING																					
Years of Production	yrs	34					1	1	1	1	1	1	1	1	1	1	5	5	5	5	4
Underground																					
Mine Operating Days	days	11,900					350	350	350	350	350	350	350	350	350	350	1,750	1750	1750	1750	1400
Tonnes mined per day	tonnes / day	7,400					4,831	6,317	7,559	7,570	7,553	7,553	7,549	7,542	7,540	7,545	7,562	7,560	7,560	7,560	7,146
Production	Mtpa	88.06				0.09	1.69	2.21	2.65	2.65	2.64	2.64	2.64	2.64	2.64	2.64	13.23	13.23	13.23	13.23	10.00
Minimum Grade	% NaCl	96.0%				93.9%	97.3%	96.8%	96.0%	96.3%	95.9%	95.8%	96.2%	95.6%	95.5%	94.7%	95.4%	96.0%	96.0%	96.3%	96.4%
Waste	Mtpa	1.47		0.08	0.27	0.38	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.05	0.06	0.10	0.30	0.10
Total Moved	Mtpa	89.53		0.08	0.27	0.46	1.69	2.24	2.65	2.65	2.64	2.64	2.64	2.74	2.64	2.64	13.29	13.29	13.33	13.53	10.10
Cumulative Salt	Mt					0.09	1.78	3.99	6.63	9.28	11.93	14.57	17.21	19.85	22.49	25.13	38.36	51.59	64.82	78.05	88.06
PROCESSING																					
Material Processed	Mtpa	88.06				0.09	1.69	2.21	2.65	2.65	2.64	2.64	2.64	2.64	2.64	2.64	13.23	13.23	13.23	13.23	10.00
Head Grade	% NaCl	96.0%				93.9%	97.3%	96.8%	96.0%	96.3%	95.9%	95.8%	96.2%	95.6%	95.5%	94.7%	95.4%	96.0%	96.0%	96.3%	96.4%
Contained NaCl	Mtpa	84.50				0.08	1.64	2.14	2.54	2.55	2.54	2.53	2.54	2.52	2.52	2.50	12.62	12.70	12.70	12.74	9.64
Losses from Mine Face to Ship	%	5%				5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Payable Rock Salt	Mtpa	83.66				0.08	1.61	2.10	2.51	2.52	2.51	2.51	2.51	2.51	2.51	2.51	12.57	12.57	12.57	12.57	9.50
REVENUE																					
Market Price																					
Weighted Average Market Price (FOB Turf Point)	C$ / t shipped	124.86	75.13	78.14	81.26	84.52	87.90	89.65	91.45	93.28	97.04	97.04	98.99	100.96	102.98	107.14	111.98	123.64	139.23	150.71	163.76
Total Gross Revenue	**C$ '000**	**10,445,286**					**148,288**	**188,316**	**229,834**	**234,771**	**243,705**	**243,722**	**248,454**	**253,185**	**258,198**	**268,804**	**1,407,767**	**1,553,936**	**1,715,680**	**1,894,274**	**1,556,351**
Total Charges	**C$ '000**	**667,044**					**11,977**	**13,340**	**14,563**	**14,863**	**15,147**	**15,450**	**15,756**	**16,065**	**16,385**	**16,717**	**88,812**	**98,047**	**108,252**	**119,520**	**102,150**
Royalties - Vulcan Minerals	C$ '000	293,347					4,089	5,249	6,458	6,597	6,857	6,848	6,981	7,114	7,254	7,563	39,569	43,677	48,223	53,243	43,626
Net Revenue	**C$ '000**	**9,484,895**					**132,222**	**169,727**	**208,812**	**213,311**	**221,702**	**221,424**	**225,717**	**230,006**	**234,559**	**244,525**	**1,279,386**	**1,412,212**	**1,559,205**	**1,721,512**	**1,410,575**
Unit NR	**C$ / t milled**	**107.71**					**78.20**	**76.76**	**78.93**	**80.51**	**83.87**	**83.76**	**85.43**	**87.14**	**88.88**	**92.59**	**96.68**	**106.74**	**117.85**	**130.12**	**141.00**
OPERATING COST																					
Mining	C$ '000	1,532,637					26,804	30,342	32,403	32,671	33,145	33,674	34,152	36,897	37,731	38,405	202,915	221,860	249,823	286,535	235,280
Processing and Material Handling	C$ '000	1,087,987					19,481	21,726	23,722	24,205	24,675	25,169	25,669	26,176	26,699	27,237	144,655	159,702	176,324	194,676	167,870
G&A	C$ '000	345,763					7,198	7,342	7,489	7,639	7,792	7,948	8,106	8,269	8,434	8,603	45,664	50,417	55,664	61,458	53,741
Total Operating Cost (with escalation)	**C$ '000**	**2,966,386**					**53,484**	**59,410**	**63,614**	**64,515**	**65,612**	**66,791**	**67,928**	**71,342**	**72,864**	**74,245**	**393,233**	**431,978**	**481,811**	**542,669**	**456,890**
Calculated Unit Costs																					
Mining	C$/t shipped	18.32					16.69	14.45	12.89	12.98	13.20	13.41	13.61	14.71	15.05	15.31	16.14	17.65	19.88	22.80	24.76
Processing and Material Handling	C$/t shipped	13.01					12.13	10.34	9.44	9.62	9.83	10.02	10.23	10.44	10.65	10.86	11.51	12.71	14.03	15.49	17.66
G&A	C$/t shipped	4.13					4.48	3.50	2.98	3.03	3.10	3.16	3.23	3.30	3.36	3.43	3.63	4.01	4.43	4.89	5.65
Total Onsite	**C$/t shipped**	**35.46**					**33.30**	**28.28**	**25.31**	**25.63**	**26.13**	**26.59**	**27.06**	**28.45**	**29.06**	**29.59**	**31.28**	**34.37**	**38.33**	**43.18**	**48.08**
Operating Cashflow	**C$ '000**	**7,185,553**					**90,716**	**123,656**	**159,762**	**163,659**	**171,236**	**170,083**	**173,545**	**174,729**	**178,080**	**186,996**	**886,153**	**980,234**	**1,077,394**	**1,178,843**	**953,685**
CAPITAL COST																					
Direct Cost																					
Mining	C$ '000	151,646		29,614	60,412	61,620															
Processing	C$ '000	39,352		-	15,554	23,798															
On-Site Infrastructure	C$ '000	46,437		4,507	13,793	28,137															
Off-Site Infrastructure	C$ '000	64,522		12,575	19,240	32,708															
Total Direct Cost	**C$ '000**	**301,958**		**46,696**	**108,999**	**146,263**															
Other Costs																					
Indirect Costs	C$ '000	71,121		13,889	28,333	28,899															
Owner's Costs	C$ '000	34,154	2,585	5,932	11,765	13,372															
Subtotal Costs	**C$ '000**	**407,232**	**2,585**	**66,517**	**149,096**	**188,534**															
Contingency	C$ '000	72,898		14,236	29,041	29,622															
Initial Capital Cost	**C$ '000**	**480,130**	**2,585**	**80,752**	**178,137**	**218,156**															
Sustaining (with escalation)	C$ '000	599,930					17,623	26,212	24,625	17,268	11,120	7,068	14,435	17,988	15,635	12,762	108,703	86,454	109,220	104,391	26,425
Reclamation and Closure	C$ '000	30,246		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30,246
Total Capital Cost	**C$ '000**	**1,110,306**	**2,585**	**80,752**	**178,137**	**218,156**	**17,623**	**26,212**	**24,625**	**17,268**	**11,120**	**7,068**	**14,435**	**17,988**	**15,635**	**12,762**	**108,703**	**86,454**	**109,220**	**104,391**	**56,671**
CASH FLOW																					
Net Pre-Tax Cashflow	**C$ '000**	**6,075,246**	**(2,585)**	**(80,752)**	**(178,137)**	**(218,156)**	**73,093**	**97,444**	**135,137**	**146,391**	**160,117**	**163,015**	**159,110**	**156,741**	**162,445**	**174,234**	**866,262**	**991,827**	**1,076,426**	**1,193,972**	**999,164**
Cumulative Pre-Tax Cashflow	C$ '000		(3,085)	(83,837)	(261,974)	(480,130)	(407,038)	(309,594)	(174,457)	(28,066)	132,051	295,066	454,175	610,917	773,362	947,596	1,813,858	2,805,685	3,882,111	5,076,082	6,075,246
Taxes																					
NL Mining Tax	C$ '000	892,540		-	-	-	-	4,504	17,225	16,279	18,052	18,533	19,492	19,761	20,324	21,834	123,820	140,551	155,112	168,697	148,356
Income Tax (Federal, Provincial)	C$ '000	1,571,930		-	-	-	-	-	0	14,811	35,969	37,414	39,456	40,264	41,438	44,096	226,612	255,103	279,837	303,132	253,798
Total Taxes		**2,464,470**		-	-	-	-	**4,504**	**17,225**	**31,089**	**54,021**	**55,948**	**58,949**	**60,025**	**61,761**	**65,930**	**350,432**	**395,654**	**434,949**	**471,829**	**402,154**
After-Tax Cash Flow	**C$ '000**	**3,610,776**	**(2,585)**	**(80,752)**	**(178,137)**	**(218,156)**	**73,093**	**92,940**	**117,911**	**115,302**	**106,095**	**107,067**	**100,161**	**96,716**	**100,684**	**108,304**	**515,830**	**596,173**	**641,477**	**722,143**	**597,010**
Cumulative	C$ '000		(3,085)	(83,837)	(261,974)	(480,130)	(407,038)	(314,097)	(196,186)	(80,884)	25,212	132,279	232,440	329,156	429,840	538,144	1,053,973	1,650,147	2,291,624	3,013,766	3,610,776
PROJECT ECONOMICS																					
Pre-Tax																					
Payback Period	**yrs**	**4.2**																			
Pre-Tax IRR	**%**	**23.4%**																			
Pre-tax NPV at 5% discounting	C$ '000	1,900,081																			
Pre-tax NPV at 8% discounting	**C$ '000**	**1,017,038**																			
Pre-tax NPV at 10% discounting	C$ '000	681,292																			
After-Tax																					
Payback Period	**yrs**	**4.8**																			
After-tax IRR	**%**	**18.5%**																			
After-tax NPV at 5% discounting	C$ '000	1,088,743																			
After-tax NPV at 8% discounting	**C$ '000**	**553,094**																			
After-tax NPV at 10% discounting	C$ '000	349,180																			
Cashflows are discounted to 1-Jan-24																					

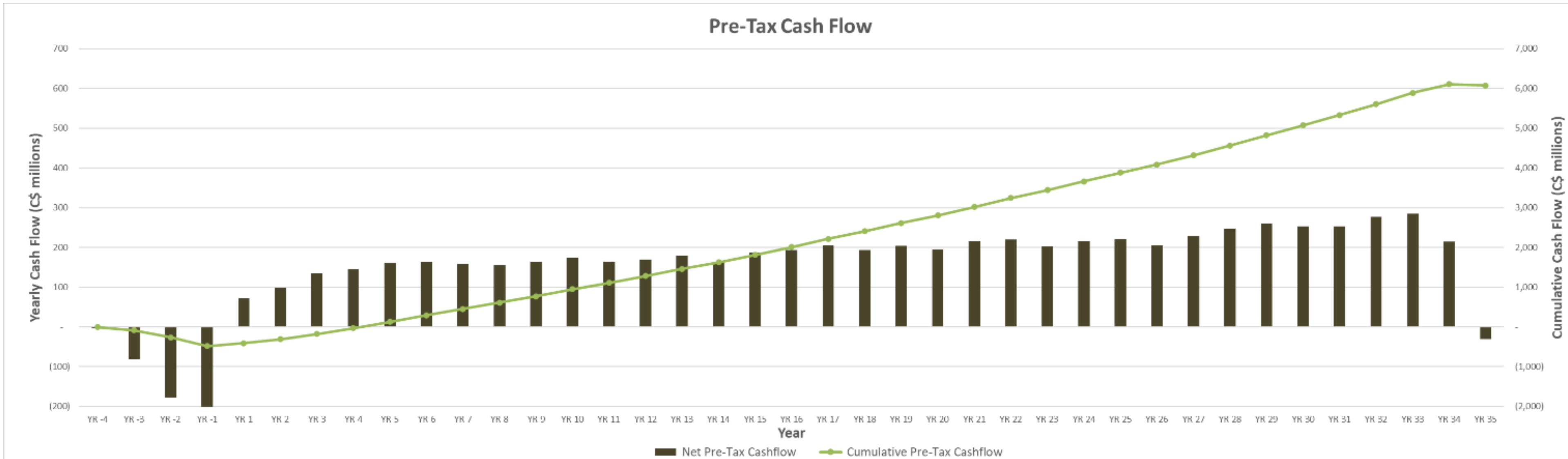
1.2.2 Cash Flow Analysis

Considering the Project on a stand-alone basis, the undiscounted pre-tax cash flow totals $6,075 million over the initial 34-year mine life. A summary of economic results (both pre-tax and post-tax) is presented in Table 1-3. The annual pre-tax cash flow is shown in Figure 1-1.

Table 1-3: Summary of Economic Results

Metric	Units	Value
Pre-Tax Payback Period	yrs	4.2
Pre-Tax Internal Rate of Return (IRR)	%	23.4%
Pre-Tax Net Present Value (NPV) at 5% Discounting	C$ '000	1,900,081
Pre-Tax NPV at 8% Discounting	**C$ '000**	**1,017,038**
Pre-Tax NPV at 10% Discounting	C$ '000	681,292
After-Tax Payback Period	yrs	**4.8**
After-Tax IRR	%	**18.5%**
After-Tax NPV at 5% Discounting	C$ '000	1,088,743
After-Tax NPV at 8% Discounting	**C$ '000**	**553,094**
After-Tax NPV at 10% Discounting	C$ '000	349,180

Figure 1-1: Annual Pre-Tax Cash Flow



1.2.3 Sensitivity Analysis

Project risks can be identified in both economic and non-economic terms. Key economic risks were examined by running cash flow sensitivities:

- Production losses
- Salt price
- Operating costs
- Pre-production capital costs

Pre-tax 8% NPV and IRR sensitivity over the base case has been calculated for -20% to +35% variations. The sensitivities are shown in Figure 1-2, Figure 1-3, and Table 1-4.

Figure 1-2: Pre-Tax 8% NPV Sensitivity Analysis

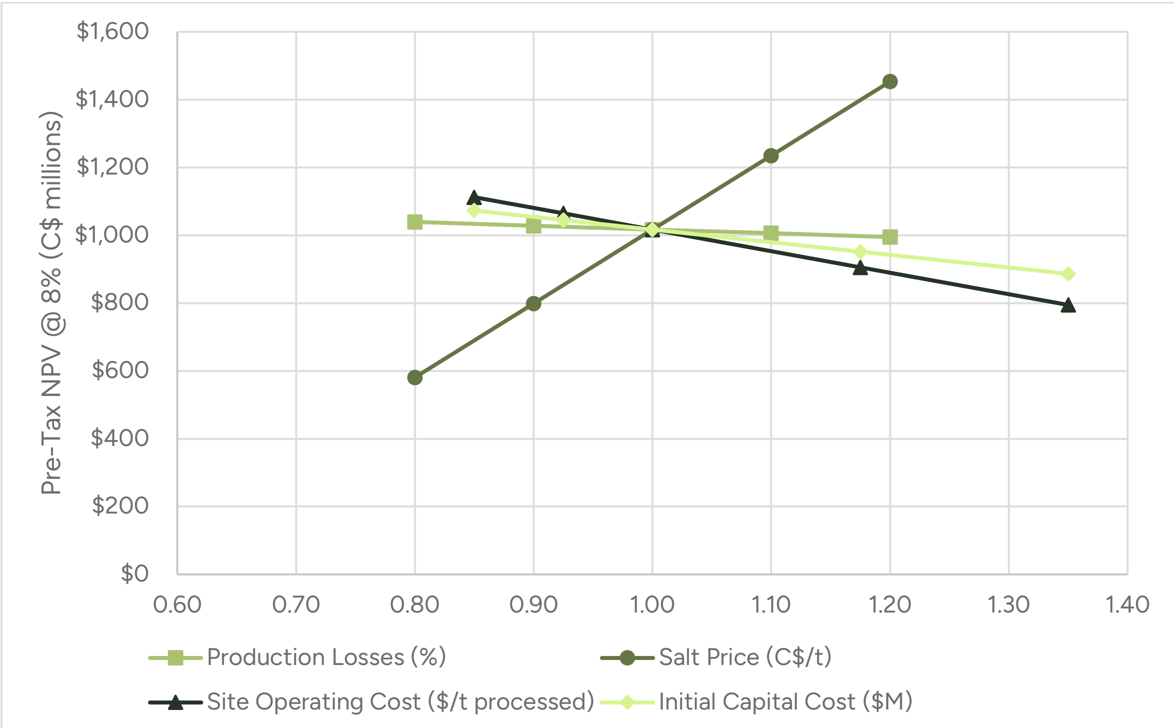


Figure 1-3: Pre-Tax IRR Sensitivity Analysis

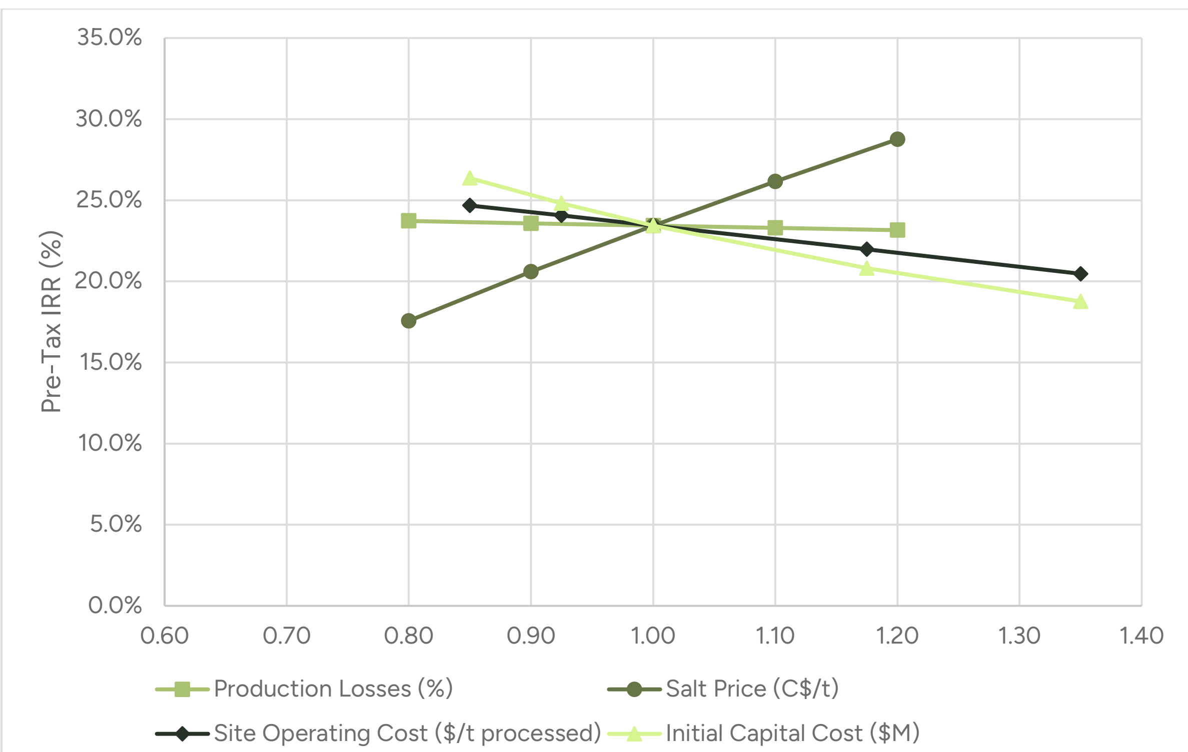


Table 1-4: Pre-Tax Sensitivity Analyses

Production Losses (%)	NPV at 8% ($M)	IRR
4.0%	$1,039	23.7%
4.5%	$1,028	23.6%
5.0%	**$1,017**	**23.4%**
5.5%	$1,006	23.3%
6.0%	$995	23.2%
LOM Salt Price (C$/t)	**NPV at 8% ($M)**	**IRR**
99.89	$581	17.6%
112.37	$799	20.6%
124.86	**$1,017**	**23.4%**
137.34	$1,235	26.2%
149.83	$1,453	28.8%
Operating Cost ($/t processed)	**NPV at 8% ($M)**	**IRR**
$30.14	$1,112	24.7%
$32.80	$1,065	24.1%
$35.46	**$1,017**	**23.4%**
$41.66	$906	22.0%
$47.87	$795	20.5%
Initial Capital Cost ($M)	**NPV at 8% ($M)**	**IRR**
$408.1	$1,073	26.4%
$444.1	$1,045	24.8%
$480.1	**$1,017**	**23.4%**
$564.2	$952	20.8%
$648.2	$886	18.8%

1.3 Technical Summary

1.3.1 Property Description and Location

The Project is located in Western Newfoundland, Canada, approximately 15 km south of the town of Stephenville, and in the vicinity of St. George's. The central point of the Project is at longitude 58.529, latitude 48.402, or 387,550 m East, 5,362,650 m North (NAD83 Zone 21 North).

1.3.2 Land Tenure

The GAS Project as the subject of this Technical Report is located within a block of claims totalling 7,100 ha, specifically on Mineral Licence 0227183M.

1.3.3 Existing Infrastructure and Local Resources

The deposit is located within the town limits of St. George's, a town incorporated in 1965. The St. George's area had been a fishing village dating to the seventeenth century. As of 2021, the town had a population of approximately 1,200 inhabitants. The town has a school, fire hall, community hall, minor commerce, a medical clinic, and a recreation centre. The town is located approximately 24 km by road from Stephenville, Newfoundland. Stephenville is one of the larger centres in western Newfoundland, with a direct population of 6,500 as of 2021. The services of Stephenville include a modern hospital, year-round port, government institutions, a community college (College of the North Atlantic), provincial detention centre, community centres, and more established commercial centre. Stephenville's international airport has irregular flight service as of 2023. Corner Brook is the largest community in western Newfoundland with a metro population of 30,000 as of 2021, and is approximately 90 km away from the deposit. St. George's, Stephenville, and Corner Brook are all situated in proximity to the Trans-Canada Highway (Hwy #1).

An all-weather gravel haul road was constructed on the Property during historic mining operations to connect the Flat Bay Gypsum Quarry with the Turf Point Port. Although the road is private, permission has been granted by the owner to Atlas to use for property access. Based on the three site visits SLR undertook, it appears that members of the public regularly use this private road.

The nearest power lines in relation to the deposit consists of the St. George's substation, owned by NL Power. This is located within the town of St. George's, approximately one kilometre away from the property.

1.3.4 History

Geological mapping of the Bay St. George Sub-Basin has been historically undertaken since the mid-1970s. Exploration drilling across the region was undertaken by numerous owners from the 1950s until the late 1990s. The focus of early exploration was on understanding the full extent and structure of Carboniferous strata of the Sub-Basin, later with a view to assessing hydrocarbon and mineral potential of the region. Geological mapping and geochemical surveying have been supplemented by numerous geophysical surveys including a range of airborne magnetics, gravity, radiometric, and most recently seismic surveying.

Within the current Atlas licences, historical exploration has largely been focussed on gypsum quarrying, with the Flat Bay Gypsum Quarry having been operated since the 1950s. Other gypsum quarries include those at Fischell's Brook during the 1990s and at Coal Brook during the early 2000s.

Red Moon Potash Inc. was incorporated on June 15, 2011, for the purpose of managing the industrial mineral exploration activities of Vulcan Minerals Inc. As of August 15, 2012, Red Moon was a wholly owned subsidiary of Vulcan Minerals with 100%-owned mineral licenses transferred to Red Moon for common shares and a 3% production royalty in 2012. In August 2021 Red Moon was renamed Atlas Salt with 36% ownership held by Vulcan Minerals.

Production of gypsum has taken place within the GAS Property at the Flat Bay Quarry as well as at the nearby Fischell's Brook and Coal Brook quarries. The Flat Bay Quarry is located directly southwest of the GAS halite deposit, while Fischell's Brook is located approximately 18 km southwest of the deposit.

No historical halite Mineral Resources estimates have been prepared by previous owners, and no halite production has taken place within the GAS Property.

1.3.5 Geology and Mineralization

The GAS Project is located within the Bay St. George Sub-Basin which represents the northeastern extension of the regional Maritimes Carboniferous Basin of southwest Newfoundland. This Basin is an extensive geological basin complex underlying the Gulf of St Lawrence and surrounding areas. During Sub-basin formation, differential extension and deformation has resulted in varied tectonic features across the region, including the Flat Bay anticline. Sub-basins are commonly separated by basement highs/ridges, and sedimentation in depressions and fault-bound basins across the region has been irregular.

The Bay St George Sub-Basin has been interpreted to be approximately 130 km long and 20 km wide. The total sedimentary succession in the Sub-Basin is estimated to be approximately 10 km comprising Carboniferous strata. Depositional environments have predominantly been terrestrial, although the Bay St George Sub-Basin halite is a basin-wide, sedimentary salt deposit on the basis of its wide lateral extent and overall stratigraphy which includes sedimentary strata from a range of depositional environments including marine, shallow marine and salina, to fluvial and deltaic facies. Salt formation within sedimentary environments occurs through the evaporation of seawater within shallow enclosed or isolated basins. Basin-wide basin deposits typically result in thick accumulations of evaporites where minor fluctuations in seawater, freshwater, or terrigenous sediment influxes can result in major depositional changes.

The Codroy Formation of the Codroy Group represents the dominant stratigraphic unit within the GAS Project area, with bedrock exposures observed across the Project area including at the quarry workings of the Flat Bay Gypsum Quarry, approximately 3 km southwest of the GAS area.

1.3.6 Exploration Status

Exploration of the GAS deposit by Vulcan Minerals (now Atlas) has comprised several phases of drilling informed by numerous seismic surveys. The first drill hole within the deposit was completed in 2002 and intended to test geological and geophysical interpretations of a massive halite deposit within the area after initial seismic surveying around the Flat Bay Gypsum Quarry in 1998. Further seismic surveying through the GAS deposit was completed in 2010 and interpretation of reflectors were subsequently tested through drilling of four drill holes in 2013 and 2014 by Vulcan Minerals. Data from this exploration was used for a maiden Mineral Resource estimate in 2016.

In 2022 and 2023, Atlas has completed an additional four drill holes within the GAS deposit area, the data from which has been combined with previous drill hole and seismic survey data to inform an updated Mineral Resource estimate by SLR.

Other Vulcan Minerals drilling across the region has included four drill holes from 1999 to 2006 to evaluate the hydrocarbon potential within the regional Carboniferous strata, and a further eight holes between 2009 and 2012 around the Flat Bay Gypsum Quarry to test the gypsum thickness within the remaining extent of the quarry.

1.3.7 Mineral Resources

Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Definition Standards for Mineral Resources and Mineral Reserves (CIM (2014) definitions) were used for Mineral Resource classification. Table 1-5 provides a summary of the Mineral Resource estimate by SLR, with an effective date of May 11, 2023. Indicated Mineral Resources are estimated to total 383 million tonnes (Mt) averaging 96.0% NaCl containing 368 Mt of NaCl. In addition, Inferred Mineral Resources are estimated to total 868 Mt averaging 95.2% NaCl containing 827 Mt of NaCl.

The SLR estimate consists of a 5% increase in tonnage and 0.3% decrease in grade in comparison to the previous estimate for the GAS Project.

Table 1-5: Mineral Resource Estimate – Effective May 11, 2023

Category	Horizon	Tonnage (Mt)	Grade (NaCl %)	Contained NaCl (Mt)
Indicated	1-Salt	-	-	-
	2-Salt	160	95.9	154
	3-Salt	223	96.0	214
	Total	**383**	**96.0**	**368**
Inferred	1-Salt	195	95.3	186
	2-Salt	288	95.3	274
	3-Salt	385	95.0	366
	Total	**868**	**95.2**	**827**

Notes:

1. CIM (2014) definitions were followed for Mineral Resources.
2. Mineral Resources are estimated without a reporting cut-off grade. Reasonable Prospects for Eventual Economic Extraction were instead demonstrated by reporting within Mineable “Stope” Optimised (MSO) shapes, with a minimum height of 5 m, minimum width of 20 m, length of 40 m, and minimum grade of 90% NaCl, with a 5 m minimum pillar width between shapes.
3. Bulk density is 2.16 t/m^3.
4. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
5. Mineral Resources are inclusive of Mineral Reserves.
6. Salt prices are not directly incorporated into the Mineral Resource MSO minimum target grades, however, the mean Mineral Resource grades exceed the 95.0% NaCl (± 0.5%) specification outlined in ASTM Designation D632-12 (2012).
7. Numbers may not add due to rounding.

The QP is not aware of any environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other relevant factors that could materially affect the Mineral Resource estimate.

1.3.8 Mineral Reserves

Mineral Reserves for the Project were estimated by SLR as part of the FS. Table 1-6 summarizes the GAS Mineral Reserve estimate as of July 31, 2023.

Table 1-6: Summary of Mineral Reserves – Effective July 31, 2023

Category	Salt Horizon	Tonnage (Mt)	Grade (%NaCl)	Contained NaCl (Mt)
Probable	2-Salt	37.7	95.9%	36.2
	3-Salt	50.3	96.0%	48.3
Total		**88.1**	**96.0%**	**84.5**

Notes:

1. CIM (2014) definitions were followed for Mineral Reserves.
2. Salt prices are not directly incorporated into the Mineral Reserve designs, however the mean Mineral Reserve grades exceed the 95% NaCl (+-0.5%) specification outlined in ASTM Designation D632-12(2012).
3. A minimum mining height of 5.0 m and width of 16.0 m were used for production rooms.
4. Sterilization zones of 8.0 m below the top of salt and 5.0 m above the bottom of salt have been applied.
5. A mining extraction factor of 100% was applied to all excavations.
6. Bulk density is 2.16 t/m^3.
7. Planned process recovery is 95%.
8. Numbers may not add due to rounding.

The QP is not aware of any mining, metallurgical, infrastructure, permitting, or other relevant factors that could materially affect the Mineral Reserve estimate.

Mineral Reserves were estimated by the application of mining factors to the Indicated Mineral Resources. A minimum mining thickness of five metres was used in the planning. The mine designs and economic considerations in the 2023 Feasibility Study support the Mineral Reserve estimates.

Only Indicated Mineral Resources were converted to Mineral Reserves. No Inferred Mineral Resources were converted to Mineral Reserves.

1.3.9 Mining Method

Mining designs, development plans and schedules have been prepared for a 2.5 Mtpa mechanized room and pillar underground mining operation. Salt will be mined using CMs and hauled by truck to a lump breaker and conveyor system to move material to a crushing and screening plant located within the underground mine. Certain components of the mine are designed to produce up to 4.0 Mtpa of salt for ice control on roads. The mining equipment will be mechanized using battery electric vehicles (BEV) to the extent possible. The underground mine consists of two declines, a plant and infrastructure level, and seven production levels. The initial mining level will be the 320 Level (approximately 320 m below surface) and the deepest level will be the 530 Level (approximately 530 m below surface).

Geotechnical test results support the assessment of the geotechnical conditions expected in the decline development through the Red Beds. The test work was completed on material from drill holes CC6, CC7, D1 and TH1 and TH2. Geotechnical test results from holes CC8 and CC9 support the geotechnical analysis of the salt horizon. The selected pillar width/height ratio, initially taken from benchmarking with similar mines and rule of thumb estimates, have been confirmed by the updated analysis and the sill pillar thickness has been reduced by five metres compared to previous studies.

An assessment of the empirical pillar stress/strength calculation methods indicate that the pillars are sized appropriately for the upper four working levels. In lower levels the pillars may behave in a yielding manor, which can be accommodated and managed through instrumentation and support. The 420 m mining level and deeper are due to be mined later in the mine life, allowing for engineering improvements to the design as the ground characteristics and stresses are better understood. The conceptual predictions indicate that there will be minimal surface subsidence issues. Typical to low closure rates are expected, due to the low ground temperature gradient at GAS.

The twin declines from surface are approximately 1,400 m in length to the 240 Level and designed at a gradient of -16%. The two declines will be parallel and will be 40 m apart (wall to wall) and include three cross passages to permit resource sharing during the construction period. In the initial development the declines will be extended to the 320 Level and in the future the declines will be extended as needed to the subsequent six mining levels. The declines will require a finished face area of at least 42 m^2 based on mine ventilation requirements.

Room and Pillar production mining will be executed in five metres high cuts, with up to three bench cuts taken below the first, resulting in a maximum room height of 20 m. The pillars will be 25 m square pillars separated by 16 m wide rooms cut in four passes with the CM. Each 20 m thick mining level will be separated from the next by 15 m thick horizontal sill pillars.

An eight metre salt pillar is left between the production heading roof and the overlying red beds or interburden and a five metre thick salt pillar is left between the floor of the production drive and the top of any interburden layers.

Each level will be mined using the CMs to work in independent areas of the level to permit blending of the mine production to maintain the minimum head grade. The top mining level will be rock bolted. After the uppermost level is developed to an edge the subsequent cuts can be mined to support continuous high production rates.

The resource model was reviewed in mine planning software to assess the distribution of the tonnages by level and by grade to select an appropriate level upon which to commence mining. The estimated volume of mineable salt increases with depth from surface and the average grade of the deposit decreases with depth. Laterally the deposit is thinner to the southwest. There are two interburden layers in the deposit and the salt horizons have been named as follows:

- 1-Salt is below the red beds and overlies the first interburden layer
- 2-Salt is between the two interburden layers
- 3-Salt is below the second interburden layer and overlies the basal anhydrite

The 1-Salt horizon was found to have a “pillow” shape about the CC4 drill hole, this limited the horizontal extent of the salt at this level. The presence of low grade NaCl through the centre of the horizon further reduced the potentially mineable volume when pillars above and below the mudstone layer were considered. For these reasons, the 1-Salt remained in the Inferred Mineral Resource category and was therefore not included in the production plan.

The 2-Salt and 3-Salt horizons were evaluated using Deswik mine planning software and the tonnage per five metre interval was evaluated from the top of the horizons to the base. Above the 320 Level there was insufficient tonnage to sustain the planned production rate for a reasonable period before development of the next level would be required. At the 320 Level the tonnage available is slightly less than the first two years of planned operations. The 320 Level was selected as the upper most mining level. There is mineable material above the 320 Level and it is recommended that mining above the 320 Level be re-evaluated in future studies.

The specification for production is to average 95% NaCl. A production schedule to maintain this specification was developed using a cut-off grade of 90% and blending the production to maintain a grade in excess of 95% NaCl. The LOM mine production totals 88.1 Mt mined at a grade of 96.0% NaCl.

The mining equipment will include drum style CMs capable of developing a 6.7 m wide by five metre high heading in a single pass. Salt will be loaded directly into 50 t capacity battery electric haul truck for transport to a feeder breaker and then by conveyor to the plant. The installation of rock bolts for the support of the uppermost cut of each mining level is included in the mining cycle. Initially four haul trucks, two CMs, a road header, two rock bolt jumbos and a variety of service vehicles make up the initial mining fleet.

The pillar pattern represents extraction of 63% and the sill pillars represent approximately 57% extraction for an estimated 36% extraction before consideration of pillars above and below interburden layers and barrier pillars around permanent infrastructure. After the inclusion of barrier pillars and the interburden pillars, the mine plan has a 23% conversion of Indicated Mineral Resources to Probable Mineral Reserves.

Mining extraction at the face is assumed to be 100% followed by an allowance for 5% losses in transport from mine face to ship hold, mainly due to fines losses. Consequently, 83.7 Mt of road salt are produced over an initial 34 year mine life.

1.3.10 Mineral Processing

Salt from the mine will be processed to produce de-icing salt for road maintenance and construction. Processing will be carried out in a processing plant located underground within the mine and will consist of conventional dry screening and crushing using double roll crushers and inclined vibrating screens. The processing plant and associated conveyors and infrastructure have been designed for a throughput of 4.0 Mtpa to allow for potential future expansions, although the Project economic analysis is based on production of 2.5 Mtpa of finished salt.

A key constraint during processing is the minimization of fines generation, which could result in specification exceedances and consequently penalty charges. To minimize the production of fines, roll crushers and multiple crushing and screening stages will be used to minimize the reduction ratio at each stage of crushing, and product-size material will be screened out before each stage of crushing and directed to the product stockpile. A fines screening circuit within the processing plant will remove excess minus 600 µm material from the crushed salt if necessary. An allowance for the rejection of up to 10% of plant feed as fines has been provided in the design.

After processing, the finished salt will be transported to the surface by conveyor via one of the mine access declines. Once on surface, the salt will be conveyed by overland conveyor to the port at Turf Point and stored in enclosed storage buildings prior to shipping. Reclaim feeders and conveyors in tunnels beneath the storage buildings will be used to convey the salt to the ship loader.

1.3.11 Project Infrastructure

The Project is located within the town limits of St. George's, NL. To develop the Project, additional infrastructure will be required. The area around the mine declines and surface buildings demarcated by a fenced perimeter and gatehouse is referred to as "onsite infrastructure" and contained within a "site terrace" of approximately 40 ha, while the area outside this (including the overland conveyor, port, and transmission line) are referred to as "offsite infrastructure".

The area of the site terrace is categorized as gently sloping toward the north-northwest, with an elevation of from 40 metres above sea level (masl) to 50 masl. The area of the site terrace requires further geotechnical ground investigations to be undertaken to determine the suitability of this area to host the site infrastructure and mine access locations. The site terrace will be accessed by a single road approximately 1,400 m in length connecting to Steel Mountain Road that connects the town of St. George's to the Trans-Canada Highway. The access road will be developed at a 2% gradient, with suitable widths to maneuver heavy machinery required during construction and operations.

Electrical power is available from a substation owned by NL Power (a provincial crown corporation that distributes power to end-users) located approximately 1,400 m from the proposed mine site. It is proposed that a transmission line will connect from the Project to the NL Power substation. Discussions between Atlas and NL Power indicate that the substation has the capacity to accommodate the addition of an industrial consumer such as what is being proposed for the Project, however further analysis is required. A site substation would receive the power from NL Power, and then step down the power and distribute to all the key areas of the Project including the mine, process plant, surface buildings, and overland conveyor.

It is envisaged that a connection to the town water and sewer supply would be established. Discussions with the St. George's town planner indicated that the town water systems have the capacity to accommodate a Project such as what is being proposed at Great Atlantic, however further work is required in this area.

It is proposed that a series of ditches be established around the perimeter to divert surface water away from contacting the site. It is proposed that the drainage ditches be developed in a way that utilizes the natural topography of the area so that water collected in the ditches gets redirected into localized streams and creeks in the area. It is proposed that water that has come in contact with the site will be collected in an effluent water treatment system. This water will be made up of the following principal sources: surface water runoff from the waste rock pile and temporary salt storage; water that has been pumped to surface from the underground sump at the base of the declines; nominal amount of process water used at the site.

An initial site water balance has been completed for the Project. It is recommended that the site water balance be updated in future studies to determine the sizing of the effluent water treatment system based on recommended hydrogeological and hydrological studies. To date an analysis of the geochemical properties of the waste rock that will be stored on surface has not been undertaken to determine what form of effluent treatment is required. For this study, SLR has assumed that the water would be treated for removing total suspended solids (TSS) by gravity, and that the effluent discharge point is into a creek immediately west of the site area.

The following buildings are planned for the Project: administration building; light vehicle parking; mine dry (change house); minor maintenance shop, with the main maintenance shop being in the underground mine; warehouse; cold storage area; and gatehouse. A camp is not required for the Project, as it is assumed that the workforce would commute daily from the local area.

The salt conveyor system includes the following principal components: on-site salt transfer system; salt storage building; overland conveyor from site to the port. Salt product will be conveyed up the decline from the 240 Level process plant to surface via a 1.4 km long 36" wide belt. On surface the salt will be conveyed by covered 36" belts with 800 tph capacity to a salt storage building. The site salt storage is planned to have a capacity of nominally 12,000 t (approximately two days of production). The site salt storage serves a dual purpose: providing a buffer of capacity in the event that the overland conveyor requires planned maintenance; and serve as a location for selling salt to local markets via truck delivery. The site salt storage building will be fitted with an anti-caking spray system and will have the ability for a front end loader (FEL) to reclaim the salt into the conveyor system for delivery to the port.

A principal component of the Project is the planned 2.0 km overland conveyor connecting the site with the existing Turf Point port. The alignment of the overland conveyor will generally follow the historical haul road and causeway that was built in the 1960's to serve the gypsum mine. Three portions of the overland conveyor require crossings of municipal infrastructure – the first is a buried crossing in the area of Main Street, the second is a bridge crossing over Station Road and the T'Railway, and the third is a bridge crossing near the municipal marina.

Turf Point port is an existing aggregate exporting facility currently used by Atlas to ship gypsum to markets in North America. Turf Point is owned by a third-party. The GAS Project plans to use the port for the shipment of salt based on coming to a commercial agreement with the third-party. There is no certainty that such an agreement will be realized, and it is assumed that Atlas will work with the owners of the port to consummate a commercial arrangement for the eventual export of salt from Turf Point. The principal components of the port as it exists today include the following: aggregate storage building with a capacity of approximately 12,700 t; outdoor aggregate storage; reclaim system feeding onto a single conveyor; series of five concrete caissons extending into Bay of St. George's connected by a structural steel trestle; ship loader mounted on the structural steel trestle with a loading rate of nominally 1,000 tph. Vessels up 225 m long, 32.26 m in beam and an alongside depth of 10 m can be accommodated.

It is proposed that the existing facilities will be augmented to enable the port to be suitable for exporting 2.5 Mtpa of rock salt. The following key changes are proposed: modify the existing storage building to accommodate the delivery of rock salt via overland conveyor; construct a new 47,300 t storage building in the area of the current outdoor storage, immediately adjacent to the existing storage building (in the area of the current outdoor storage); complete a series of reclaim feeders underneath the new building to feed salt to the ship loader; refurbishment of the existing ship loader, replacement of the existing reclaim conveyor. With the addition of the new storage building, the total storage at the port will be 60,000 t, or approximately two ship loads. The ship loader would maintain its capacity to load at a rate of 1,000 tph.

A waste management facility is included in the design that consists of three piles. A waste pile is sized to accommodate the waste rock generated from the initial declines, box cut, and excess site terrace excavations. A second pile is planned for salt excavated during the pre-production period. A third pile is planned for organics material removed during initial excavations. Notably, no tailings management facility is planned for the Project, as all processed material is either sold as product or returned to underground mined out areas.

1.3.12 Market Studies

In order to establish a reasonable marketing plan and pricing data, SLR has reviewed both publicly available information, and relied on information and documentation commissioned specifically for Atlas and the Project. The North American highway de-icing market is divided into two primary end-users: government entities and commercial operators, accounting for approximately 70% and 30% of volume, respectively.

The annual consumption of markets that GAS has a high potential of penetrating is estimated to be approximately 11 Mtpa to 16 Mtpa. SLR notes that annual consumption varies, with some winters having more weather events necessitating the increased application of rock salt.

Atlas has based the FS sales plan on the following markets.

- US East Coast (USEC) – Maine to Baltimore ports
- Quebec – Montreal and St Lawrence downstream
- Newfoundland – St. John's and west coast
- Spot Sales

Table 1-7 shows the Project allocation by destination or type of sale.

Table 1-7: Market Breakdown

Destination	Allocation	
	%	Tonnage (t)
USEC	50%	1,250,000
Newfoundland	15%	375,000
Quebec	25%	625,000
Spot Sales	10%	250,000
Total	**100%**	**2,500,000**

Spot sales refer to private companies that buy salt for use in de-icing operations on private property, and who typically pay a premium price due to the relatively low tonnages consumed.

All salt prices and logistics costs are based on Q3 2023 estimates.

With a production rate of 2.5 Mtpa, Atlas would capture from 16% to 23% of the high potential North American market. At 4.0 Mtpa, the rate of capture would increase to from 25% to 36%. Atlas would supply approximately from one quarter to one third of total rock salt in the target market, which is similar to the current scenario with two to three companies operating in each sub-region of North America. Gaining this level of market penetration will require a ramp-up period as Atlas establishes itself in the market., To achieve market share, it is envisaged that Atlas would first replace production that originates from overseas markets, given the relative shipping advantage that GAS would have. Further, Atlas intends on displacing production from aging rock salt mines located in the region.

Atlas has assessed the costs of water borne transport and logistics costs to ship product from Turf Point at ports in the market areas listed above.

Although there exists a typical salt marketing "season" from April to December of each year, it is assumed that GAS can ship salt year-round since it has access to a generally ice-free port, and the high potential market is accessible year-round.

With the exception of the west coast Newfoundland market, Atlas would sell salt as far as the point of delivering it dockside at each of the destination ports. From that point, a distribution company would manage the unloading of the salt, salt storage, and delivery of salt to the final point of sale. This is generally known as CIF (Cost, Insurance, Freight).

It has been assumed that shipping would occur mainly via using 25,000 tonnes to 30,000 tonnes capacity self-unloaders and up to 40,000 tonnes capacity grab unloaders. Smaller vessels could also be utilized for smaller ports. Shipping to USEC will be by international flagged vessels.

For the west coast Newfoundland market, SLR has assumed that Atlas will use a Delivered at Place (DAP) pricing basis, in which Atlas will arrange for delivery of salt to the final point of sale determined by the customer (typically a municipality). Atlas will accomplish this either by truck for nearby municipalities, or vessels when appropriate.

Some sales could be conducted on a Free on Board (FOB) basis, where salt purchasers would arrange for a vessel to be loaded with salt at Turf Point port.

Regardless of the shipping terms (DAP, FOB, CIF), the pricing assumed by SLR in the financial model is FOB Turf Point port.

SLR has developed a weighted average of the price that Atlas could reasonably expect to receive assuming FOB Turf Point of C$72.24 per tonne. The weighted average is based on actual 2022/2023 pricing data for individual ports in the markets listed in Table 1-7.

1.3.13 Environmental, Permitting and Social Considerations

The Project is located within the town of St George's. The Qalipu Mi'kmaq First Nation has a community in St George's. Engagement with communities has been undertaken and is ongoing and will be continued as the Project progresses into the environmental approval application phase.

Baseline studies were initiated for the Project in 2022 and identified some protected and sensitive areas close to the Project area. Additional baseline work is recommended.

An environmental assessment has not yet been conducted for the Project. To support the Feasibility Study, subject matter experts conducted desktop work to identify potential environmental and social impacts and key mitigation measures. Further environmental studies are recommended to support the provincial authorisation process and progress the Project into the environmental application phase.

The Project team has incorporated key environmental and social mitigation measures into the Project design.

An environmental approval and permit register and high-level schedule has been developed for the Project. The Project requires registration pursuant to the NL Environmental Protection Act and the approval process under this legal framework. No federal environmental assessment is anticipated. Several environmental permits will be required.

The Project team has developed a conceptual closure plan a high-level closure costing and will be the starting point for the development of a Rehabilitation and Closure Plan required as part of the mine development plan approval process.

1.3.14 Other Relevant Information

1.3.14.1 Project Execution Plan

It is assumed that Atlas will establish an Owner's Project Team responsible for managing all of the Project's business, management and operations activities.

The Project execution strategy is to appoint a singular Engineering Procurement and Construction Management (EPCM) Contractor to complete the engineering, procurement and construction management associated with the on and off-site infrastructure and all process and material handling facilities. In addition, the PEP assumes the appointment of a mining contractor for the design and construction of the box cut and decline development.

To ensure a timely and cohesive implementation of this project, the team of Atlas Salt' Operational and Project staff will be required to be mobilised as soon as approval is given to proceed with the Project. The up-front work by the dedicated Owner's Project Team will potentially be supported by project staff from internal and external sources to assist with the calling of tenders for the Execution Phase Services Contracts, specifically the EPCM and Mining Contract.

It is proposed that the Owner's Project Team, will be supported by a Project Steering Committee, which will report to the Vice President of Engineering and Construction and Mine Project Manager.

The EPCM will carry overall responsibility for the execution of activities under the EPCM mandate, including detailed engineering, procurement, logistics, construction, commissioning, and Project Controls.

A portion of Atlas' Operations Team will be required to be mobilized during the development phase of the Project to provide common services that will be required over the LOM (i.e., not limited to construction support). Atlas' Operations Team will provide staffing and be responsible for mining operations, including maintenance, health and safety, environmental management & monitoring, permitting, security (assumed to be contracted service), project accounting, warehouse management (EPCM in execution and hand over to Owner in operations) and community relations.

1.3.15 Capital and Operating Cost Estimates

The pre-production capital costs for the Project are based on Q3 2023 estimates. The unescalated capital costs total $450 million. The capital cost estimate is at a AACE Level 3 basis.

For the economic analysis the capital costs have been inflated by 2% per year from 2023. The construction was forecast to commence in 2024 (i.e., "YR -4" in Table 1-8 equals 2024). The escalated pre-production capital totals $480.1 million and is spent over four years as shown in Table 1-8.

Table 1-8: Escalated Pre-Production Capital Cost Estimate

Cost Area	Units	Total	YR-4	YR -3	YR -2	YR -1
Mining	C$ '000	151,646	-	29,614	60,412	61,620
Processing	C$ '000	39,352	-	-	15,554	23,798
On-Site Infrastructure	C$ '000	46,437	-	4,507	13,793	28,137
Off-Site Infrastructure	C$ '000	64,522	-	12,575	19,240	32,708
Total Direct Cost	**C$ '000**	**301,958**	**-**	**46,696**	**108,999**	**146,263**

Cost Area	Units	Total	YR-4	YR -3	YR -2	YR -1
		-				
Other Costs		-				
Indirect Costs	C$ '000	71,121	-	13,889	28,333	28,899
Owners Costs[1]	C$ '000	34,154	2,585	5,932	11,765	13,372
Subtotal Costs[1]	**C$ '000**	**407,232**	**2,585**	**66,517**	**149,096**	**188,534**
		-				
Contingency	C$ '000	72,898	-	14,236	29,041	29,622
Initial Capital Cost[1]	**C$ '000**	**480,130**	**2,585**	**80,752**	**178,137**	**218,156**

Notes:

1. Owner's Costs, Subtotal Costs, and Initial Capital Costs include an additional C$500k spent in "YR -5"

The escalated sustaining capital cost is $599.9 million. Contingency was assessed on a line by line basis. The average contingency is 17.9%.

Operating cost estimates were built up from first principles. The operating cost basis is Q3 2023, and operating costs are escalated at a rate of 2% per year from 2023. The LOM escalated operating costs are summarized in Table 1-9.

The port is independently owned and an operating cost estimate for the storage and ship loading was generated from first principles on the assumption that the port would be operated by the third party. The port costs include operating costs, overhead, profit and an allowance for ongoing repairs and are included in the processing and material handling line.

Table 1-9: LOM Operating Costs

Area	LOM- Initial 34-Year Plan (C$ '000)	Steady State Annual Average (C$ '000)	Unit Costs with Q3 2023 Basis (C$/t shipped)	LOM Unit Costs (C$/t shipped)
Mining	1,532,637	46,008	11.71	18.32
Processing and Material Handling	1,087,987	32,430	8.34	13.01
General and Administration	345,763	10,238	2.65	4.13
Total	**2,966,386**	**88,676**	**22.70**	**35.46**

Notes:

1. The columns LOM – Initial 34 Year Plan, Steady State Annual Average, and LOM Unit Costs include escalation.
2. The column Steady State Annual Average only considers years of producing 2.5 Mtpa

Personnel requirements were estimated for each of the areas and wage rates and benefits were based on a comparison to hard rock and salt mines in the Maritime region. Mine operations personnel levels considered the mining productivity and equipment requirements.

The mine will operate 24 hours per day on a full 365 day year basis, with appropriate allowances for planned annual maintenance. The Project will be operated by company employees. The total personnel requirements are estimated to be 169 persons as summarized by department in Table 1-10. Port operations, which would be managed by a third party, are excluded from this total.

Table 1-10: Project Personnel

Department	Number of Personnel
Mine Operations	64
Underground Maintenance	33
Technical Services	10
Plant & Surface	37
Management & Administration	25
Total	**169**

2.0 Introduction

SLR Consulting Ltd (SLR) was retained by Atlas Salt Inc. (Atlas or the Company) to prepare an independent Technical Report on the Great Atlantic Salt (GAS) Project (the Project or GAS Project), located near St. George's, Newfoundland, Canada. The purpose of this Technical Report is to present the results of a Feasibility Study (FS) of the Project. This Technical Report conforms to National Instrument 43-101 Standards of Disclosure for Mineral Projects (NI 43-101).

This report has been amended from the original signature date of October 11, 2023 to May 1, 2024.

Atlas is a Canadian-based resource development company listed on the Toronto Venture Exchange under the trading symbol SALT (TSXV:SALT), and headquartered in St. John's, Newfoundland. Atlas is the 100% owner of the Project. Atlas is also the largest shareholder in Triple Point Resources Ltd. (Triple Point) as it pursues development of the Fischell's Brook Salt Dome approximately 15 km south of the GAS. The Qualified Persons (QP) understand that the development of the Fischell's Brook Salt Dome is intended for energy storage purposes, and not for mining of road salt. Triple Point is currently a private company.

2.1 Sources of Information

A site visit was carried out by SLR QPs Dr. John Kelly, EurGeol, P.Geo., FIMMM, MIQ, Derek Riehm, M.A.Sc., P.Eng., and David Robson, P.Eng., MBA, from October 17 to 20, 2022. During the site visit, the QPs examined drill hole core, core logging, sampling, quality assurance and quality control (QA/QC), discussed the geological setting of the deposit, the geological interpretations with the site geologist, toured the area of St. George's, met with representatives of the town of St. George's, and toured the port at Turf Point. Lance Engelbrecht, P.Eng., and Mr. Robson visited the property on October 4 to 7, 2021. Mr. Robson also visited the property on April 17 to 20, 2023. During the site visit and in meetings throughout the study, discussions were held with personnel from Atlas, including:

- Patrick Laracy, former Chief Executive Officer, current Chairman
- Rowland Howe, President
- Colin Hayes, Geologist
- Bart Wilson, Geologist

Table 2-1 presents a summary of the QPs responsibilities for this Technical Report.

Table 2-1: List of SLR Qualified Persons and Responsibilities

Qualified Person	Title/Position	Sections
Dr. John G. Kelly, EurGeol, P.Geo., FIMMM, MIQ	Technical Director – Geology	4 – 11, 12.1, 14, 23, 25.1, 26.1
David M. Robson, P.Eng., MBA	Principal Mining Engineer	1 – 3, 12.2, 15, 16, 18, 21, 22, 24, 25.2, 25.4, 25.7, 25.8, 26.2, 26.4, 26.7, 26.8
Lance Engelbrecht, P.Eng.	Technical Manager – Metallurgy	12.3, 13, 17, 25.3, 26.3
Graham Clow, P.Eng.	Strategy Director – Global Mining Advisory	12.4, 19, 25.5, 26.5
Derek Riehm, M.A.Sc., P.Eng.	Principal Consultant	12.5, 20, 25.6, 26.6
All	-	27.0

Dr. Kelly, Mr. Robson, Mr. Engelbrecht, Mr. Clow, and Mr. Riehm are independent QPs as defined in NI 43-101. The documentation reviewed, and other sources of information, are listed at the end of this report in Section 27.0 References.

2.2 List of Abbreviations

Units of measurement used in this Technical Report conform to the metric system. All currency in this Technical Report is Canadian dollars (C$, or $) unless otherwise noted.

μ	micron
μg	microgram
a	annum
A	ampere
bbl	barrels
Btu	British thermal units
°C	degree Celsius
C$	Canadian dollars
cal	calorie
cfm	cubic feet per minute
cm	centimetre
cm^2	square centimetre
d	day
dia	diameter
dmt	dry metric tonne
dwt	dead-weight ton
°F	degree Fahrenheit
ft	foot
ft^2	square foot
ft^3	cubic foot
ft/s	foot per second
g	gram
G	giga (billion)
Gal	Imperial gallon
g/L	gram per litre
Gpm	Imperial gallons per minute
g/t	gram per tonne
gr/ft^3	grain per cubic foot
gr/m^3	grain per cubic metre
ha	hectare
hp	horsepower
hr	hour
Hz	hertz
in.	inch
in^2	square inch
J	joule
k	kilo (thousand)
kcal	kilocalorie
kg	kilogram
km	kilometre
km^2	square kilometre
km/h	kilometre per hour
kPa	kilopascal
kVA	kilovolt-amperes
kW	kilowatt
kWh	kilowatt-hour
L	litre
lb	pound
L/s	litres per second
m	metre
M	mega (million); molar
m^2	square metre
m^3	cubic metre
masl	metres above sea level
m^3/h	cubic metres per hour
mi	mile
min	minute
μm	micrometre
mm	millimetre
mph	miles per hour
MVA	megavolt-amperes
MW	megawatt
MWh	megawatt-hour
oz	Troy ounce (31.1035g)
oz/st, opt	ounce per short ton
ppb	part per billion
ppm	part per million
psia	pound per square inch absolute
psig	pound per square inch gauge
RL	relative elevation
s	second
st	short ton
stpa	short ton per year
stpd	short ton per day
t	metric tonne
tpa	metric tonne per year
tpd	metric tonne per day
US$	United States dollar
USg	United States gallon
USgpm	US gallon per minute
V	volt
W	watt
wmt	wet metric tonne
wt%	weight percent
yd^3	cubic yard
yr	year

3.0 Reliance on Other Experts

This Technical Report has been prepared by the QPs for Atlas. The information, conclusions, opinions, and estimates contained herein are based on:

- Information available to the QPs at the time of preparation of this Technical Report.
- Assumptions, conditions, and qualifications as set forth in this Technical Report.

Except for the purposes legislated under provincial securities laws, any use of this Technical Report by any third party is at that party's sole risk.

3.1 Mineral Tenure, Surface Rights, and Encumbrances

For the purpose of this Technical Report, the QPs have relied on ownership information provided by Atlas. The QPs have not researched property title or mineral rights for the Project and express no opinion as to the ownership status of the property. Information provided to the QPs includes the following:

- Hayes, C., 2023 Re: Mineral licenses Great Atlantic Salt: email from Atlas to David Robson, Project Manager, SLR Consulting Ltd., September 6, 2023
- Stewart McKelvey, 2021 Re: Turf Point Property – Report on Title, memo from Justin Hewitt to Patrick Laracy, November 5, 2021

The QPs have relied on this information in Section 4 and the Summary of this Technical Report.

3.2 Taxation

For Sections 1 and 22 of this Technical Report, the QPs have relied on Atlas for guidance on applicable taxes, royalties, and other government levies or interests, applicable to revenue or income from the GAS Project. Information provided to the QPs includes the following:

- KPMG LLP, 2023, Ref: DRAFT Great Atlantic Salt Project – Thirty Year Cash Flow DRAFT Tax Considerations, from KPMG LLP to Patrick Laracy, Atlas Salt, January 19, 2023

3.3 Marketing

For Section 19 and the Summary of this Technical Report, the QPs have relied on third party expertise for the assessment of rock salt markets, rock salt pricing, and logistics considerations for delivering salt from Turf Point to destination markets. Information provided to the QPs is described in Section 19.1.

4.0 Property Description and Location

4.1 Location

The Project is located in Western Newfoundland, Canada, approximately 15 km south of the town of Stephenville, and in the vicinity of the town of St. George's. The location of the Project is illustrated in Figure 4-1.

The central point of the Project is at longitude 58.529, latitude 48.402, or 387,550 mE, 5,362,650 mN (NAD83 Zone 21 North).

4.2 Land Tenure

The GAS Project is located within a block of claims totalling 7,100 ha (the GAS Property), specifically on Licence 027183M. A summary of the Atlas licences is included in Table 4-1 and shown in Figure 4-2.

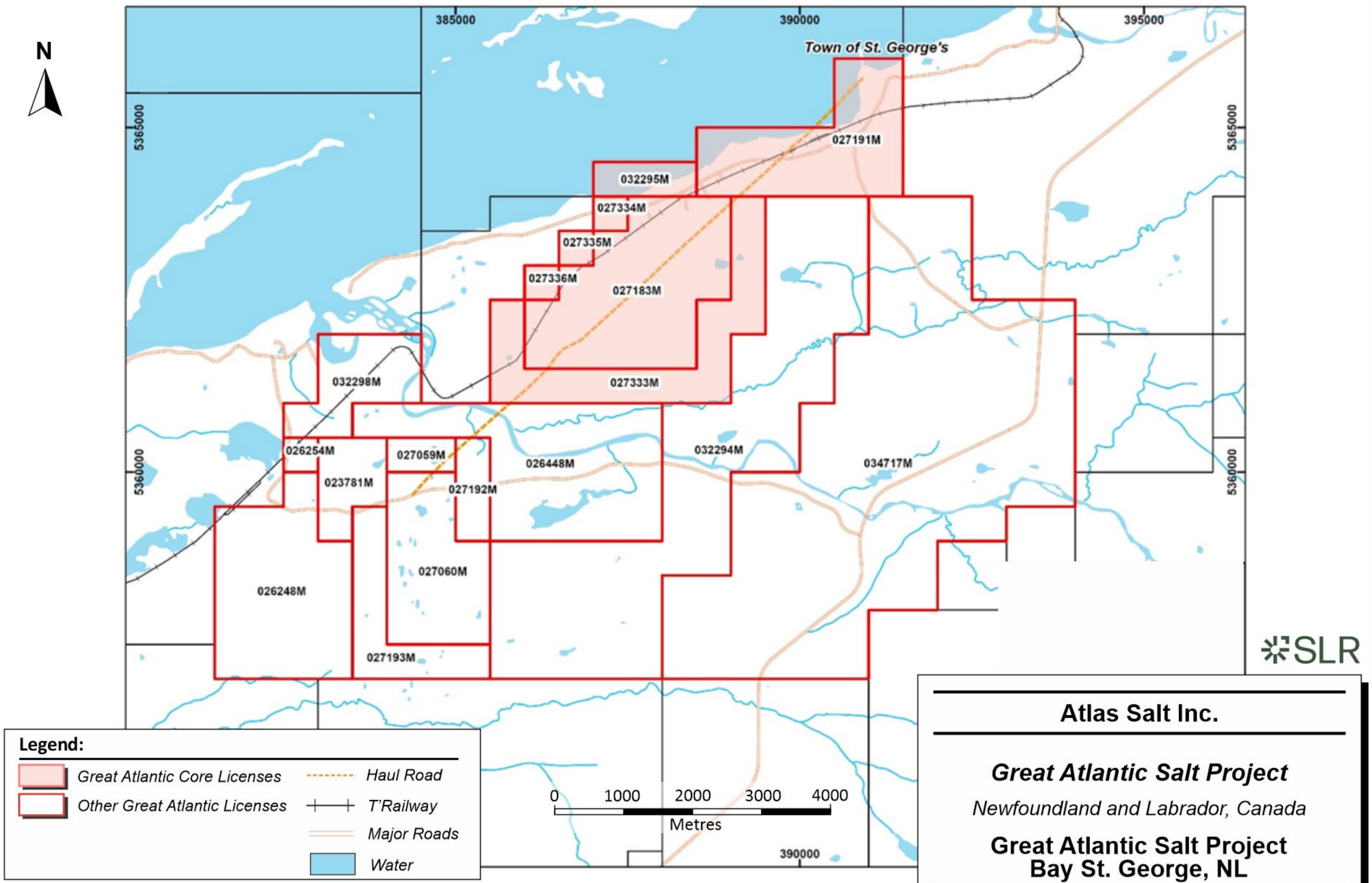
Table 4-1: GAS Property Licences

Licence No.	Licence Holder	No. of Claims	Status	Date Issued	Renewal Date	Area (ha)
027333M	Atlas Salt	15	Active	12/09/2019	12/09/2024	375
027334M	Atlas Salt	1	Active	12/09/2019	12/09/2024	25
027335M	Atlas Salt	1	Active	12/09/2019	12/09/2024	25
027336M	Atlas Salt	1	Active	12/09/2019	12/09/2024	25
026448M	Atlas Salt	24	Active	13/09/2018	12/09/2028	600
027183M	Atlas Salt	22	Active	06/06/1998	06/06/2024	550
026248M	Atlas Salt	20	Active	16/08/2018	16/08/2028	500
026254M	Atlas Salt	1	Active	16/08/2018	16/08/2028	25
023781M	Atlas Salt	5	Active	04/03/2016	04/03/2026	125
027059M	Atlas Salt	2	Active	08/06/1998	08/06/2024	50
027060M	Atlas Salt	13	Active	12/04/2004	12/04/2024	325
027191M	Atlas Salt	16	Active	18/07/2019	08/07/2024	400
027192M	Atlas Salt	3	Active	18/07/2019	08/07/2024	75
027193M	Atlas Salt	8	Active	18/07/2019	08/07/2024	200
032294M	Atlas Salt	52	Active	05/04/2021	05/04/2026	1,300
032295M	Atlas Salt	3	Active	05/04/2021	05/04/2026	75
032298M	Atlas Salt	8	Active	05/04/2021	05/04/2026	200
034717M	Atlas Salt	89	Active	19/06/2022	19/06/2027	2,225
					Total	**7,100**

Figure 4-1: Location Map

Source: SLR, 2023.

Figure 4-2: Mineral Tenure Map



Source: Atlas Salt, 2023.

All mineral licences in the territory are staked using the online MIRIAD system and issued by the Newfoundland and Labrador Department of Natural Resources and registered with the Mineral Claims Recorders Office. Licences consist of 500 m^2 claim blocks based on one-quarter of a UTM grid square (25 ha). Licences may be grouped together if the total number of claims does not exceed 256 and provided that first-year assessment reports have been submitted and approved.

Fees associated with the claims include a C$15/claim fee in addition to a C$50/claim deposit, refunded after the first-year assessment requirements have been met including an assessment report. Licences are renewed for an initial five-year term but may be held for a maximum of 30 years. Renewal fees apply during assessment years 5, 10, 15, 20, and 30 (Table 4-2).

Table 4-2: Licence Renewal Fees and Expenditures

Year	Renewal Fees ($/claim)	Minimum Expenditure (C$/claim)
1	-	200
2	-	250
3	-	300
4	-	350
5	25	400
6 – 10	50 (in Y10)	600
11 – 15	100 (in Y15)	900
16 – 20	-	1,200
21 – 25	200	2,000
25 – 30	200	2,500

Mineral licences provide exclusive rights to explore for minerals in, on, or under the designated area of land but do not include surface rights such as rights of way. The granting of surface rights, for example for the establishment of mining activities and related infrastructure, is allowed for under the Mineral Act.

All licences are 100%-owned by Atlas Salt, an affiliated company of Vulcan Minerals Inc. (Vulcan Minerals), which holds a 30.5% interest in Atlas Salt.

4.3 Royalties and Encumbrances

The Project has the following royalties applied to it:

- 3% net production royalty payable to Vulcan Minerals Inc.

The 3% revenue royalty applies to all revenue, net of shipping, logistics, and Turf Point Port costs. SLR is not aware of any other encumbrances on the Project.

4.4 Environmental Liabilities and Permitting

The QP is not aware of any environmental liabilities on the property. Atlas is in the process of commencing permitting and licensing to develop the Project. During past exploration programs, Atlas has been able to receive timely permitting to conduct planned exploration on the property. The QP is not aware of any other significant factors and risks that may affect access, title, or the right or ability to perform the proposed work program on the property.

5.0 Accessibility, Climate, Local Resources, Infrastructure and Physiography

5.1 Accessibility

The Trans-Canada Highway passes through the eastern portion of the GAS Property, extending from Channel-Port aux Basques on the east coast of Newfoundland to St. John's on the west coast. The coastal areas of the St. George's Bay region are serviced by all-weather paved roads. The town of Flat Bay, to the northwest of the property, is accessed via the secondary highway NL-403 (Flat Bay Road), which extends westwards through the property from the Trans-Canada-Highway. The town of St. George's, located in the northeast of the property, is accessed via the Steel Mountain Road, which extends northwest from the Trans-Canada-Highway. The private Flat Bay gravel haul road extends northeast-southwest across the property, between Flat Bay Mine and St. George's, use of which to access the property has been granted by the owner.

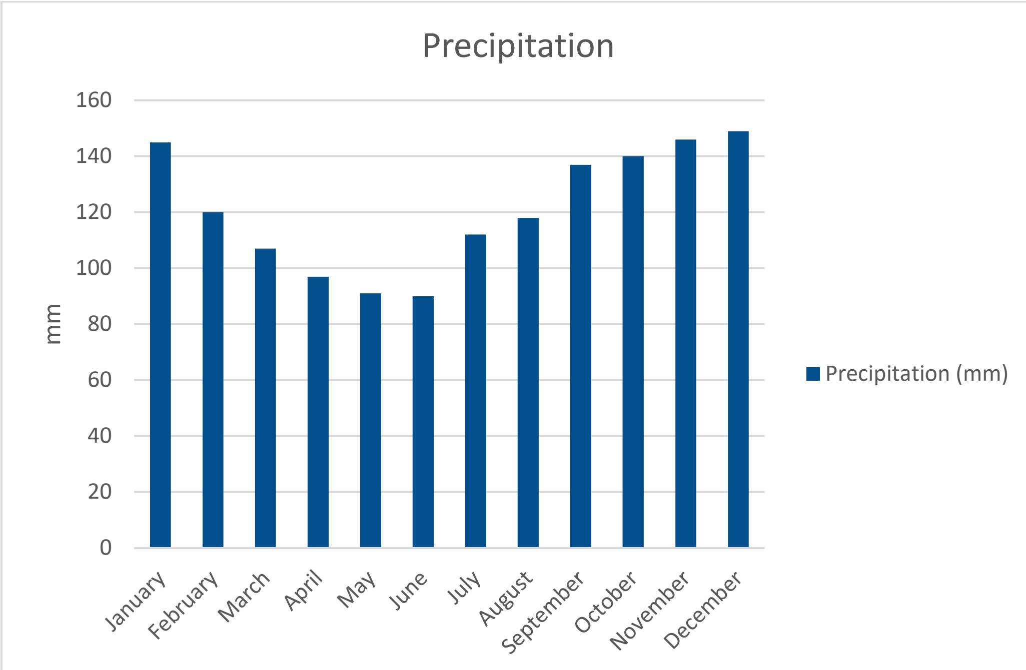
The closest airport is the Stephenville International Airport, approximately 15 km north of the property and 25 km by road, with the airport operating an irregular service. A commercial airport is located in Deer Lake, Newfoundland, approximately 135 km northeast of the property. The closest port is the Turf Point Port located in St. George's, however this port is only capable of exporting bulk materials. A larger port, capable of importing and exporting cargo containers, is located in Stephenville. The historic Newfoundland Railway passes through the property however it ceased operation as a railway in 1988 and now is used as a recreational trail (known as the T'Railway).

5.2 Climate

Climate data is available for the town of Stephenville, located approximately 15 km north of the Project and considered representative of the area. The area has a Dfb climate according to the Köppen–Geiger classification system (Climate-data.org, 2023); designated as continental, with no dry season and a warm summer. The Project's northern boreal climate has significant seasonal variations, modified by the near-ocean location (APEX, 2016).

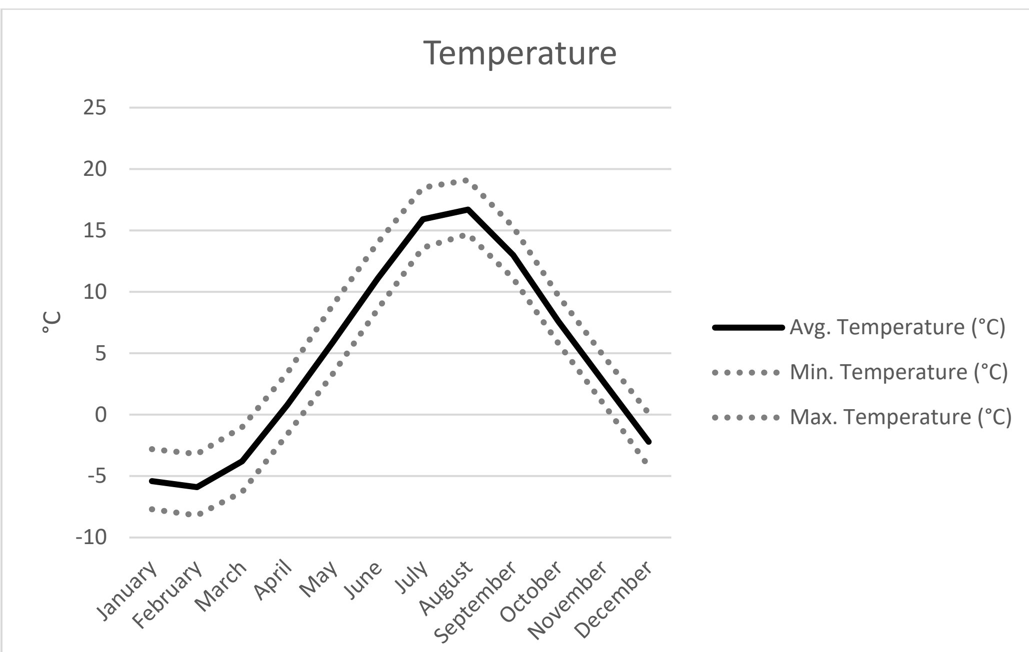
Daylight hours peak in July with an average of 16.0 hours per day, while December and January have a minimum of 8.4 hours per days (Climate-Data.org, 2023). Annual precipitation totals 1,452 mm. Mean monthly precipitation is shown in Figure 5-1, which reaches a high of 149 mm in December and a low of 90 mm in June. Mean monthly temperatures are shown in Figure 5-2, which reach a high of 19.1°C in August and a low of -5.9°C in February.

Figure 5-1: Stephenville Annual Precipitation



Source: Climate-Data.org, 2023.

Figure 5-2: Stephenville Annual Temperature



Source: Climate-Data.org, 2023.

It is not anticipated that the climate of the area would impact GAS Property access or prevent year-round operations. This has been demonstrated by the previous gypsum mining operations at Flat Bay Quarry, located within the property.

5.3 Local Resources

The deposit is located within the town limits of St. George's, a town incorporated in 1965. The St. George's area had been a French fishing village dating to the seventeenth century. As of 2021, the town had a population of approximately 1,200 inhabitants. The town has a school, fire hall, community hall, minor commerce, a medical clinic, and a recreation centre. The town is located approximately 24 km by road from Stephenville, Newfoundland. Stephenville is one of the largest centres in western Newfoundland, with a direct population of 6,500 as of the 2021 census. The services of Stephenville include a modern hospital, year-round port, government institutions, a community college (College of the North Atlantic), provincial detention centre, community centres, and more established commercial centre. Stephenville's international airport has an irregular flight service. Corner Brook is the largest community in western Newfoundland with a population of 30,000 as of 2021 and is approximately 90 km by road away from the deposit. St. George's, Stephenville, and Corner Brook are all situated in proximity to the Trans-Canada-Highway.

5.4 Infrastructure

The deposit is located within the town limits of St. George's. An all-weather gravel haul road was constructed on the GAS Property during historic mining operations to connect the Flat Bay Gypsum Quarry with the Turf Point Port. Although the road is private, permission has been granted by the owner to Atlas to use it for property access. Based on SLR's two site visits, it appears that members of the public regularly use this private road.

A water depth draft survey at the Turf Point Port was conducted in September 2015, determining a draft of 11.6 m to 13.7 m. Infrastructure at the Turf Point Port includes a large, graveled dockside area of approximately 7,000 m^2; a large, steel-clad storage facility of approximately 50 m x 65 m; and a conveyor system connecting the storage facility and the main port ship-loading terminal.

The storage and conveyor were constructed by Teck Resources Ltd. to load and ship base metal concentrate from their Duck Pond and Boundary Deposit operations, both of which have since been mined out. The conveyor system is operational and currently used to load outgoing aggregate shipping. The Turf Point Port is capable of loading Handymax bulk ship carriers (40,000 dwt to 50,000 dwt), Handy bulk ship carriers (<40,000 dwt), as well as barges carrying nominally 10,000 dwt.

Port Harmon in Stephenville provides a larger port facility with year-round operations, located approximately 15 km north of the deposit. The port has 7,500 m^2 of paved dockside area and provides berthage and turning room for ships up to 385 m in length with 10 m depth. As of 2023, Port Harmon was purchased by a private corporation.

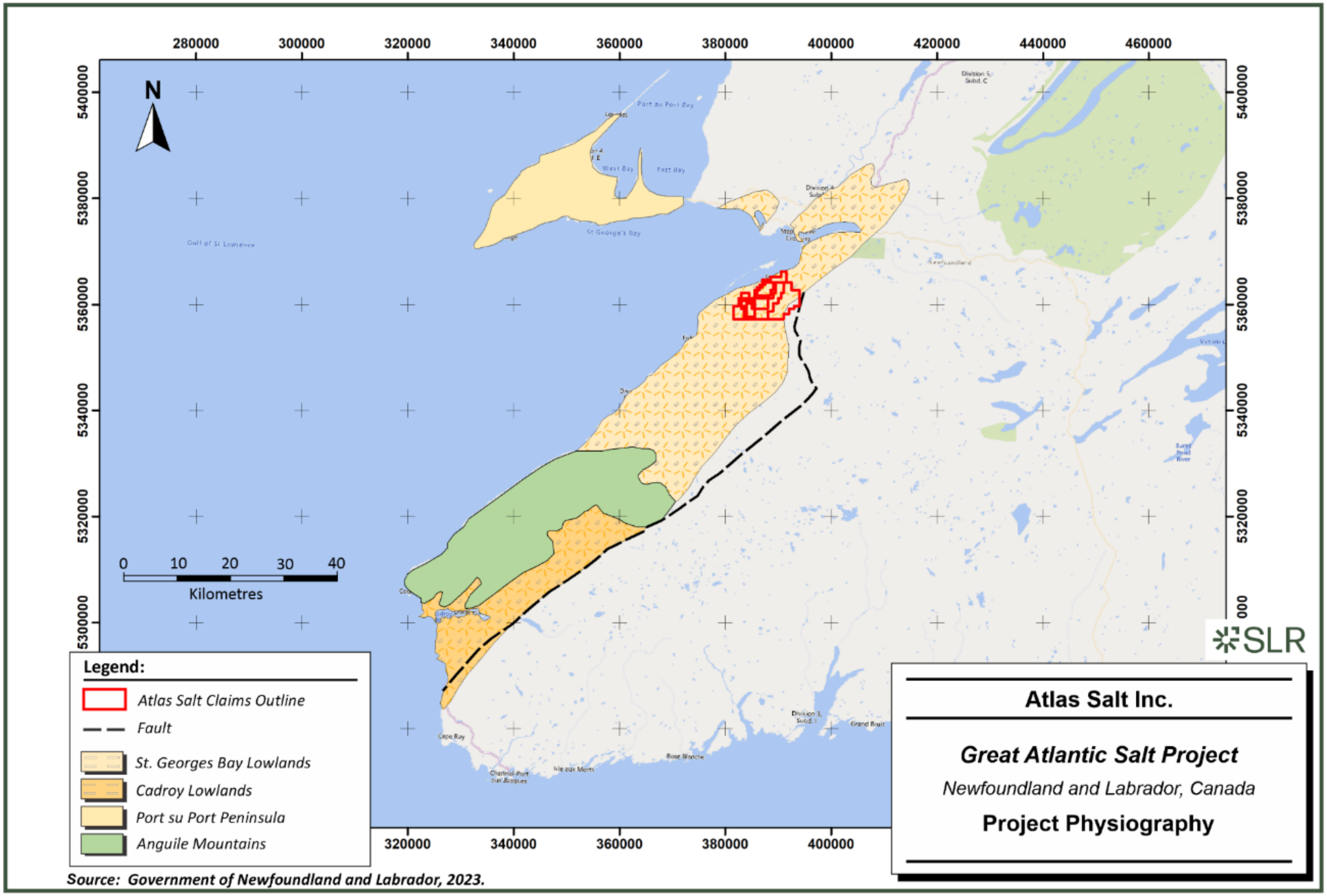
The nearest power lines in relation to the deposit consists of the St. George's substation, owned by NL Power. This is located within the town of St. George's, approximately two kilometres away from the property.

5.5 Physiography

The Bay St. George Sub-Basin area contains three distinct topographical areas; the St. George's Bay Lowlands, the Uplands of the Anguille mountains, and the Codroy Lowlands (Figure 5-3). The Project is located within the St. George's Bay Lowlands and consists of a gently rolling coastal plain at an elevation of approximately 60 masl. The Uplands are located further southwest along the south coast of St. George's Bay and form steep flanked mountains with an average elevation of 525 masl, while the Codroy Lowlands are situated immediately southeast of these. Coastal portions of the GAS Property consist of sandy beaches.

The St. George's Bay Lowlands are located within the Western Newfoundland Forest and are characterized by forests of balsam fir, with an understorey of wood ferns (PAA, 2008). Other typical vegetation of the area includes trembling aspen, white birch, alder thicket, and grasses. Within the property, there are numerous streams, ponds, and bogs. To the southeast of the property, the lower mountain slopes flatten northwards towards the coast and form extensive Plateau Bogs. Significant local variations in vegetation result from hills and valleys.

Figure 5-3: Project Physiography



Source: Government of Newfoundland and Labrador, 2023.

6.0 History

6.1 Prior Ownership

Red Moon Potash Inc. (Red Moon) was incorporated on June 15, 2011, for the purpose of managing the industrial mineral exploration activities of Vulcan Minerals Inc. (Vulcan Minerals). As of August 15, 2012, Red Moon was a wholly owned subsidiary of Vulcan Minerals with 100%-owned mineral licenses transferred to Red Moon for common shares and a 3% net production royalty.

In August 2021 Red Moon was renamed Atlas Salt. As of the effective date of this report, Vulcan Minerals holds a 30.5% interest in Atlas Salt.

6.2 Exploration and Development History

Information regarding exploration and development history has been excerpted and modified from APEX, 2016.

6.2.1 Mapping

Government-led mapping was completed in the St. George's Bay area by Fong in 1974 and 1977 (APEX, 2016). In 1975, Fong and Douglas also mapped various portions of the Bay St. George Sub-Basin. In 1983, previous research related to the Carboniferous Bay St. George Sub-Basin was synthesized by Knight (1983). Regional mapping was conducted for the southwestern Long Range Mountains, forming the basement to the east of the Carboniferous strata and thought to locally underlie the basinal rocks of the Project.

6.2.2 Drilling

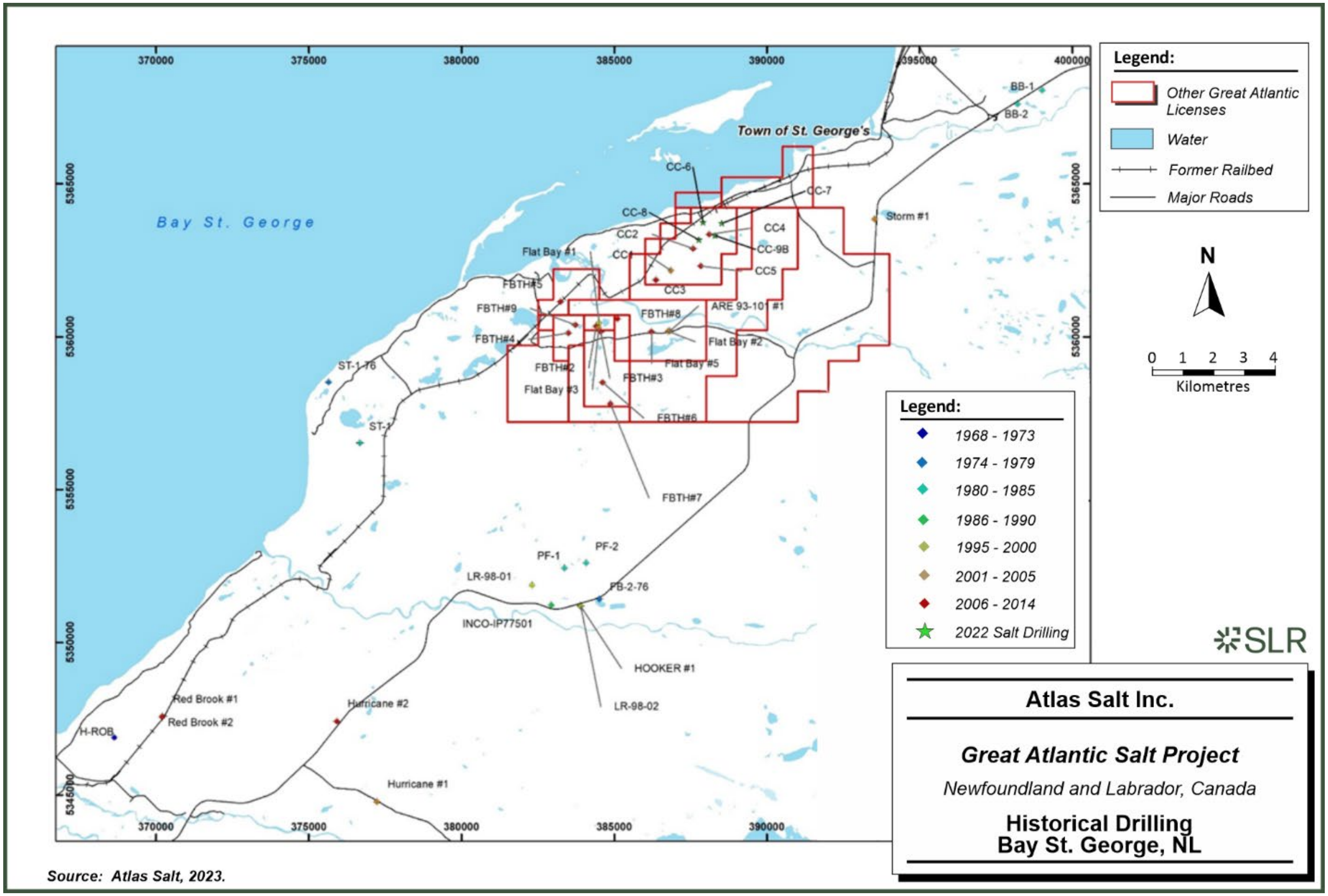
Historical drilling has been completed within the Project and surrounding area since 1952, as summarized in Table 6-1 and shown in Figure 6-1.

Table 6-1: Summary of Historical Drilling

Drill Hole ID	Owner	NAD83 Z21 N		Year Drilled	Total Depth (m)
		Easting	Northing		
NLGS-OR-52-1A	NFLD Geological Survey	334832	5303405	1952	254.81
NLGS-OR-53-2A	NFLD Geological Survey	334374	5303388	1953	274.78
NLGS-SF-53-1	NFLD Geological Survey	366599	5331219	1953	518.17
NLGS-SF-53-3	NFLD Geological Survey	366789	5331389	1953	124.97
NLGS-SF-53-2	NFLD Geological Survey	366809	5331389	1953	151.11
NLGS-SF-53-4	NFLD Geological Survey	367099	5330119	1953	271.28
HOOKER#1	Hooker Chemical Ltd	383889	5351219	1968	1,098.82
H-ROB	Hooker Chemical Ltd	368117	5346209	1972	694.95
H-SF	Hooker Chemical Ltd	361949	5339649	1973	459.00
ST-1-76	AMAX Exploration Ltd	375639	5358519	1976	1,044.24
FB-2-76	AMAX Exploration Ltd	384509	5351419	1976	915.93

Drill Hole ID	Owner	NAD83 Z21 N		Year Drilled	Total Depth (m)
		Easting	Northing		
PF-1	Pronto Exploration Ltd	383359	5352439	1980	879.96
PF-2	Pronto Exploration Ltd	384069	5352599	1980	641.91
ST-1	Pronto Exploration Ltd	376659	5356529	1981	411.49
BB-1	Pronto Exploration Ltd	398999	5368079	1981	701.04
BB-2	Pronto Exploration Ltd	398199	5367619	1982	1,025.66
CT-1	Rio Algom Exploration Inc	334119	5297519	1984	384.50
INCO-IP77501	INCO	383209	5351419	1988	925.00
LR-98-01	Leeson Resources Inc	382309	5351869	1998	771.23
LR-98-02	Leeson Resources Inc	383889	5351269	1998	358.38
ARE 93-101	American Reserve Energy	386096	5360183	2000	660.94
Total					**12,568.17**

Figure 6-1: Historical Drilling Plan



Source: Atlas, 2023.

6.2.3 Geophysical Surveying

Historical geophysical surveying has been conducted across the Project area by both the government and private companies. These surveys are summarized in Table 6-2:

Table 6-2: Summary of Historical Geophysics

Year	Company	Report	Area	Method	Line (km)
1951	Photographic Survey Corporation Ltd.	NFLD/0150	Bay St. George, Stephenville Crossing to Sandy Point	1, 3	n/a
1968	Hooker Chemical Corp	012B/0103	Fischell's Brook	8, 10	n/a
1968	Hooker Chemical Corp	012B/0100	St. Fintans	12	n/a
1971	Hooker Chemical Corp	012B/0147	Stephenville, Codroy, Fischell's Brook	8	n/a
1975	GSC	NFLD/1769	Bay St. George	3	
1978	Hooker Chemical Corp	012B/0225	St. Teresa, Fischell's Brook	10	n/a
1981	Noranda Exploration Co. Ltd	12B/0253	Highlands-Lochleven	8	48
1981	Pronto Exploration Ltd	012B/0245	Fischell's Brook	8	93
1982	Chevron Standard Limited	012B/0258	Robinsons	8	95
1982	Shell Canada Resources (Westfield)	012B/0260	Crabbes River	8	88
1983	Westfield Minerals Ltd	012B/0267	Crabbes River	8	42.6
1984	GSC	N00153	Southwestern Newfoundland	1, 3	
1986	Duration Mines Ltd	012B/0287	Robinsons	11	n/a
1987	INCO	012B/0304	Fischell's Brook	5	29
1988	INCO	012B/0307	Fischell's Brook	5	n/a
1999	Leeson Resources	012B/0441	Fischell's Brook	5	n/a
2002	Vulcan Minerals Inc.	012B/0480	Flat Bay	5	19
2005	Vulcan Minerals Inc.	012B/0510	Flat Bay	5	57.5
2006	Vulcan Minerals Inc.	012B/0525	Flat Bay	5	69.5
2006	Vulcan Minerals Inc.	012B/0558	Robinsons	5	38.6
2010	Altius Resources Inc.	012B/0598	Flat Bay	8	545
2011	Vulcan Minerals Inc.	unpublished	Flat Bay	2	1,496

Source: updated from APEX, 2016.

Notes:

1. Airborne Magnetic
2. Airborne Gravity
3. Airborne Radiometric
4. Airborne Electromagnetic
5. Seismic
6. Ground Magnetic
7. VLF/EM (+/- Magnetic)

8. Ground Gravity
9. Ground Radiometric (Scintillometer)
10. Ground IP-Resistivity
11. Max-Min (Hlem)
12. Downhole Gamma

6.3 Historical Resource Estimates

No halite Mineral Resource estimates have been prepared by previous owners.

6.4 Past Production

Production of gypsum has taken place within the GAS Property at the Flat Bay Quarry. Outside of the current Project licence areas, gypsum has also been produced at the Fischell's Brook and Coal Brook mines. The Flat Bay Mine is located directly southwest of the GAS halite deposit, while Fischell's Brook is located approximately 18 km southwest of the deposit. Historical gypsum operations within the GAS Property area are listed in Table 6-3

No halite production has taken place within the GAS property.

Table 6-3: Previous Gypsum Operations

Company	Mine	From	To
Atlantic Gypsum Ltd.	Flat Bay	1952	1961
Flintkote Mines Ltd./Genstar	Flat Bay	1961	1987
Domtar Inc. (St George's Gypsum Mines Inc.)	Flat Bay	1988	1990
Atlantic Gypsum Resources Inc.	Fischell's Brook	1996	1998
Lafarge Gypsum Canada Inc.	Fischell's Brook	1999	2001
Galen Gypsum Mines Limited	Coal Brook	1999	2009

Source: APEX, 2016.

7.0 Geological Setting and Mineralization

Information presented in Section 7.0 regarding geological setting and mineralization has been modified from APEX, 2016.

7.1 Regional Geology

The Project is located within the Bay St. George Sub-Basin, which represents the northeastern extension of the regional Maritimes Carboniferous Basin of southwest Newfoundland. This basin is an extensive geological basin complex underlying the Gulf of St. Lawrence and surrounding areas. The numerous sub-basins of the Maritimes were formed through extensional tectonics in proximity to the northeast trending Long Range Fault, a major strike-slip fault within the Cabot Fault system. Fault movement is interpreted to have commenced in the Late Devonian-Early Carboniferous. These northeast-southwest orientated fault systems are characteristic of the Carboniferous sub-basins of western Newfoundland, with individual sub-basin formation, structure, and deposition determined by the local variations in scale and extent of fault activity.

During sub-basin formation, differential extension and deformation has resulted in varied tectonic features across the region, including the Snake's Bight Fault, St. George's coalfield syncline, and the Flat Bay and Anguille anticlines. As a result, sub-basins are commonly separated by basement highs/ridges, and sedimentation in depressions and fault-bound basins across the region has been irregular. Figure 7-1 shows the regional geology of the Bay St. George Sub-Basin and the relative position of the major geological structural features.

The Bay St. George Sub-Basin has been interpreted to be approximately 130 km long and 20 km wide, although from the sedimentary record it is suspected to have once stretched 60 km wide. The total sedimentary sequence in the sub-basin is estimated to be approximately 10 km comprising Devonian – Carboniferous strata including the Famennian-Tournaisian Anguille Group, Viséan Codroy Group, and Namurian-Westphalian Barachois Group. Depositional environments have predominantly been terrestrial, although the Codroy Group contains marine strata including localized evaporites.

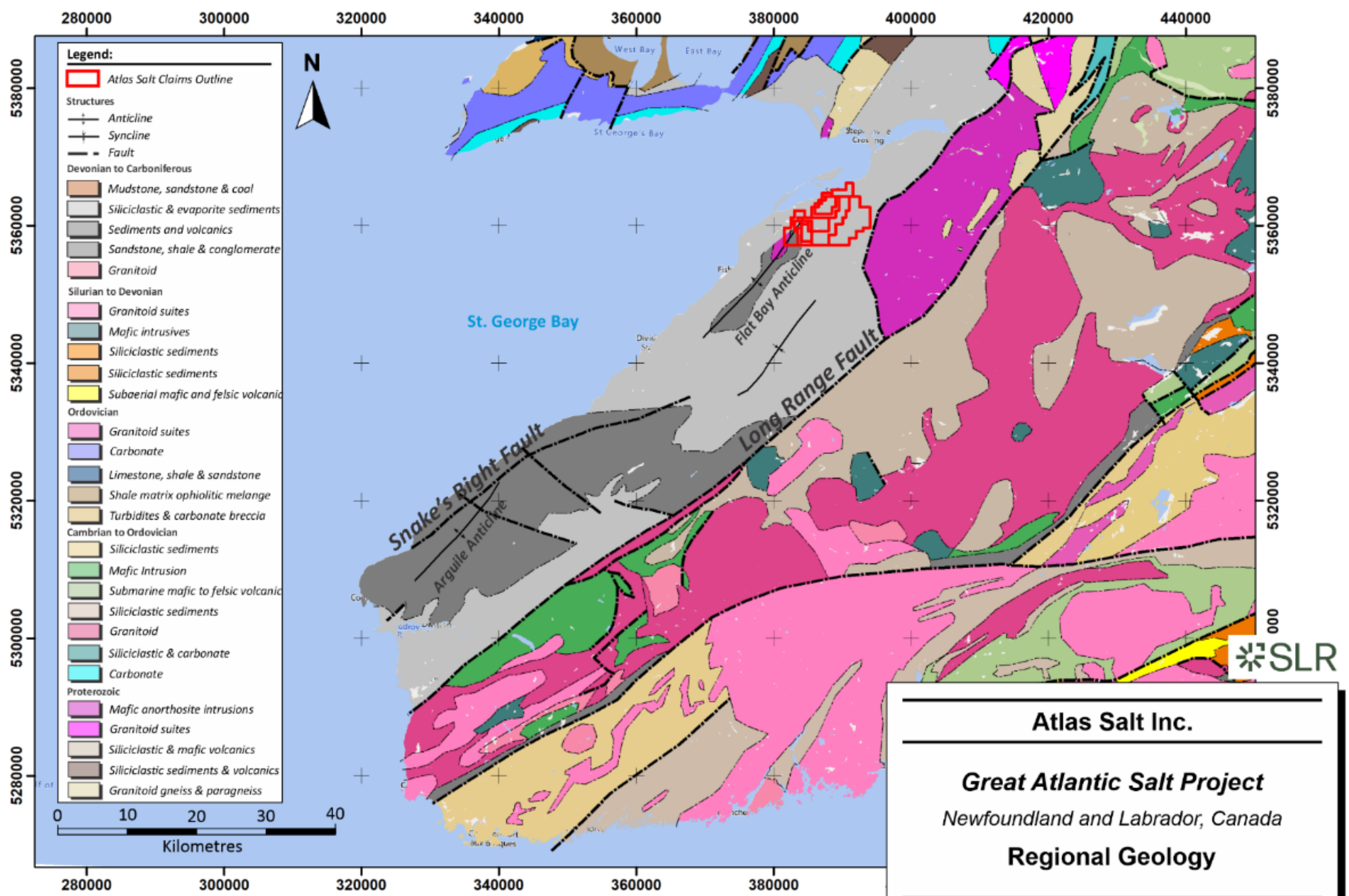
Figure 7-2 illustrates a schematic stratigraphical column of the main formations of the Bay St. George Sub-Basin, which can also be described as follows:

- Anguille Group: the oldest strata in the Bay St. George Sub-Basin overlying a pre-Carboniferous basement, the Group varies in thickness across the Snakes Bight Fault from approximately 2 km to 4.9 km to the northwest and southeast, respectively. Siliciclastic strata include red and green sandstones, black shales, grey sandstones, and conglomerates across four sub-groups, namely:
    - o Kennels Brook Formation red beds
    - o Snake's Bight Formation lacustrine black shale, mudstone, turbidite, and deltaic sandstone
    - o Friars Cover Formation of fluvial-deltaic sandstone and shale
    - o Spout Falls Formation conglomerate
- Codroy Formation: immediately overlying the Anguille Group, the Codroy Formation comprises between 4 km and 6 km of marine and non-marine strata including siliciclastics, evaporites, and calcareous sedimentary rocks across four sub-formations, namely:

- Woody Cape Formation
- Robinsons River Formation
- Codroy Road Formation
- Ship Cove Formation

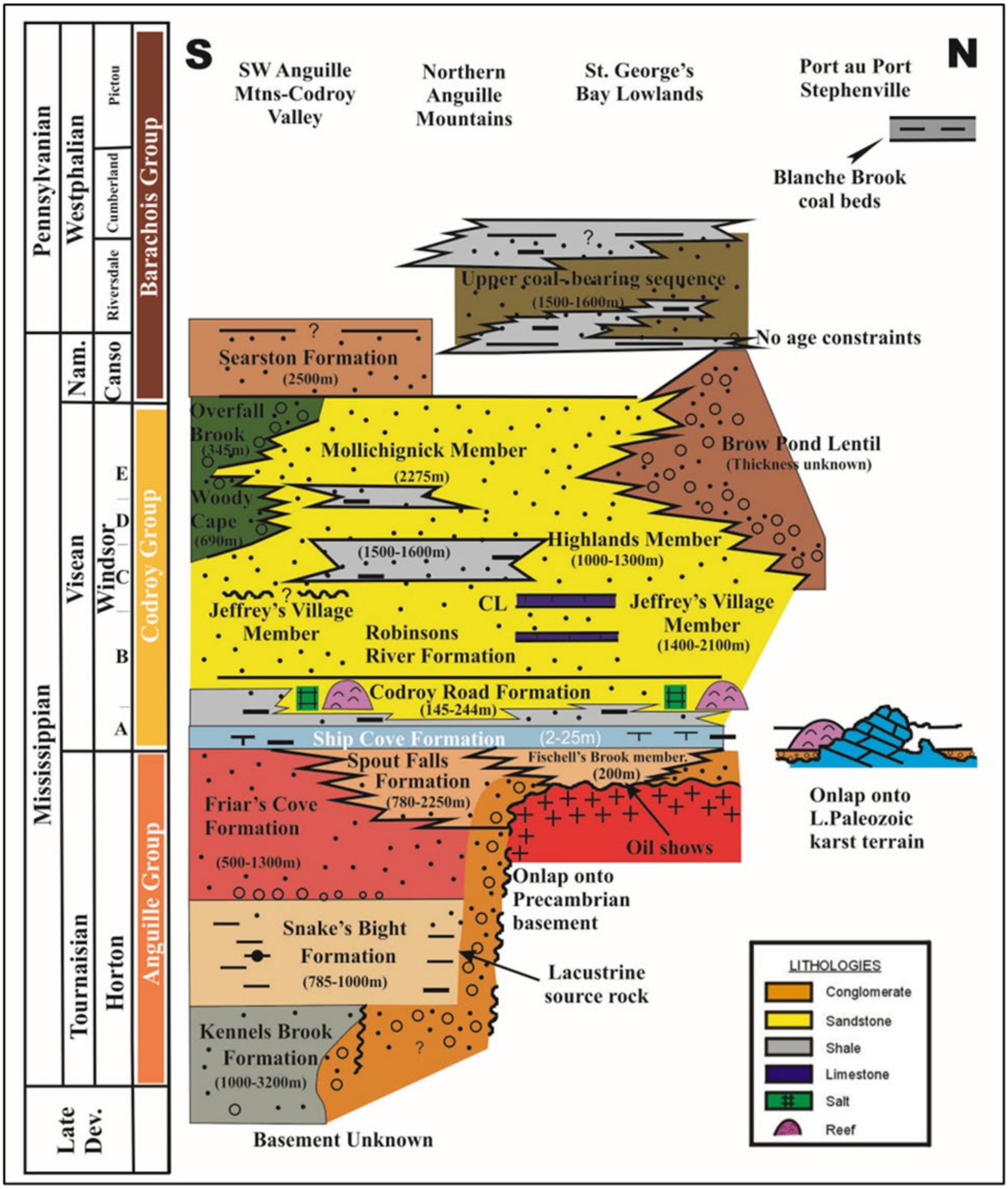
- The Codroy Road Formation consists of mixed red siltstone and sandstone, evaporitic shales, minor carbonates (bituminous dolomite and mudstone-dolomite), and grey-black mudstones and siltstones. Evaporites are predominantly gypsum and blue-grey anhydrite. The Codroy Road Formation is the main salt bearing formation and the current focus of exploration for Atlas.
- Barachois Group: overlying the Codroy Formation, this group represents the youngest strata of the Bay St. George Sub-Basin and comprises thick succession up to 2.5 km of grey sandstone, red siltstone, grey-black mudstone, and minor coal. These strata are interpreted to have originated from fluvial and floodplain depositional environments.

Figure 7-1: Regional Geology



Source: Government of Newfoundland and Labrador, 2023.

Figure 7-2: Stratigraphic Column of the Bay St. George Sub-Basin Area



Source: Newfoundland and Labrador, Department of Industry, Energy and Technology, after Knight 1992

7.2 Property Geology

The Codroy and Robinsons River formations represent the dominant stratigraphic units within the Project area, with bedrock exposures observed across the Project area including at the quarry workings of the Flat Bay Gypsum Quarry, approximately 3 km southwest of the Project. The mine extracted gypsum and anhydrite of the Codroy Road Formation in the northern portion of the Bay St. George Sub-Basin, including massive and sugary crystallite gypsum, coarse to needle-like and fibrous gypsum, and massive crystalline anhydrite. These evaporites, originating in shallow salinas (salt flats), are found interbedded with fine grained grey to red siliciclastic rocks of shallow marine and lagoonal settings.

Figure 7-3 illustrates the property geology for the Project. The stratigraphy of the Project is entirely hosted within the Carboniferous Codroy Group.

Exploration drilling to date has tested the geological succession beneath the Project to a maximum depth of approximately 630 m (in drill hole CC-5), which represents the most complete stratigraphic profile of the GAS halite deposit. The halite deposit has been intersected in a total of seven drill holes between depths of approximately 180 m and 395 m. Excluding two drill holes terminated shorter than planned, the thickness of the halite deposit has been observed to vary between 68 m in the southwest and 340 m in the northeast.

The halite is overlain by a thick succession of sandstones, siltstones, mudstones, and conglomerates, referred to as Red Beds, and is immediately underlain by a basal anhydrite, both of which form relatively sharp boundaries with the major halite horizons (Table 7-1). The Red Beds have been intersected to a maximum depth of 394 m in CC-5 with the strata thickening to the north and southeast. Drill holes have generally been terminated after intersecting the base of the halite, and as such the information on the total thickness of this unit in the Project area is limited, although it was intersected to a maximum depth of 604 m in drill hole CC-1.

Discrete interbeds of primarily mudstone with minor potash and anhydrite exist across the Project area and have been intersected in multiple drill holes. These interbeds range from 2 m to 27 m thick and exhibit varying degrees of lateral continuity across the Project area. SLR has opted to correlate these across the deposit for the purpose of excluding this material from the Mineral Resource estimate. SLR has interpreted two major interbed units across the Project as having greater lateral continuity, referred to herein as IB-1 and IB-2, thereby splitting the halite into three main horizons, referred to herein as 1-Salt, 2-Salt, and 3-Salt.

Thinner interbeds with a lower degree of lateral continuity also exist within each of the three halite horizons, interpreted as occurring over localized areas only. It is not possible to confidently correlate these between drill holes and as such these are considered as internal dilution in the Mineral Resource estimate.

Figure 7-4 shows a northeast-southwest vertical section through the SLR geological model including drill hole intersections in CC-1 to CC-4, CC-7, CC-8, and CC-9b illustrating the thickness of the halite deposit and relative position of the modelled interbeds.

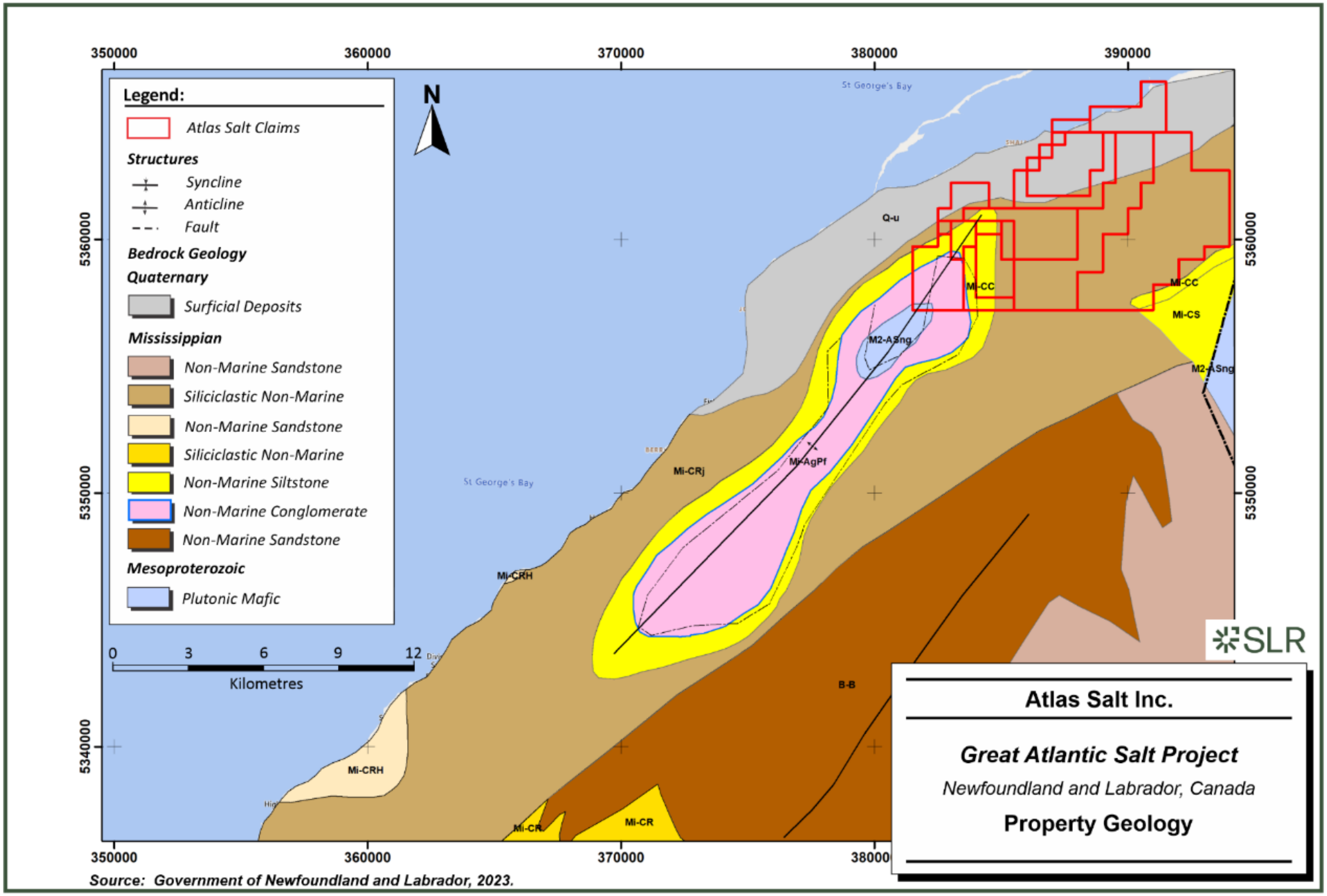
Table 7-1: Simplified Stratigraphy

Stratigraphy	Min. Thickness (m)	Max. Thickness (m)	Avg. Thickness (m)
Overburden	9.0	37.2	21.0
Red Beds[1]	177.0	382.0	253.4
1-Salt	11.1	56.4	32.8
Interbed-1	3.9	27.1	14.6
2-Salt	20.3	100.8	65.7
Interbed-2	2.0	19.6	6.7
3-Salt	13.8	183.4	93.2
Anhydrite[2]	3.7	246.5	43.4

Notes:

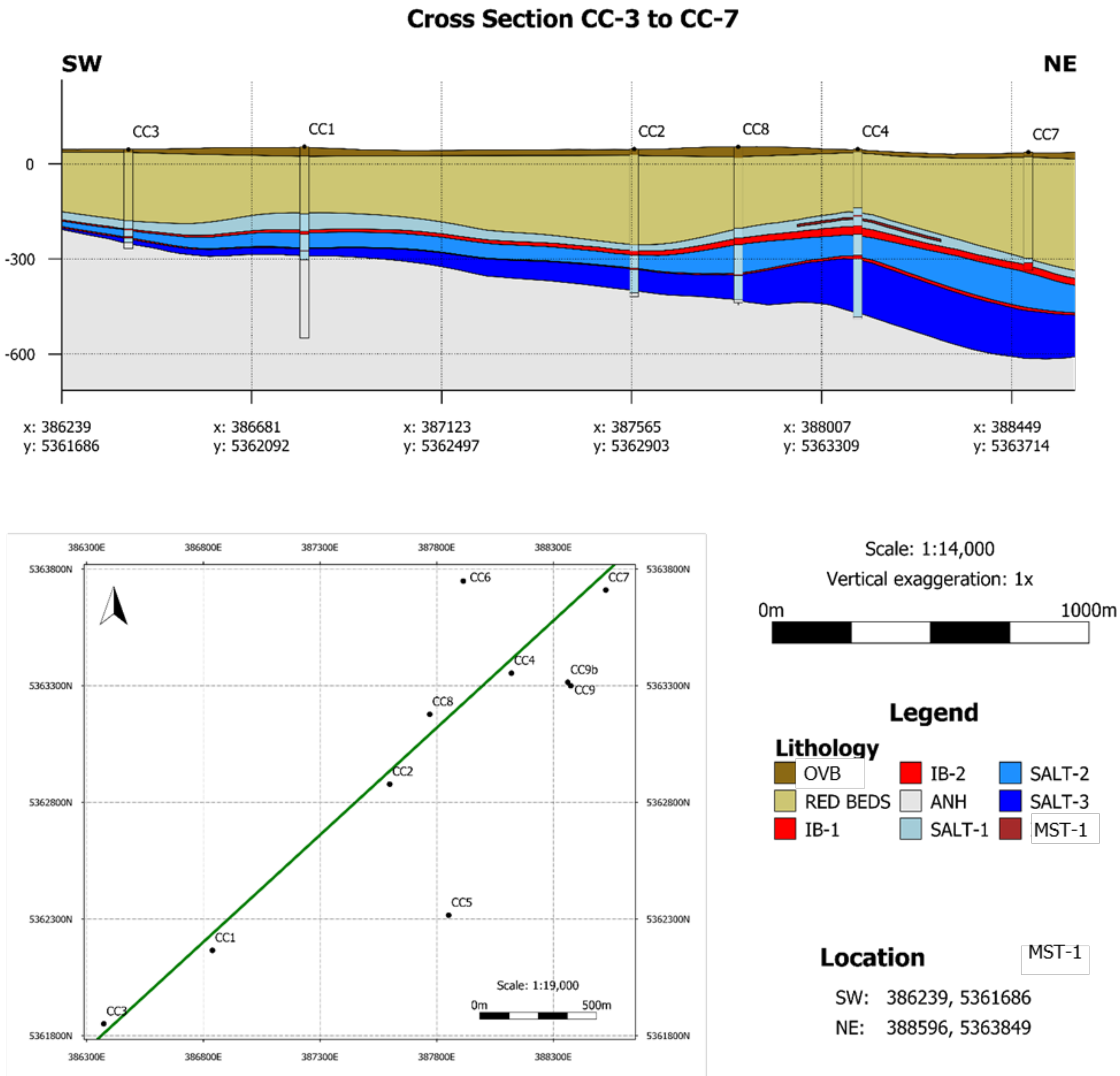
1. Excludes data from CC-9 and CC-9a which did not penetrate the full depth of Red Beds or intersect top of salt.
2. Maximum depth of penetration taken from CC-1 with all other drill holes terminated above or shortly after confirming base of salt.

Figure 7-3: Property Geology



Source: Government of Newfoundland and Labrador, 2023.

Figure 7-4: Northeast-Southwest Vertical Section (CC-7 to CC-3)



Source: SLR, 2023

7.3 Mineralization

Potentially economic mineralization of gypsum, sodium chloride, and minor potassium chloride (potash) occur within the Codroy Formation, in addition to minor coal measure accumulations within the Barachois Group. Economic extraction of gypsum has been undertaken locally since the 1950s, including at the Flat Bay Gypsum Quarry. The Project is, however, focussed on the mineralization of thick, massive halite accumulations primarily of the Robinsons River Formation within the Codroy Group. As described in Section 7.2, the massive halite is known to contain laterally continuous mudstone interbeds up to 27 m thick. These interbeds have the effect of separating the halite into three horizons, a sub-division which is also known to exist within the regional Maritimes Basin. Within each of the halite units other minor interbeds of mudstones, shales, potash, and anhydrite also exist but lack lateral continuity.

The GAS halite has been shown from drill core observations to exhibit varying colouration ranging between white, beige, brown, orange, champagne, medium grey, and dark grey. Except for brown and orange colouration, which is attributable to an increased proportion of potash and/or mudstone content, colouration has not been shown to be a reliable indicator of halite quality, with grades typically ranging from 95% NaCl to 99% NaCl.

Sampling of the GAS halite has shown it to range from fine to very coarsely grained, but more commonly medium coarse. Recrystallization of salt within the deposit is evident from drill core with small, centimetre-scale, clear glass-like halite occurring perpendicular or sub-perpendicular to core axes indicating lateral salt flow having occurred after deposition. Another indicator of potential salt flow or deposition is the presence of centimetre-scale inclusions which are common through the drill core and particularly prevalent either near the top or base of the deposit proximal to the overlying red beds or underlying anhydrite. Inclusions of salt fragments occurring within interbedded mudstones is also commonly observed in drill core. Fine, millimetre-scale inclusions of gypsum within the halite have also been observed and interpreted as secondary to original halite formation.

Potash interbeds within the deposits typically consist of a mixture of mudstone, salt, and potash. Potash typically occurs as fine to coarse, clear white to pale orange sylvite disseminated in a halite matrix. Distinct potash beds are less common across the deposit but generally comprise sylvinite with disseminated carnallite.

8.0 Deposit Types

Salt generally occurs as one of two major deposit types, including:

- Sedimentary salt, generally occurring as an undeformed, bedded succession,
- Salt tectonics, including salt domes, ridges, tongues, and pillows.

The Bay St. George Sub-Basin halite is considered to be a basin-wide, sedimentary salt deposit on the basis of its wide lateral extent and overall stratigraphy which includes sedimentary strata from a range of depositional environments including marine, shallow marine, and salina, to fluvial and deltaic. Other examples of large-scale Carboniferous evaporite deposits in North and South America include:

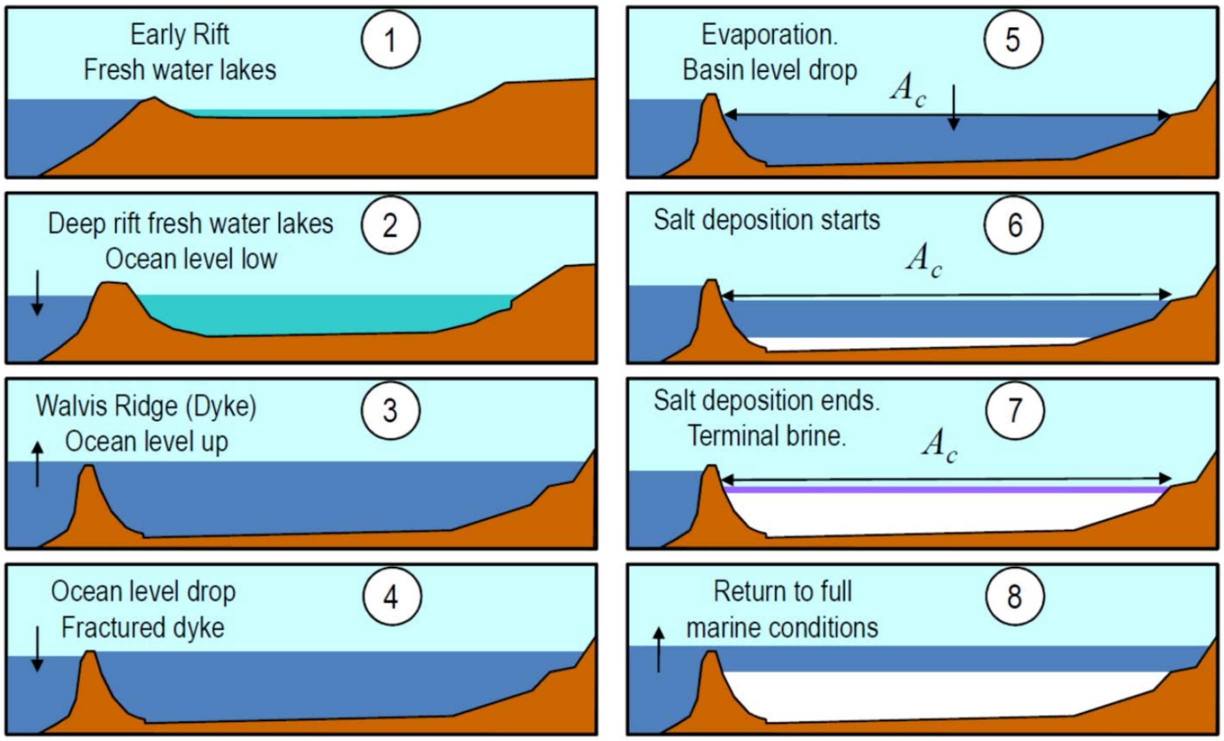
- Upper Carboniferous Paradox Formation, Paradox Basin, Colorado-Utah, USA
- Upper Carboniferous Caurauri Formation, Amazon Basin, South America
- Carboniferous Otto Fiord Formation, Sverdup Basin, Canadian Arctic Islands
- Lower Carboniferous Windsor Group, Maritime Basin, Atlantic Canada

Salt formation within sedimentary environments comprises the evaporation of seawater within shallow enclosed or isolated basins, as illustrated in Figure 8-1. Key characteristics of such basins required for the formation of evaporite deposits include:

- Overall basin geometry amenable to evaporation i.e., wide, flat, and shallow relative to offshore marine environments
- Structural barriers to isolate or enclose the basin allowing for a stable setting over extended periods
- Limited or periodic recharge of the basin with seawater
- Climate with a sufficient rate of evaporation for mineralization to occur
- Water intake proportional to basin accommodation space

Basin-wide deposits typically result in thick accumulations of evaporites where minor fluctuations in seawater, freshwater, or terrigenous sediment influxes can result in major depositional changes. Cyclical deposition of evaporites is also common including gypsum, anhydrite, halite, and potash (primarily sylvite and carnallite), indicating that such sedimentary successions form as the result of numerous phases of deposition and basin geometries change through time. This is in contrast to marginal marine platform or shelf-type deposits.

Figure 8-1: Evaporite Deposit Model



Source: Montaron and Tapponnier, 2010.

9.0 Exploration

9.1 Exploration Potential

The full lateral extent of the GAS halite deposit has not been fully defined and therefore remains open to further exploration, which is warranted. The Mineral Resource estimate prepared by SLR includes geological and analytical data from four drill holes completed in 2022 and 2023 by Atlas, namely CC-6, CC-7, CC-8, and CC-9b. Completion of drill hole CC-9b post-dates the previous Mineral Resource estimate prepared by SLR with an effective date of January 6, 2023.

Two earlier holes (CC-9 and CC-9a) were drilled near the CC-9b location during the 2022 drilling program. Both were terminated within the overlying Red Beds strata due to drilling difficulties.

9.2 Geophysical Surveying

In 2005, Vulcan Minerals commissioned Aeroquest Limited of Ontario to survey a 4,420 line-km high resolution airborne magnetic survey of the Bay St. George property. The survey was flown with 200 m spaced east-west lines and 1,000 m spaced northeast-southwest lines.

Between 1998 and 2010, Vulcan Minerals acquired approximately 341 km of two-dimensional seismic line data. This included a 6 line-km seismic line (98-106) along the access road between the Flat Bay Gypsum Quarry towards St. George's. Drill holes CC-1 to CC-4 were subsequently positioned along this seismic line. Interpretations of line 98-106 (Laracy, 1999) included the delineation of evaporitic deposits thickest around the area of CC-4. Seismic line VUL-2010-01 orientated approximately west-east bisecting drill holes CC-1 and CC-5 also provides subsurface information in the Project area. Both seismic sections indicated the presence of a well-defined reflector towards the base of the evaporite sequence where a thick anhydrite horizon is known to underly the GAS halite.

In 2011, Vulcan Minerals completed a 1,496 line-km airborne gravity gradiometer and aeromagnetic survey over the Bay St. George area that now includes the Project and an additional block north of Stephenville. Line spacing was 300 m orientated northeast-southwest, with variable spaced lines averaging 3,000 m orientated northwest-southeast. The survey indicated a decrease in density from southeast to northwest, consistent with a crystalline basement in the southeast.

In 2022, Atlas commissioned further reprocessing and interpretation of the seismic survey data from seismic lines 98-106 and VUL-2010-01, in addition to seismic line SR-4 south of the deposit area. Reprocessing was undertaken by independent consultant A. Bernard in May 2022. The study included re-evaluation of the time-depth conversions to be applied to existing seismic line data including:

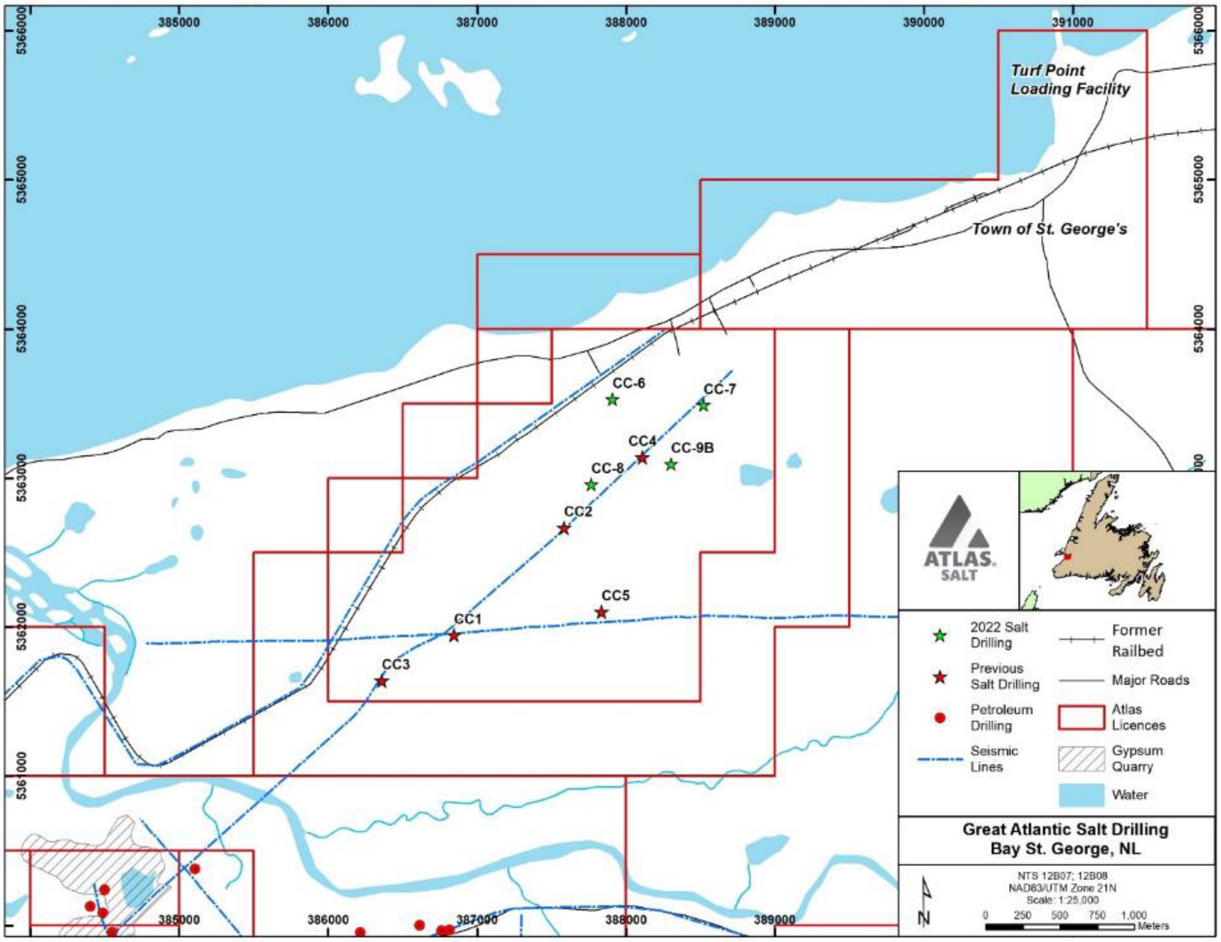
- Line 98-106: orientated northeast-southwest along the Project access road. Drill holes CC-1 to CC-4 and CC-7 have subsequently been drilled along this line.
- Line VUL-2010-01: orientated approximately east-west north of CC-1. Drill hole CC-5 was subsequently drilled to the east of CC-1 along this line.
- Line SR-4: orientated approximately east-west but with a varying path, this line traverses drill holes FB-2 and FB-5 to the south of the GAS deposit area.

From the seismic line re-interpretations, a new conversion between two-way-time (TWT) and total vertical depth minus the elevation of the reference point, referred to as TVDSS, was derived. The QP was provided with contours representing the top and basal surfaces of the Codroy Formation.

In addition to drill hole intersections, these were subsequently used by the QP to inform geological interpretation and modelling of the halite, as discussed in Section 14.

Figure 9-1 presents the Project drilling plan overlayed on the regional seismic lines.

Figure 9-1: Regional Seismic Lines and Project Drilling Plan



Source: Atlas, 2023.

10.0 Drilling

10.1 Summary

Drilling within the Project licences completed by Atlas (including drilling completed as Vulcan Minerals) has been separated into two groups. Table 10-1 summarizes those drill holes completed for the purpose of hydrocarbon exploration and those in the vicinity of the Flat Bay Gypsum Quarry to test the extent of the deposit to support ongoing quarrying activities.

From 1999 to 2006, Vulcan Minerals completed four drill holes in the Flat Bay area for evaluation of hydrocarbon potential within the Carboniferous strata, referred to as the Flat Bay ("FB") wells. The drill holes generally intersected mainly gypsum and anhydrite – stratigraphically underlying the GAS halite deposit – except for FB2 and FB5 drilled in 2004 and 2006, respectively, which intersected salt and potash. FB2 and FB5 are located approximately 1,700 m south of the southernmost CC drill hole (CC-3). FB2 and FB5 drill holes intersected halite, although, due to their location relative to the Project and absence of analytical data, neither has been used in the previous Mineral Resource estimation and has similarly not been used by SLR.

Between 2009 and 2012, Vulcan Minerals completed eight test holes located in proximity to the Flat Bay Gypsum Quarry, located approximately 2 km southwest of CC-3, referred to as the Flat Bay Test Holes ("FBTH"). These were drilled to provide stratigraphic information within the lower Codroy Formation and upper Anguille Groups and to test the gypsum thickness within the remaining extent of the quarry.

The remaining FB and FBTH holes did not intersect the GAS halite and are therefore not included in the drill hole database for the Project.

Table 10-1: Summary of Hydrocarbon and Flat Bay Gypsum Quarry Drilling

Drill Hole ID	Owner	Year Drilled	NAD83 Z21 N[1]		Elevation (masl)	Total Depth (m)
			Easting	Northing		
FB-1	Vulcan Minerals	1999	384494	5360457	47.00	286
FB-2	Vulcan Minerals	2004	386756	5360182	55.45	845.4
Hurricane-1	Vulcan Minerals	2005	377221	5344869	138.32	876
Hurricane-2	Vulcan Minerals	2005	375913	5347414	145.70	935.2
Storm-1	Vulcan Minerals	2005	393519	5363857	111.75	880.3
FB-3	Vulcan Minerals	2007	384481	5360303	45.36	370.5
FB-5	Vulcan Minerals	2006	386211	5360171	68.63	719
Red Brook-1	Vulcan Minerals	2006	370175	5347603	56.44	186.5
FBTH-2	Vulcan Minerals	2009	384396	5360345	43.64	213.5
FBTH-3	Vulcan Minerals	2009	384543	5360173	46.89	249
Red Brook-2	Vulcan Minerals	2009	370184	5347564	57.10	1,965
FBTH-4	Vulcan Minerals	2011	383490	5360124	20.41	187
FBTH-5	Vulcan Minerals	2011	383232	5361153	7.37	350
FBTH-6	Vulcan Minerals	2011	384614	5358513	65.99	202
FBTH-7	Vulcan Minerals	2011	384869	5357809	80.45	220

Drill Hole ID	Owner	Year Drilled	NAD83 Z21 N[1]		Elevation (masl)	Total Depth (m)
			Easting	Northing		
FBTH-8	Vulcan Minerals	2011	385099	5360598	18.46	349
FBTH-9	Vulcan Minerals	2011	383725	5360395	16.39	159
Total						**8,993.4**

Notes:

1. Coordinates converted from UTM NAD27 Z21 to NAD83 by SLR
2. Drill hole information obtained from publicly available records of Newfoundland and Labrador, Industry, Energy, and Technology (www.gov.nl.ca/iet/publications)

Table 10-2 provides a summary of the halite exploration drilling at the Project, comprising 12 drill holes completed between 1999 and 2022.

Drill hole CC-1 was completed in 2002 by Vulcan Minerals for the purpose of testing geological and geophysical interpretations of a massive halite deposit within the Project area. Following a 10-year gap in exploration, Red Moon (now Atlas) subsequently completed four drill holes (CC-2 to CC-5) in 2013 and 2014. Data from CC-1 to CC-5 served as the basis for the Inferred Mineral Resource estimate in 2016 (APEX, 2016). Exploration restarted at the Project in 2022 by Atlas that has to date comprised four drill holes, plus two that were terminated prior to reaching salt, due to drilling difficulties.

Table 10-2: Summary of Project Drilling

Drill Hole ID	Owner	Year Drilled	UTM NAD83 Z21		Elevation (masl)	Total Depth (m)
			Easting	Northing		
CC-1	Vulcan Minerals	2002	386838.9	5362165.6	54.20	605.2
CC-2	Red Moon	2013	387598.9	5362877.7	47.45	466.0
CC-3	Red Moon	2013	386373.4	5361850.9	46.55	313.0
CC-4	Red Moon	2014	388120.8	5363353.0	47.41	536.0
CC-5	Red Moon	2014	387851.6	5362316.1	58.79	632.0
CC-6	Atlas Salt	2022	387914.1	5363747.8	24.86	362.0
CC-7	Atlas Salt	2022	388525.0	5363709.5	38.09	374.0
CC-8	Atlas Salt	2022	387770.4	5363177.0	54.67	491.6
CC-9[1]	Atlas Salt	2022	388374.8	5363298.8	47.55	158.3
CC-9a[1]	Atlas Salt	2022	388367.5	5363307.7	47.11	116.0
CC-9b[2]	Atlas Salt	2022	388381.1	5363303.8	47.20	580.0
Total						**4,634.10**

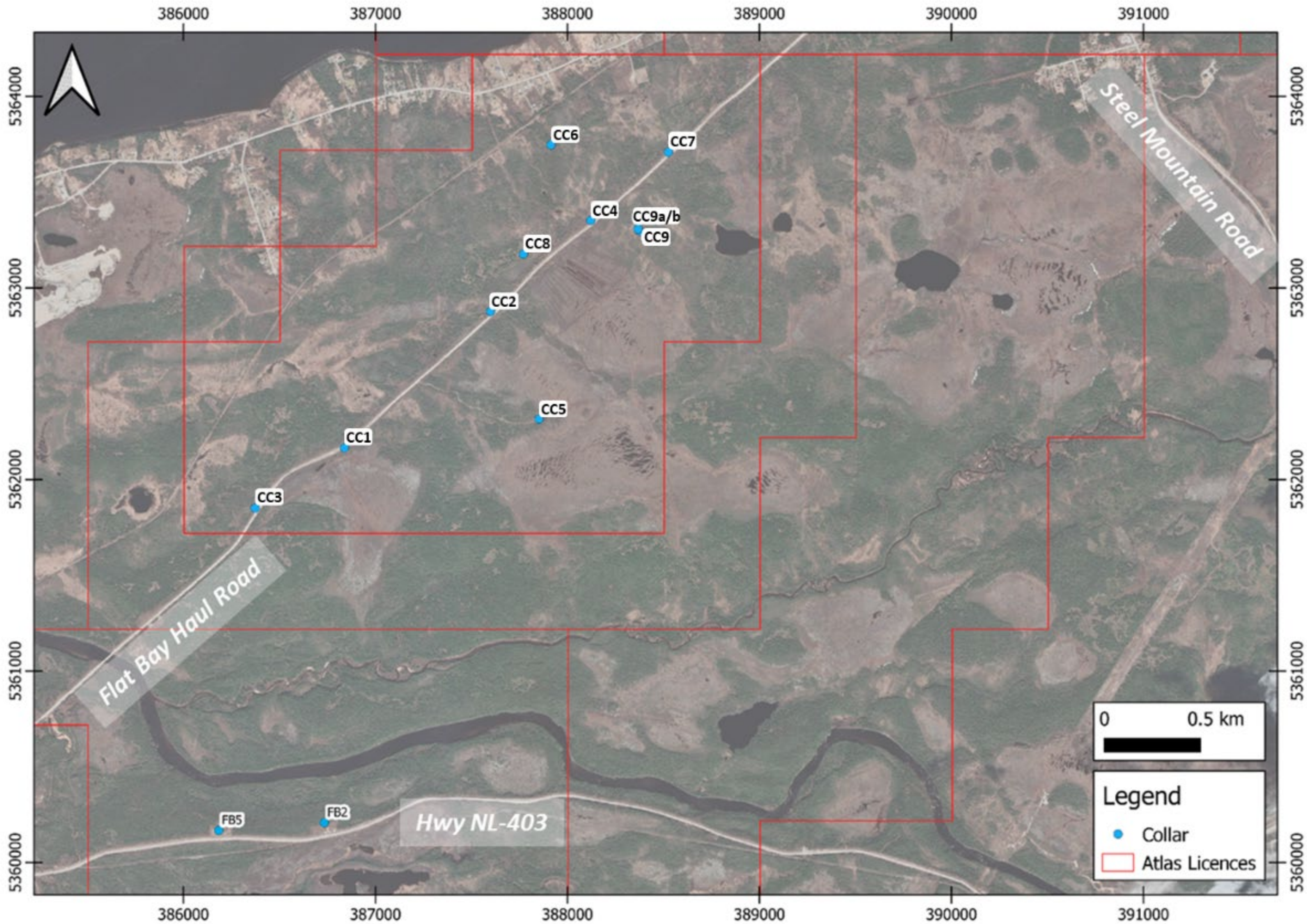
Notes:

1. CC-9 and CC-9a were terminated prior to reaching salt.
2. CC-9b was a redrill of 9/9a and intersected the full thickness of salt. SLR used a handheld GPS coordinate for CC-9b at the time of the Mineral Resource estimate.

Figure 10-1 illustrates a drill hole plan of the Project showing the relative position of all drilling to-date. CC-1 to CC-4 were all positioned along an existing access road/track orientated northeast-southwest through the Project area. In addition to providing ease of access for drilling this layout was primarily to allow comparison of intersections to seismic line 98-106, also positioned along the road (see Figure 9-1). CC-5 is located approximately 600 m southeast of the road and is positioned along seismic line VUL-2010-01 that also bisects CC-1.

Drill hole spacings across the deposit range from approximately 270 m between CC-4 and CC-9b up to 1,030 m between CC-1 and CC-2, and 1,120 m between CC-9b and CC-5.

Figure 10-1: Project Drill Hole Plan



Source: SLR, 2023.

10.2 Drilling Methods

FB2 and FB5 were drilled in 2004 and 2006 by Vulcan Minerals for the purpose of evaluating oil and gas potential of the Carboniferous strata of the basin. Both were drilled by percussion methods at 216 mm and 165 mm diameter with chip samples taken, and therefore simplified geological logs to the nearest five metres are available. Both intersected thick evaporitic sequences of gypsum, halite, and anhydrite, underlain by anhydrite, limestone, and conglomerates, confirming the lateral extent of halite mineralization across the property area.

Drill hole CC-1 was drilled in 2002 by Vulcan Minerals. Drill holes CC-2 to CC-5 were all drilled by Logan Drilling Group of Nova Scotia for Atlas. All CC-1 to CC-5 drill holes were completed as continuous cored diamond holes at HQ size (63.5 mm core diameter) through the overlying clastic (Red Beds) strata, followed by NQ size (47.6 mm core diameter) through the halite. To maintain high core recoveries within the halite to allow core sampling, the overlying clastic strata were drilled then cemented at the base, after which a closed-circulation saturated brine fluid was used for drilling through halite.

Drilling of CC-6, CC-7, CC-8, CC-9, and CC-9a in 2022 was undertaken by Cabo Drilling Corporation using a Marcotte 2500 drilling rig and 9b was drilled by Logan Drilling Group. Drill holes were similarly completed as continuous cored diamond holes at HQ size through the overlying clastic strata, changing to NQ size prior to drilling through the halite.

After drilling, CC-1 was surveyed using a Differential Global Positioning System (DGPS) unit by Enos Fudge Surveys of Newfoundland on behalf of Vulcan Minerals on February 4, 2002. Drill holes CC-2 to CC-5 were surveyed using a handheld GPS unit. Due to coordinate discrepancies identified by SLR during the 2022 exploration program, CC-2 to CC-9/9a were surveyed by Yates & Wood Limited surveyors of Newfoundland, on October 27, 2022. Drill hole CC-9b was surveyed after completion by Yates & Wood Limited on April 20, 2023.

Given the stratigraphic nature of the halite deposit, all drill holes have been drilled vertically. Only CC-1 has been subject to downhole deviation surveying, conducted at four downhole depths and all confirming 0° deviation from vertical. No downhole deviation surveys have been completed in any of the remaining drill holes. All drill holes have assumed to be vertical and modelled as such.

10.3 Core Logging and Drilling Results

Geological logging of core has been undertaken by company geologists of Vulcan Minerals and Red Moon (now Atlas) for each of the drilling programs. Core logging includes recording of lithology and a geological description of each logged interval comprising commentary on colour, grain size, mineralogy, estimated core compositions, and any intervals of specific interest. Core was also photographed during logging. Logging in CC-2 and CC-3 in 2013 also included a more detailed description of colour and purity within salt intersections.

Based on the observations of exploration completed to-date, the GAS deposit has been drill tested over an extent of approximately 2,800 m in a northeast-southwest direction and a width of approximately 600 m in a northwest-southeast direction.

The halite has to date been drill tested a maximum depth of 625 m in CC-5. While generally considered as a massive halite deposit, drill core observations also show that interbeds of mudstone and potash – often containing salt inclusions or fragments – occur across the deposit with varying degrees of lateral continuity. These vary in thickness from approximately 0.2 m lenses up to 27 m distinct interbeds. Two interbeds have been deemed to have lateral continuity across the full deposit being interpreted in all drill holes.

Drill hole intersections generally indicate that the overall halite deposit thickens towards CC-4 in the northeast. The intersection in CC-4 also indicates this location as a stratigraphic high, with the halite dipping away to surrounding intersections in CC-6, CC-7, CC-8, and CC-9b all being between 60 m and 160 m deeper. The halite deposit is generally shown to dip shallowly (10°) to the southeast.

In 2022, the QP also completed check logging of drill holes CC-2, CC-4, and CC-8 in the northeast of the deposit (SLR, 2023). Combining the check logging observations with original logging from the other holes, SLR derived the following thicknesses (Table 10-3).

Table 10-3: Summary of Drilling Intersections

Drill Hole ID	Red Beds[1] (m)	1-Salt (m)	Interbed-1 (m)	2-Salt (m)	Interbed-2 (m)	3-Salt (m)
CC-1	212.0	55.5	9.5	51.0	2.0	27.5
CC-2	303.0	19.1	12.9	41.4	4.1	73.8
CC-3	225.4	25.4	4.2	20.3	4.5	13.8
CC-4	186.0	56.0	27.1	66.2	11.1	183.4
CC-5	394.0	11.1	3.9	85.8	2.5	127.4
CC-6[2]	314.0	25.5	21.7	0.8	-	-
CC-7[2]	335.0	15.0	24.0	-	-	-
CC-8	257.0	31.0	20.6	94.6	3.1	76.9
CC-9[3]	158.3	-	-	-	-	-
CC-9a[3]	116.0	-	-	-	-	-
CC-9b[4]	242.6	56.4	7.3	100.8	19.6	149.8

Notes:

1. Includes superficial overburden.
2. CC-6 and CC-7 did not intersect the bottom of the salt horizons.
3. CC-9 and CC-9a were terminated prior to reaching salt.
4. CC-9b was a redrill of 9/9a and intersected the full thickness of salt.

Geological interpretation is discussed in more detail with respect to geological modelling and Mineral Resource estimation in Section 14.0.

10.4 Core Recovery

For drill hole CC-1 completed in 2002, drill core recovery is stated as being 100% (Vulcan Minerals, 2004). For drill holes CC-2 to CC-5, core recovery was not explicitly recorded unless encountered, however, from these records SLR has evaluated core loss intervals against the three halite horizons intersected. For CC-6 to CC-9b, a separate core recovery log was provided for each hole indicating the actual recovered core from each drill run.

The combined core recovery records have been used by SLR to evaluate recovery within each of the three halite horizons, results of which are shown in Table 10-4. Core recovery was lowest in the uppermost salt horizon (1-Salt), generally attributable to dissolution at the boundary between the Red Beds and halite. Core recovery in the remaining halite intersections were high except for the lowermost horizon (3-Salt) in CC-8 with a core recovery of 75%.

Table 10-4: Summary of Core Recovery

Drill Hole ID	Core Recovery (%)		
	1-Salt	2-Salt	3-Salt
CC-1	100	100	100
CC-2	77	100	100
CC-3	88	100	100
CC-4	84	100	100
CC-5	82	100	100
CC-6	98	100	-
CC-7	98	-	-
CC-8	88	98	75
CC-9b	90	96	92

The QP is of the opinion that core recoveries are sufficient for the purposes of obtaining representative samples. The 1-Salt was shown to be more susceptible to core loss which could be associated with an increased proportion of mudstone, potash, and anhydrite inclusions in comparison to the more massive halite of 2-Salt and 3-Salt. Reduced core recovery of 3-Salt in CC-8 was reviewed during the QP site visit in 2022. Core was observed as being more broken and disked in comparison to other drill holes and has been attributed to the experience of the drilling contractor. This result has therefore not influenced the QP's opinion of sample representativeness.

10.5 Downhole Geophysical Logging

Following drilling in 2013 and 2014, CC-2 to CC-5 were subject to downhole geophysical surveys for natural gamma. All downhole geophysical logging was undertaken internally by Red Moon (now Atlas) using a downhole poly-gamma probe manufactured by Mount Sopris Instruments. Natural gamma logs were subsequently used to validate the top and base of the halite horizons and lithological logging intervals as observed in drill core. Natural gamma geophysical logging has also been undertaken in CC-9b but not CC-8 due to hole size restrictions.

Geological interpretation and the use of downhole geophysics is discussed in more detail in Section 14.0

10.6 Core Sampling

Due to the massive and generally homogenous nature of the GAS halite, sampling in all drill core has not been undertaken continuously. Sampling of CC-1 to CC-5 has been based on a strategy of taking representative core samples dependent on drill core observations and geological logging. As a result, the total number of samples in these drill holes is a function of halite homogeneity and therefore the frequency of core samples is different within each hole. Sampling of CC-8 and CC-9b in 2022 was completed using more regularly spaced sampling strategy and therefore the frequency of sampling is higher than in CC-1 to CC-5 holes, i.e., not a function of halite homogeneity.

Table 10-5 provides a summary of core samples and sampling frequency taken in each drill hole, including all check samples taken by SLR and Atlas in 2022 and 2023. No core samples for salt assaying were taken from CC-9 and CC-9a.

Table 10-5: Summary of Sampling

Drill Hole ID	Total Depth (m)	Halite + Interbed Thickness (m)	No. of Samples (Halite + Interbed)	Sample Frequency (m)
CC-1	605.2	145.5	66	2.20
CC-2	466	151.3	83	1.82
CC-3	313	68.1	44	1.55
CC-4	536	343.7	71	4.84
CC-5	632	230.7	81	2.85
CC-6	362	48.0	27	1.78
CC-7	374	39.0	12	3.25
CC-8	491.6	226.1	194	1.17
CC-9b	580.0	333.7	199	1.68
Total		1,586.11	777	2.04

11.0 Sample Preparation, Analyses, and Security

11.1 Sample Preparation and Analysis

11.1.1 Summary

Sampling and analysis on Project drill core has been undertaken in four distinct phases including:

1. Potash Analytical Testing of CC-1 to CC-5 drill holes in 2008, 2013, and 2014 using Inductively Coupled Plasma-Optical Emission Spectroscopy (ICP-OES).
2. Sodium Chloride Analytical Testing of CC-1 to CC-5 drill holes in 2014 and 2015 using either ASTM Designation D632-12 or ICP-OES.
3. Sodium Chloride Analytical Testing of CC-6 to CC-9b drill holes in 2022 and 2023 using ASTM Designation D632-12
4. Sodium Chloride Analytical Testing of check laboratory samples taken from CC-1, CC-4, CC-8, and CC-9b in 2022 and 2023 using British Standard BS 3247:2011 + A1:2016.

Table 11-1 summarizes the analytical data available for the Project and used by SLR for Mineral Resource estimation. It should be noted that for those samples analysed at Saskatchewan Research Council (SRC) for K_2O, NaCl values were also calculated from the geochemical results and, as such, there are a total of 162 NaCl results analyzed by ICP-OES.

Table 11-1: Summary of Analysis

Drill Hole ID	K_2O Analysis				NaCl Analysis					
	ICP-OES	Lab	ICP-OES	Lab	ASTM D631-12	Lab	BS 3247:2011 + A1:2016	Lab	ICP-OES	Lab
CC-1	8	SRC	-	-	34	Actlabs	2	Sandberg	24	SRC
CC-2	22	SRC	-	-	48	Actlabs	-	-	17	Actlabs
CC-3	16	SRC	-	-	24	Actlabs	-	-	10	Actlabs
CC-4	6	Actlabs	3	SRC	37	Actlabs	2	Sandberg	34	Actlabs
CC-5	7	Actlabs	3	SRC	64	Actlabs	-		18	Actlabs
CC-6	-	-	-	-	27	Actlabs			-	-
CC-7	-	-	-	-	12	Actlabs			-	-
CC-8	-	-	-	-	174	Actlabs	23	Sandberg	-	-
CC-9b					179	Actlabs	22	Sandberg	-	-
Total	**59**		**6**		**599**		**49**		**103**	

Notes:

1. Both SRC, in Saskatchewan, and Activation Laboratories Ltd. (Actlabs), in Ontario, are accredited under the Standards Council of Canada (SCC) and operate in accordance with ISO/IEC 17025:2017 General Requirements for the Competence of Mineral Testing and Calibration Laboratories. At the time of analysis, both laboratories operated in accordance with the preceding ISO/IEC 17025:2005.
2. Sandberg LLP (Sandberg) in the UK is an accredited laboratory in accordance with International Standard ISO/IEC 17025:2017 under the UK Accreditation Service (UKAS).
3. All laboratories are independent of Atlas.

11.1.2 Potash Analysis

In 2008, CC-1 was originally sampled and analyzed by Vulcan Minerals to evaluate the potash potential of the deposit. Core samples from potash rich horizons ranged in length from 0.2 m to 0.75 m. A total of eight half core samples were taken from CC-1 and sent to the SRC laboratory for assaying using the SRC Potash Exploration Package for K_2O and MgO, in addition to other constituents. Results for K_2O were generally low, between 4.4% K_2O and 10.1% K_2O with one sample (CC#7) returning 20.4% K_2O.

In 2013, Red Moon continued testing the potash potential of the deposit through assaying of potash interval samples from CC-2 and CC-3. A total of 38 half core samples ranging from 0.3 m to 0.5 m in length were taken and again analyzed at the SRC laboratory. Results for K_2O were low, between 0.07% and 9.5% K_2O, averaging 0.86% K_2O.

Samples sent to SRC were initially crushed to 60% at -2 mm from which a 100 g to 200 g sample was taken using a riffle splitter. The sub-sample was further pulverized to 90% at -106 microns using a grinding mill. For assaying the pulverized sample was added to 15 mL of 30°C deionized water and shaken with the solution then analyzed by ICP-OES/Mass Spectrometry (MS). While the analytical method is deemed appropriate for potash mineralization, it is not considered suitable for determination of insoluble salt minerals e.g., anhydrite. The SRC Potash Exploration Package has a detection limit of 0.01% K_2O.

In 2014, an additional nine half core samples from potash intervals from CC-4 and CC-5 ranging from 0.2 m to 0.75 m in length were analyzed by Actlabs using the Actlabs Code 8 Potash Package. Results for K_2O were very low, between 0.05% K_2O and 0.42% K_2O.

Samples sent to Actlabs were analyzed as a 0.5 g sample digested in aqua regia then diluted to 250 mL with purified water. The sample was then analyzed by dissolution in 30°C deionized water. Potassium-chloride was dissolved along with soluble salts with the residual insoluble dried and weighed. The Actlabs Code 8 Potash Package has a detection limit of 0.01% K_2O.

Overall, potash grades within the GAS deposit are variable although predominantly low grade (less than 1% K_2O) with isolated high grade intervals up to 20% K_2O. As a result, analytical protocols were subsequently changed to focus on sodium chloride (NaCl) potential.

11.1.3 Sodium Chloride Analysis (CC-1 to CC-5)

Sodium chloride assaying was undertaken using two different analytical methods including ASTM Designation D632-12 titration and ICP-OES. Analysis by ICP-OES was undertaken using the SRC Potash and Actlabs Code 8 Potash packages. ASTM D632-12 determines the total amount of chlorides in the sample expressed as NaCl using a titration method with a silver nitrate ($AgNO_3$) solution. This method applies to the standard specification for sodium chloride for intended use as a deicer and for road construction or maintenance.

For measuring the insoluble residue and moisture content, ASTM Designation E534-13 was used to determine the free moisture in the salt by heating and using the gravimetric method, i.e., excluding moisture within salt crystals.

11.1.4 Sodium Chloride Analysis (CC-6 to CC-9b)

All halite samples taken from CC-6 to CC-9b were sent to Actlabs in Ancaster, Ontario, and analyzed for NaCl by ASTM D632-12 analytical package.

Core samples in CC-6, CC-7, and the upper section of CC-8 were initially taken as half core samples after cutting by Atlas, ranging in length from 0.1 m to 0.3 m, averaging 0.18 m. During sampling of CC-8, due to difficulties experienced with splitting the NQ diameter core longitudinally, Atlas decided to take shorter, whole core samples for the remainder of the drill hole. The remaining samples were predominantly 0.1 m in length.

11.1.5 Sodium Chloride Analysis (Check Laboratory Samples)

In 2022 and 2023, a total of 49 samples taken from CC-1, CC-4, CC-8, and CC-9b were sent to Sandberg in the UK and analyzed using British Standard BS 3247:2011 + A1:2016 for NaCl, SO_4, and insoluble residue as the "specification for salt for spreading on highways for winter maintenance". The QP considers this suite comparable to ASTM D632-12.

Samples ranged in length from 0.08 m to 0.20 m, averaging 0.12 m, and were taken as whole core samples. While not representing true field duplicates, check samples were taken adjacent to existing Atlas samples for validation purposes, described in Section 11.0

11.1.6 Density

In addition to geochemical analysis, 22 core samples were tested by gas pycnometer for density determination in 2015. The results from these samples, and other density samples taken in 2015, are described in Section 14.9.

11.1.7 Moisture and Insoluble Matter

While market requirements are principally based on sodium chloride grade and grading, i.e., particle size distribution (discussed in Section 19.0), some specific jurisdictions may also require information with respect to moisture content and insoluble matter contents. For example, the Ontario Provincial Standard Specification for Sodium Chloride (OPSS.PROV.2502, 2017) requires a moisture content not more than 1.5% and insoluble matter (dry basis) of not more than 4.0%[1].

Table 11-2 and Table 11-3 present basic statistics of 99 moisture and 122 insoluble assays with sodium chloride content greater than or equal to 95%. Moisture and insoluble analytical suites were not included in the 2022 analytical program for CC-6, CC-7, CC-8, or CC-9b, however, check laboratory samples analyzed at Sandberg included analysis for insoluble matter.

The results indicate that samples with greater than 95% sodium chloride contents average 0.12% moisture and 0.78% insoluble matter, both of which are well below expected specification limits.

Table 11-2: Moisture Assay Statistics for NaCl > 95%

Drill Hole ID	Moisture (%)					
	Count	Minimum	Maximum	Mean	Median	Std. Dev.
CC-1	22	0.05	3.27	0.31	0.13	0.68
CC-2	24	0.05	0.2	0.09	0.05	0.06
CC-3	4	0.05	0.1	0.09	0.10	0.03
CC-4	37	0.05	0.2	0.06	0.05	0.03
CC-5	12	0.05	0.1	0.06	0.05	0.02
Total	99	0.05	3.27	0.12	0.07	0.33

[1] Standards (roadauthority.com) Ontario Provincial Standards, Volume 6, Division 25

Table 11-3: Insoluble Assay Statistics for NaCl > 95%

Drill Hole ID	Insoluble Matter (%)					
	Count	Minimum	Maximum	Mean	Median	Std. Dev.
CC-1	22	0.02	2.72	0.59	0.29	0.76
CC-2	24	0.1	2.82	0.99	0.81	0.79
CC-3	4	0.6	1.88	1.32	1.41	0.58
CC-4	37	0.09	1.78	0.60	0.47	0.45
CC-5	12	0.23	1.88	0.68	0.57	0.5
CC-8	12	0.4	2.4	0.97	0.9	0.52
CC-9b	11	0.5	2.4	1.05	0.8	0.57
Total	122	0.02	2.82	0.78	0.62	0.64

11.1.8 Conclusion

In the QP's opinion, the sample analysis methodology is acceptable for the purposes of a Mineral Resource estimate. The QP considers that the method of whole core sampling adopted by Atlas in the lower section of drill hole CC-8 and CC-9b is justifiable and will not affect sample representativeness given the massive nature of the halite. The QP recommends that, where possible, future drill holes be completed at a larger drill core diameter to provide greater material for sampling and to reduce issues with core splitting and sampling.

11.2 Sample Security

All core samples were initially logged by Vulcan Minerals (CC-1), Red Moon (CC-2 to CC-5), and Atlas (CC-6 to CC-9b).

For CC-1 sampling in 2008, core was transported for storage at the Mines Branch Core Storage Library in Pasadena, Newfoundland. Samples were taken as half core after dry sawing, then placed in sealed plastic bags and sent by courier to the SRC laboratory in Saskatoon, Saskatchewan. Potash samples taken from CC-2 and CC-3 in 2013 were also sampled in the same manner and sent to SRC.

Samples from CC-4 and CC-5 core and those from CC-1 to CC-3 analyzed for NaCl were also dry sawed, then placed in sealed plastic bags and sent by courier to Actlabs in Ancaster, Ontario.

Core from CC-1 remains at the Government Core Storage Facility in Pasadena. Halite intersections from CC-2 to CC-9b are currently being stored at a warehouse in St. John's leased by Atlas. This includes pulp sample splits returned from the laboratories and samples of unanalyzed halite cores. Non-halite intersections from CC-2 to CC-9b are currently being stored at a separate storage site in Stephenville, approximately 25 km north of the Project.

For the 2022 drilling program, drill core was collected from the drilling site by Atlas geological staff. Drill core is then transported to a secure core storage facility in Stephenville for logging and sampling. Core sample tags are placed in the core box and sample bags, with a third tag placed in a record book. All sample record books are stored at the Atlas offices.

Samples are placed in individual sealed and labelled plastic bags and sample shipments are accompanied by sample inventory sheets. Atlas geological staff deliver sample batches to the courier and receive tracking details, after which samples are transported by courier to the Actlabs laboratory in Ontario.

Overall, the QP is satisfied that the sample security and chain of custody measures are reasonable and appropriate for the purposes of a Mineral Resource estimate.

11.3 Quality Assurance and Quality Control

11.3.1 Summary

Quality Assurance (QA) is necessary to demonstrate that the assay data has precision and accuracy within generally accepted limits for sampling and analytical methods used to have confidence in the resource estimation. Quality Control (QC) consists of procedures used to ensure that an adequate level of quality is maintained in the process of sampling, preparing, and assaying the drill core samples. In general, QA/QC programs are designed to prevent or detect contamination and allow analytical precision and accuracy to be quantified. In addition, a QA/QC program can disclose the overall sampling – assaying variability of the sampling method itself.

QA/QC programs typically include the insertion of different control sample types including blanks, duplicates, and standards (Certified Reference Material – CRM). However, given the deposit type and style of mineralization, previous QA/QC programs have only included duplicate samples for several reasons:

- Duplicates: Drill core from halite is more likely to be homogenous, i.e., it does not suffer from a nugget effect and therefore the potential for bias in obtaining field duplicates typically associated with metalliferous deposits is reduced. The ability to take field duplicates has also been influenced by the ease of splitting halite cores of NQ diameter.
- As an alternative, SLR and Atlas have taken field check samples adjacent to primary samples. Some pulp duplicate analysis has also been completed internally by Actlabs.
- CRMs: There is no common standard/CRM for halite; even if a CRM based on commercial road salt material, it would still be expected to show a degree of variability between 95% NaCl and 100% NaCl, i.e., having insufficient precision for determining laboratory performance.
- Blanks: Atlas has not introduced blanks into the sample stream although a small number have been introduced as procedure by Actlabs.

Table 11-4 presents a summary of QA/QC sampling undertaken for CC-1 to CC-9b drill holes. All QA/QC samples comprise either field or pulp duplicates as reported by APEX (2016), Atlas, or the analytical laboratory (Actlabs).

The results from each of these duplicate types are discussed in the following sub-sections.

Table 11-4: Summary of QA/QC Samples

Drill Hole ID	Total No. Primary Samples	APEX QP Duplicates		Atlas Duplicates		Internal Lab Duplicates		Internal Lab Blanks	
		Count	%	Count	%	Count	%	Count	%
CC-1	66	2	3.0%	0	0.0%	4	6.1%		
CC-2	83	2	2.4%	2	2.4%	4	4.8%		
CC-3	44	2	4.5%	4	9.1%	3	6.8%		
CC-4	71	4	5.6%	4	5.6%	5	7.0%		
CC-5	81	6	7.4%	4	4.9%	7	8.6%		

Drill Hole ID	Total No. Primary Samples	APEX QP Duplicates		Atlas Duplicates		Internal Lab Duplicates		Internal Lab Blanks	
		Count	%	Count	%	Count	%	Count	%
Sub-Total	345	16	4.6%	14	4.1%	23	6.7%	12	3.5%
CC-6	27					2	7.4%		
CC-7	12					1	8.3%		
CC-8	197					14	7.1%		
CC-9b	201					5	2.5%		
Sub-Total	437					22	5.0%	14	3.2%
Total	**782**	**16**	**2.0%**	**14**	**1.8%**	**45**	**5.8%**	**26**	**3.3%**

11.3.2 CC-1 to CC-5

11.3.2.1 APEX Duplicate Samples

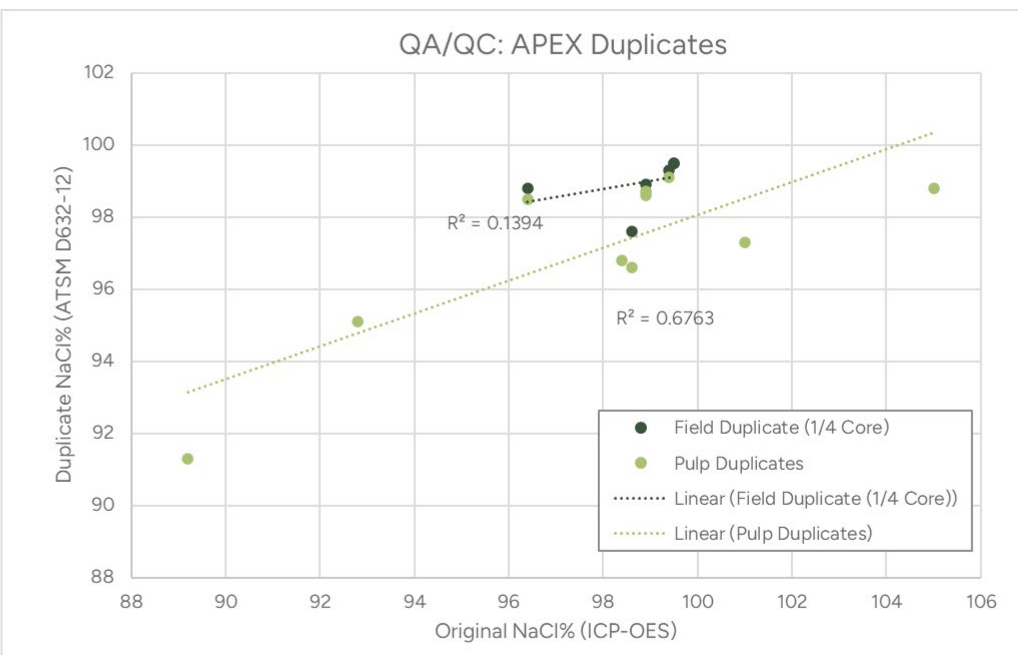
In 2015, for the purpose of preparing a NI 43-101 Technical Report (APEX, 2016), the APEX QP collected a total of 16 samples for analysis by ASTM Designation D632-12 for comparison against original assay results obtained by Atlas using the Code 8 Potash ICP-OES-MS method. Of the 16 samples collected during the APEX QP site visit, six were taken as quarter core field duplicates, with the remaining 10 based on existing pulp material obtained from the archived Atlas analytical program.

Table 11-5 presents the results of the QA/QC samples taken by APEX in 2015 which are further graphically shown in Figure 11-1.

Table 11-5: 2015 APEX Duplicate Sample Results

Drill Hole ID	Type	Original Sample ID	Original NaCl % (ICP-OES)	QP Sample ID	QP Sample NaCl% (D632-12)
CC-5	¼ Core	426489	98.9	15RER-RM001	98.9
CC-5	Pulp	426489	98.9	15RER-RM002	98.7
CC-5	¼ Core	426488	99.4	15RER-RM003	99.3
CC-5	Pulp	426488	99.4	15RER-RM004	99.1
CC-5	¼ Core	426524	98.6	15RER-RM005	97.6
CC-5	Pulp	426524	98.6	15RER-RM006	96.6
CC-2	Pulp	CC2-25	101.0	15RER-RM007	97.3
CC-2	Pulp	CC2-29	105.0	15RER-RM008	98.8
CC-3	Pulp	CC3-19	89.2	15RER-RM009	91.3
CC-3	Pulp	CC3-22	92.8	15RER-RM010	95.1
CC-4	¼ Core	426429	96.4	15RER-RM011	98.8
CC-4	Pulp	426429	96.4	15RER-RM012	98.5
CC-4	Pulp	426449	98.4	15RER-RM013	96.8
CC-4	Pulp	426462	98.9	15RER-RM014	98.6
CC-1	¼ Core	34947	98.9	15RER-RM017	99.5
CC-1	¼ Core	34960	99.6	15RER-RM018	99.5

Figure 11-1: 2015 APEX Duplicate Sample Results



Source: SLR, 2023.

It is noted by the QP that a difference in the R^2 value for the pulp duplicate results between Figure 11-1 and that presented in the APEX Technical Report (APEX, 2016) is due to the difference in NaCl% assays between a draft and final version of Actlabs laboratory certificate A13-13892. The QP has used those from the final version.

Figure 11-1 illustrates that correlation between the two analytical methods for both quarter core and pulp duplicates have low degrees of correlation (high variance), indicated by R^2 values of 0.10 and 0.67, respectively. This low correlation has previously been attributed to:

- Limited sample size.
- Imprecision in analyzing pseudo core samples collected by the APEX QP versus the original analysis.
- Narrow chemical distribution of halite that included only relatively pure halite greater than 90% NaCl, with the majority greater than 98% NaCl.
- The QP is of the opinion that while these duplicate results confirm the overall high grade of the halite at the Project, they also indicate overall low correlation between D632-12 and ICP-OES/MS analytical methods. APEX (2016) has previously suggested that as other salts associated with chloride may exist at lower sodium contents and the D632-12 method is based on a theoretical calculation of NaCl based on chloride from titration, NaCl could be slightly overestimated in instances where NaCl is less than 95%. The QP was unable to verify this explanation.

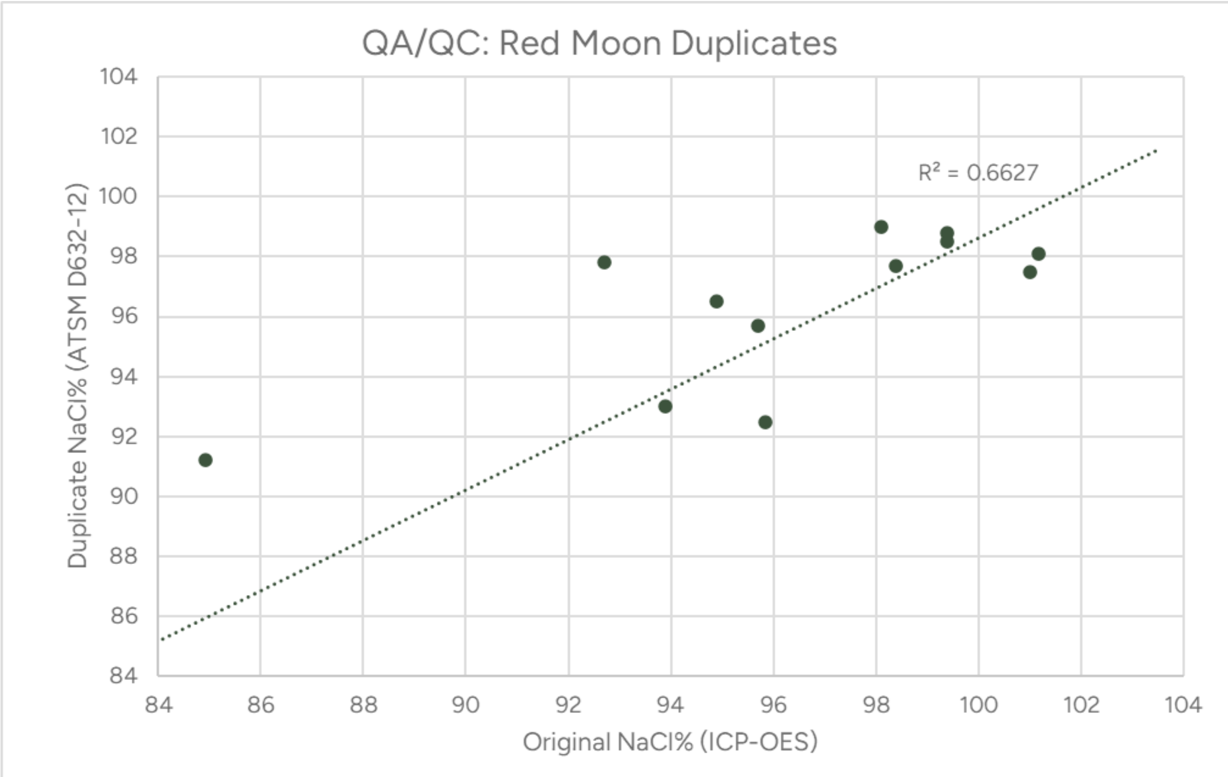
11.3.2.2 Red Moon Duplicate Samples

In addition to the 16 APEX samples, Atlas also analyzed an additional 14 samples using the ASTM Designation D632-12 method for direct comparison to the Code 8 Potash ICP-OES/MS method. The results are summarized in Table 11-6 and illustrated in Figure 11-2.

Table 11-6: 2015 Atlas Salt Duplicate Sample Results

Drill Hole ID	Sample ID	NaCl % (ICP-OES)	NaCl % (D632-12)	Difference (Absolute NaCl%)	Difference (%)
CC-2	CC2-24	101.18	98.1	-3.08	-3%
CC-2	CC2-38	89.50	83.5	-6.00	-7%
CC-3	CC3-21	84.91	91.2	6.29	7%
CC-3	CC3-23	95.84	92.5	-3.34	-4%
CC-3	CC3-25	84.90	81.9	-3.00	-4%
CC-3	CC3-26	101.00	97.5	-3.50	-4%
CC-4	426409	99.40	98.5	-0.90	-1%
CC-4	426423	99.40	98.8	-0.60	-1%
CC-4	426459	92.70	97.8	5.10	5%
CC-4	426465	98.40	97.7	-0.70	-1%
CC-5	426490	98.10	99.0	0.90	1%
CC-5	426505	93.90	93.0	-0.90	-1%
CC-5	426523	95.70	95.7	0.00	0%
CC-5	426526	94.90	96.5	1.60	2%

Figure 11-2: 2015 Red Moon Duplicate Sample Results



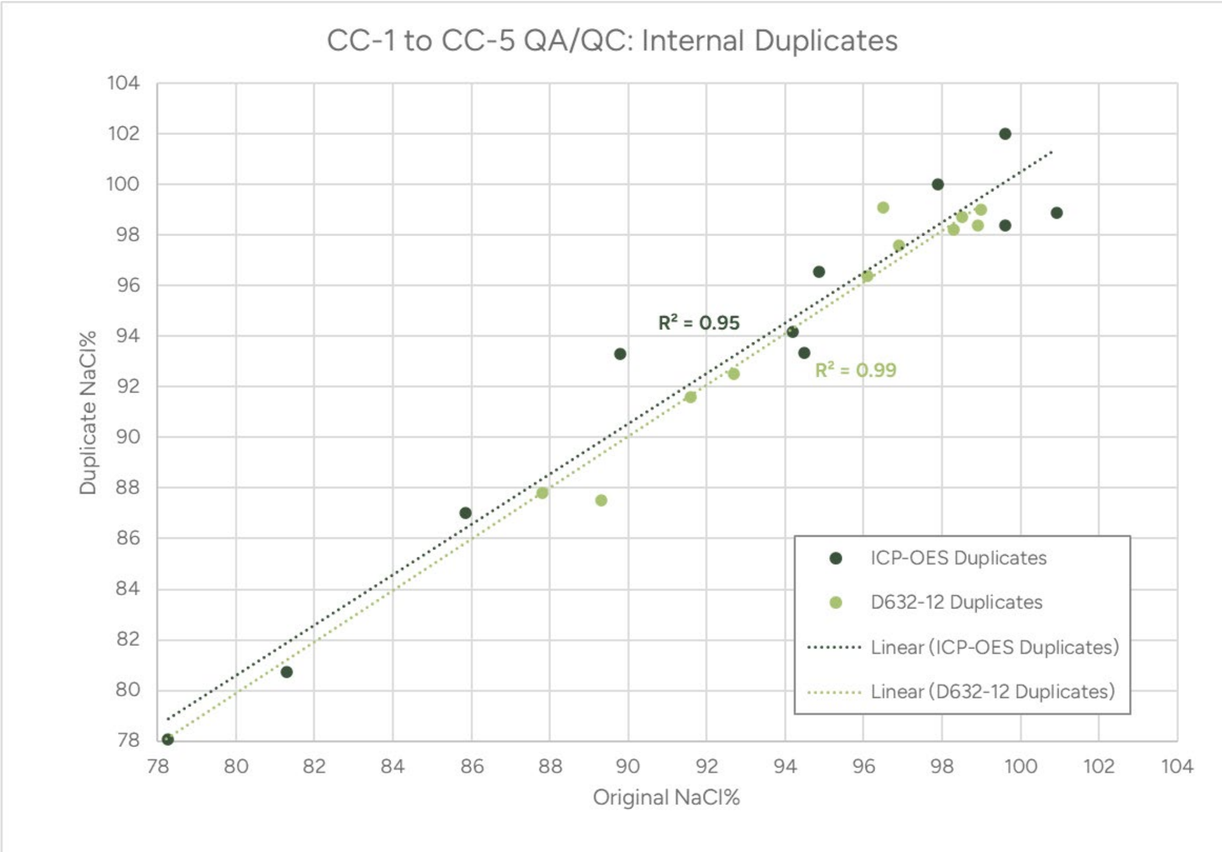
Source: SLR, 2023.

The duplicate sample analysis by Atlas demonstrates similar results to that by APEX, i.e., samples with lower NaCl concentrations generally less than 95% showed a slight overestimation from the D632-12 method. There is a closer degree of correlation between samples with grades greater than 95% NaCl.

11.3.2.3 Laboratory Repeats

In addition to duplicate sample assaying by APEX and Atlas, SRC and Actlabs also completed internal laboratory duplicate assays. SRC assayed four repeat/duplicate samples between 2008 and 2014, and Actlabs assayed 23 samples between 2013 and 2023. Collectively these included 11 samples assayed by ICP-OES and 12 by D632-12 (Figure 11-3), which is equivalent to 7% of the database. The QP is of the opinion that both sets of results indicate good laboratory performance through repeatability as indicated by the high degrees of correlation observed between original and repeat assay results.

Figure 11-3: CC-1 to CC-5 Laboratory Internal Duplicate Sample Results

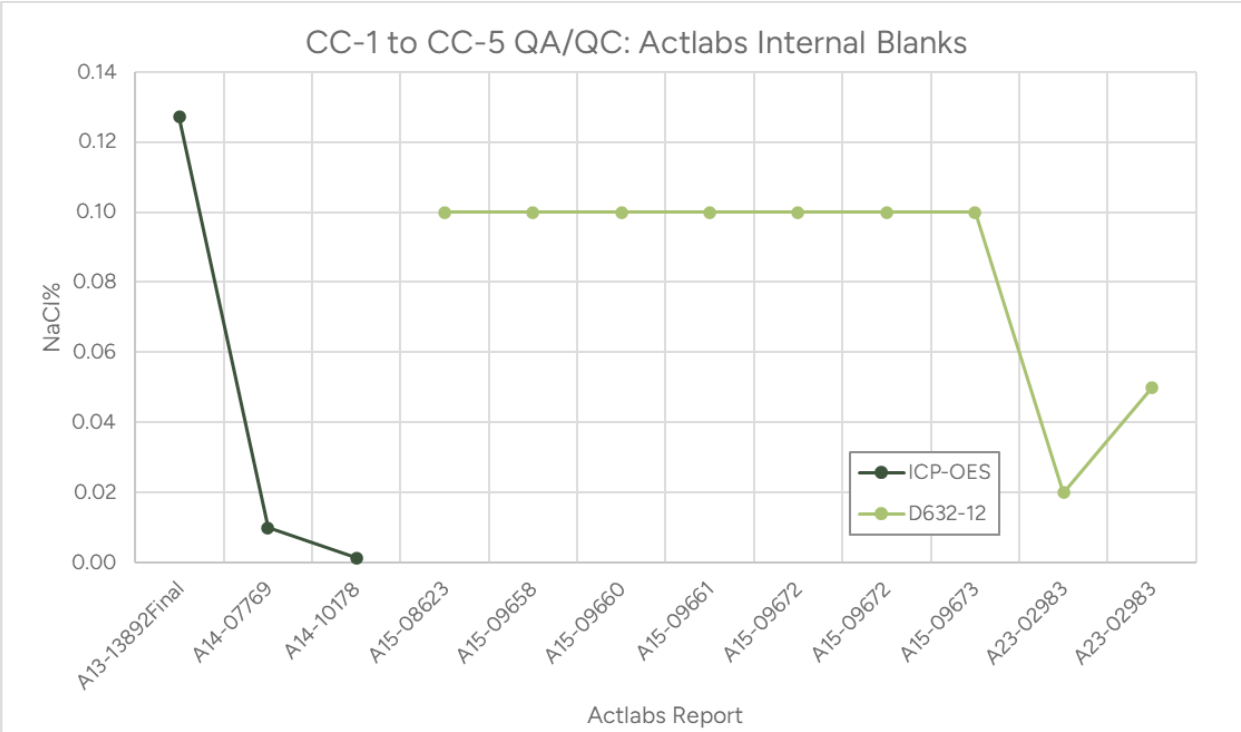


Source: SLR, 2023.

11.3.2.4 Laboratory Blanks

A total of 12 blank samples were introduced into the analytical programs completed by Actlabs between 2013 and 2023. While only representing a small portion of the total number of samples for CC-1 to CC-5 (approximately 4%), the results, as expected, show either very low or detection level NaCl grades (Figure 11-4).

Figure 11-4: CC-1 to CC-5 Actlabs Internal Blank Sample Results



Source: SLR, 2023.

The QP is of the opinion that overall laboratory performance by Actlabs has been reasonable and sufficient for the purpose of Mineral Resource estimation.

11.3.3 CC-6 to CC-9b

11.3.3.1 Atlas QA/QC Samples

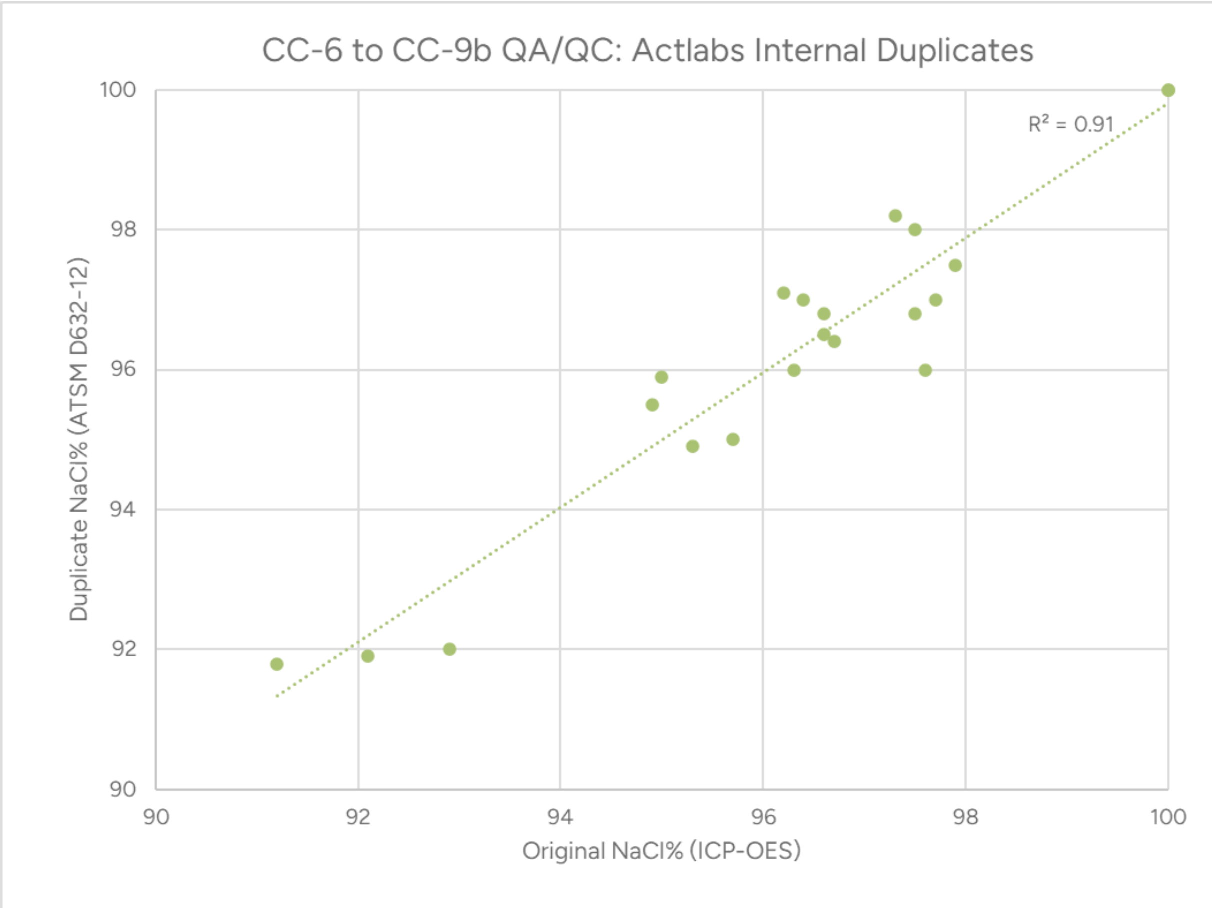
No QA/QC samples were introduced into the 2022-2023 sample stream by Atlas. The evaluation of laboratory performance is therefore based on the results of internal laboratory repeats and blanks, in addition to the SLR QA/QC samples taken by the QP (refer to Section 12.1.4).

Due to the core diameter used in 2022 drill holes and difficulties experienced with longitudinally splitting/cutting core, Atlas modified the sampling from taking 0.1 m to 0.3 m length, half core samples in CC-6, CC-7, and the upper section of CC-8, to taking 0.1 m length full core samples for the remainder of CC-8 from approximately mid-way through 2-Salt, and CC-9b. As a result, no field duplicate samples were taken by Atlas in 2022 and 2023.

11.3.3.2 Laboratory Repeats

Actlabs completed a total of 22 internal laboratory duplicate assays in 2022 and 2023 from samples of CC-6 (2), CC-7 (1), CC-8 (14), and CC-9b (5) equivalent to 5% of the 2022-2023 assay database. The results are illustrated in Figure 11-5. The QP is of the opinion that both sets of results indicate good laboratory performance through repeatability as indicated by the high degrees of correlation observed between original and repeat assay results.

Figure 11-5: CC-6 to CC-9b Actlabs Internal Duplicate Sample Results

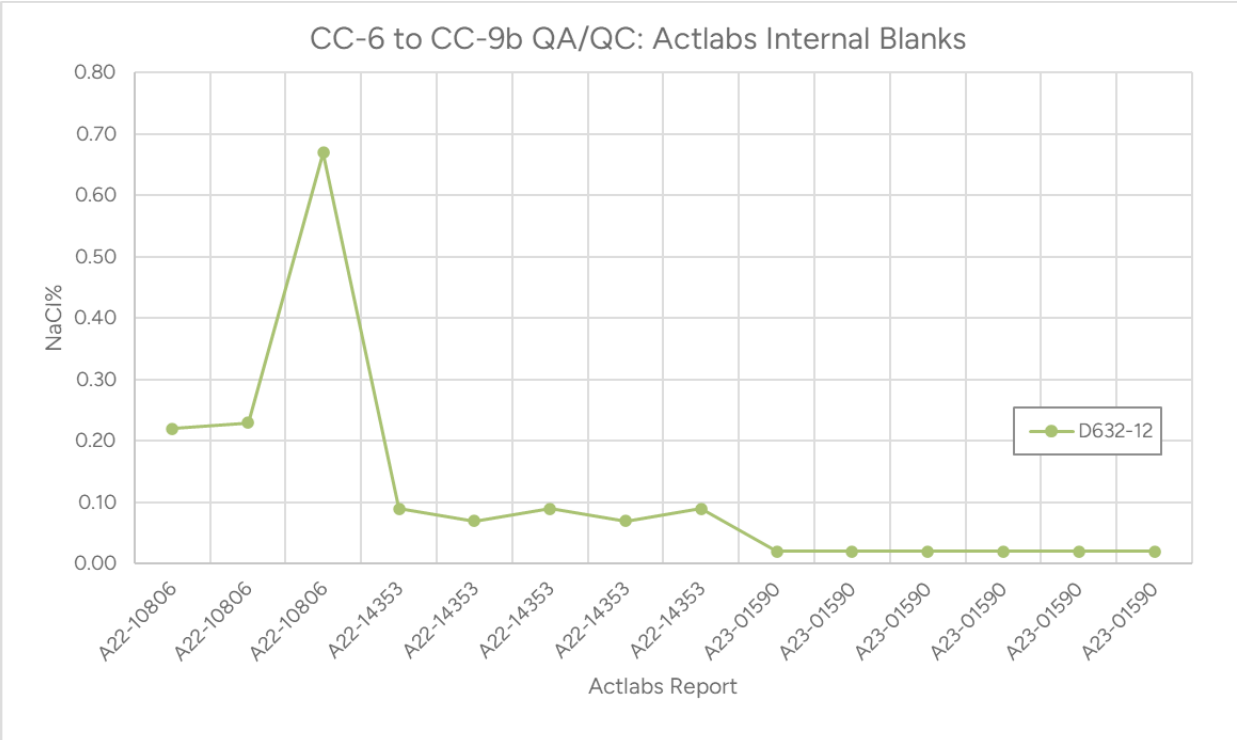


Source: SLR, 2023.

11.3.3.3 Laboratory Blanks

A total of 14 blank samples were introduced into the 2022-2023 analytical program completed by Actlabs. While representing only a small portion of the total number of samples for CC-6 to CC-9b (approximately 3%), the results, as expected, show very low NaCl grades (Figure 11-6). While a single blank analyzed with CC-6 and CC-7 core samples returned an elevated grade of 0.67% NaCl, this is immaterial in comparison to expected halite sample assays.

Figure 11-6: CC-6 to CC-9b Actlabs Internal Blank Sample Results



Source: SLR, 2023.

The QP is of the opinion that overall laboratory performance by Actlabs has been reasonable and sufficient for the purpose of Mineral Resource estimation.

11.3.4 Conclusions

The QP recognizes that the QA/QC strategy for the GAS deposit does not follow typical convention for other metal and mineral deposits primarily due to the style of mineralization and the general homogenous nature of the halite. For example, the absence of any CRMs in the QA/QC programs is recognized by the QP as being due to the lack of commercially available halite samples, where even industrial road salt material may return NaCl grades ranging from 95% to 100%, not deemed sufficient for assessing laboratory performance.

With regard to duplicate samples, field duplicates have previously been taken by both Red Moon and the APEX QP in 2015, however, due to limitations in core diameter in the latest drilling program, no such duplicates have been taken in 2022. As a result, opinion on laboratory performance in 2022 has primarily been formed based on the results of internal laboratory repeats and QP's samples (see discussion in Section 12.1.4).

CC-1 to CC-5

- The QP is satisfied that, with consideration for the deposit type and style of mineralization, the overall insertion rates for duplicate samples in CC-1 to CC-5 analytical programs are appropriate.
- APEX duplicate results indicate overall low repeatability, albeit significantly higher for pulp duplicates compared to quarter core field duplicates. The QP is satisfied that pulp

duplicate performance is adequate to support Mineral Resource estimation. Differences in field duplicates have been attributed to sampling discrepancies between original and APEX QP sampling, and the overall small sample size.

- The results from duplicate samples taken by Atlas show a closer degree of correlation between higher grade samples greater than 95% NaCl. The QP is satisfied that the results indicate overall reasonable repeatability sufficient to support Mineral Resource estimation.
- The QP is of the opinion that the internal laboratory repeats show high degree of correlation with both ICP-OES and D632-12 analytical methods.
- Laboratory blanks returned negligible or detection limit NaCl grades, also indicating good laboratory performance.

CC-6 to CC-9b

- The results of internal laboratory repeats show a reasonable degree of correlation, considered by the QP to be sufficient to confirm laboratory accuracy and reliability.
- Similarly, laboratory blanks returned negligible NaCl grades, indicating overall good laboratory performance with no evidence of contamination.
- Following recommendations made in 2022 to appoint a second check laboratory to validate Actlabs results, Atlas subsequently sent check samples to Sandberg in the UK (see discussion in Section 11.3).

In the QP's opinion, the sample preparation, analysis, and security procedures at GAS are adequate for use in the estimation of Mineral Resources. The QP offers the following recommendations with respect to QA/QC:

- Increase the frequency of laboratory repeats to account for the difficulty in the collection of reliable field duplicates.
- Obtain appropriate blank material, for example equivalent material used internally by Actlabs, for blind insertion into the sample stream by Atlas. This could be a commercially available blank or inert material obtained locally and crushed by Atlas.

12.0 Data Verification

The following section describes the data audit and verification steps undertaken by the QPs for the purposes of preparing a Mineral Resource estimate, a Mineral Reserve estimate, and Feasibility Study for the Project. These data verification steps for the current Mineral Resource estimate were originally undertaken by the QP for preparation of the previous Mineral Resource estimate (effective date January 6, 2023) and have subsequently been repeated or updated for the current Mineral Resource estimate (effective date May 11, 2023).

12.1 Data Verification for the Mineral Resource Estimate

12.1.1 Collar Coordinates

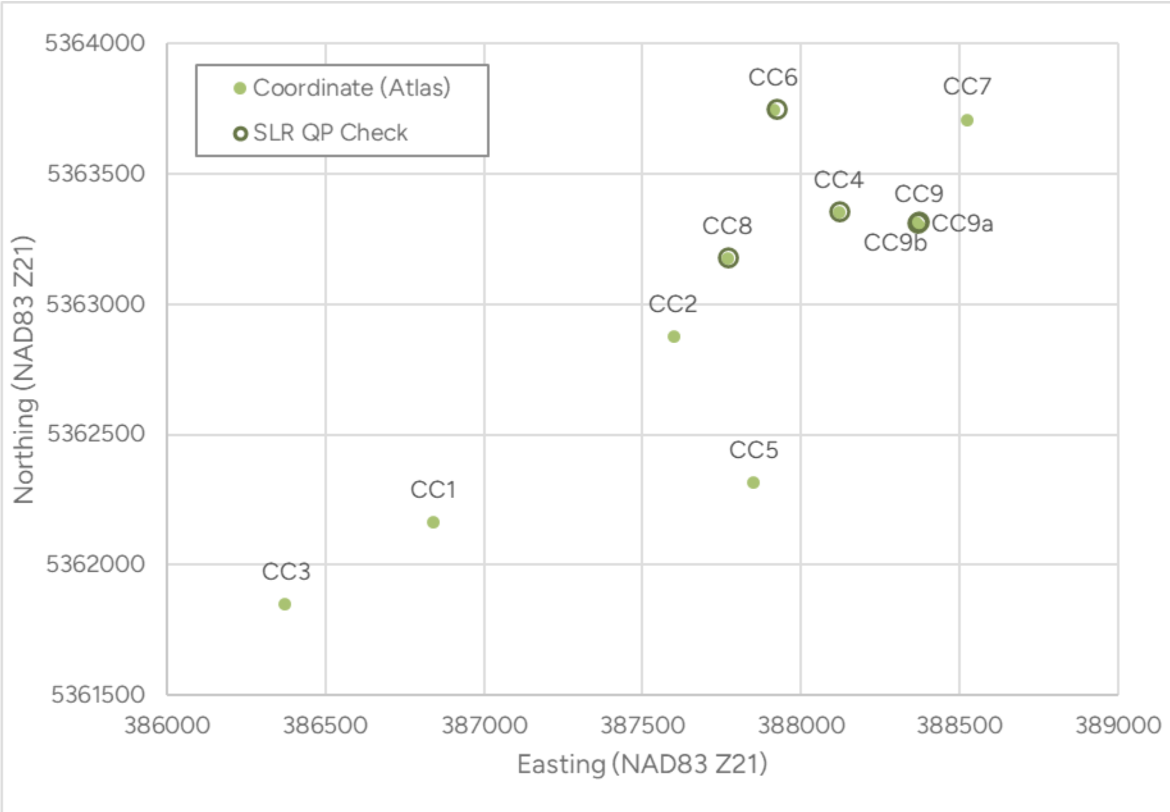
During the 2022 exploration program, discrepancies were identified by SLR when comparing between the various sources of information including drill hole maps/plans, collar coordinate tables, and tables from the APEX report (APEX, 2016). Also, drill holes were slightly relocated during the program due to accessibility issues with originally planned coordinates.

Considering that only CC-1 had previously been located by a qualified surveyor, with all others located using a handheld GPS, the QP recommended that all drill hole collars be re-surveyed by an independent, qualified surveyor. This survey was completed by Yates & Wood Limited surveyors of Newfoundland, on October 27, 2022. A second survey including CC-9b was completed by Yates & Wood Limited on April 20, 2023.

During a site visit by John Kelly, QP, from October 17 to 20, 2022, coordinates for five drill hole collars, CC-4, CC-6, CC-8, CC-9, and CC-9a, were checked using a handheld GPS device for the purpose of data verification. The GPS coordinates collected by the QP were compared against those from the 2022 collar survey, showing negligible differences within the accuracy limits of the GPS device (Figure 12-1).

The first drill hole collar survey and the QP site visit both pre-date the siting and completion of drill hole CC-9b.

Figure 12-1: Collar Coordinate Validation



Source: SLR, 2023.

Further to collar coordinate verification, the QP also compared the surveyed collar elevations against the topography surface from Light Detection and Ranging (LiDAR) to identify any material discrepancies. The differences between the two sets of elevations are shown in Table 12-1. The QP considers the discrepancies to be within acceptable limits, indicating the suitability of the supplied LiDAR survey data.

Table 12-1: Collar Elevation Verification

Drill Hole ID	Surveyed Elevation (masl)	Topography Elevation (masl)	Difference (m)
CC-1	54.20	54.53	-0.33
CC-2	47.45	47.13	0.32
CC-3	46.55	46.00	0.55
CC-4	47.41	47.00	0.41
CC-5	58.79	58.59	0.20
CC-6	24.86	24.38	0.48
CC-7	38.09	37.46	0.63
CC-8	54.67	54.00	0.67
CC-9	47.55	47.15	0.40
CC-9a	47.11	46.82	0.29
CC-9b	47.20	46.70	0.50

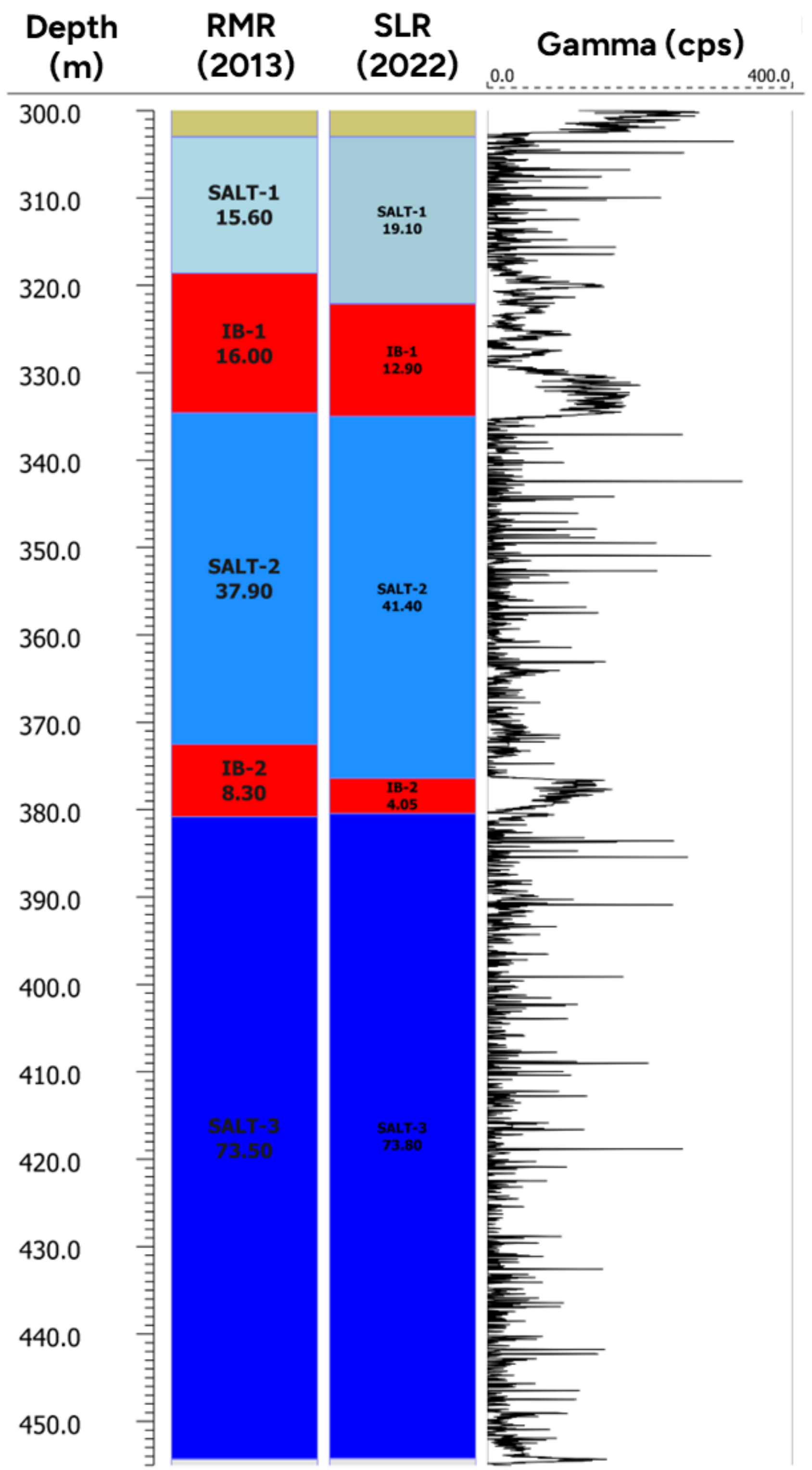
12.1.2 Lithological Data

SLR initially conducted a desktop review of the geological logging information provided for CC-1 to CC-9b. This review included comparison between lithological logging and assay sample intervals to evaluate their representativeness and to identify potential interval (overlapping or missing) errors. No errors were found. Where available, SLR also conducted a review of lithological descriptions, core photographs, and downhole geophysical logs as a validation of halite intersections. No discrepancies between the halite-Red Beds contact or halite-anhydrite contact were observed and, as such, The QP considers the halite intersections to be well defined/constrained vertically.

During a site visit from October 17 to 20, 2022, the QP also completed independent logging of the halite intersected in CC-2 and CC-4, and check logging of CC-8. Figure 12-2 and Figure 12-3 illustrate comparison between original Red Moon logging with modelled interbeds (APEX, 2016) and QP independent logging in CC-2 and CC-4, respectively, alongside natural gamma logs. Both sets of logs are broadly comparable, although for the purposes of producing an updated Mineral Resource SLR has used the independent logging conducted by the QP in October 2022.

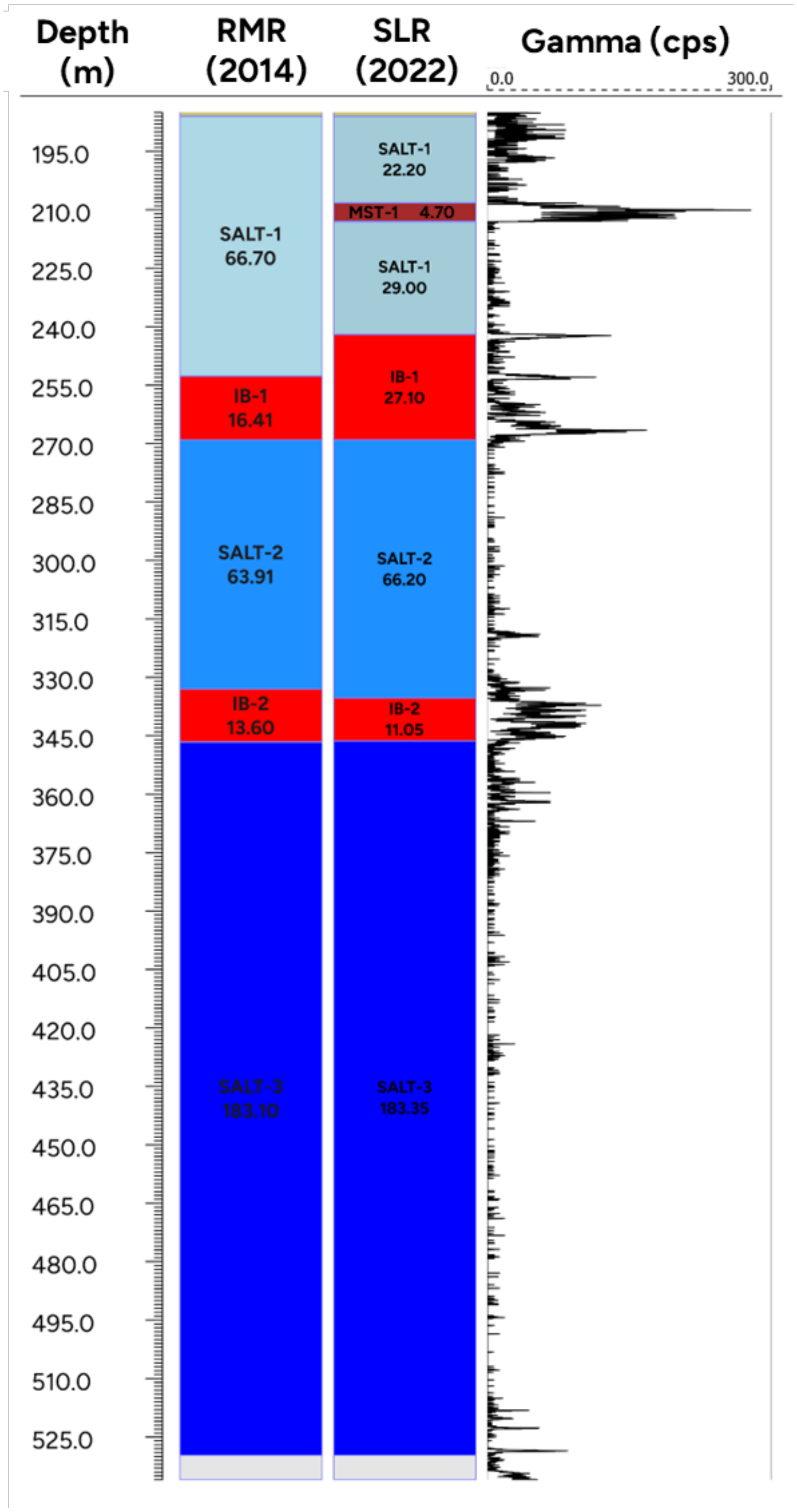
In CC-8, geological logging provided by Atlas included lithological descriptions but no existing interpretation of halite or interbeds. During the site visit, the QP completed a check log of the halite interval and subsequently interpreted intervals for the three halite horizons and separating interbeds. The same interpretation procedure was repeated for CC-9b using a combination of lithological descriptions, core photos, and gamma logs, subsequently validated using assay results.

Figure 12-2: SLR Check Logging Comparison (CC-2)



Source: SLR, 2023.

Figure 12-3: SLR Check Logging Comparison (CC-4)



Source: SLR, 2023.

12.1.3 Assay Results

SLR was provided with laboratory assay certificates from SRC and Actlabs for CC-1 to CC-5 drill holes, Actlabs for CC-6 to CC-9b drill holes, and Sandberg for CC-1, CC-4, CC-8, and CC-9b. All certificates were provided in electronic (.XLSX and .PDF) file format to allow for cross-checks to be made against the Mineral Resource database. A summary of the available certificates is presented in Table 12-2.

Table 12-2: Summary of Assay Certificates

Drill Holes	Lab	Certificate	Year	No. of Samples	Analytical Suite
CC-1	SRC	2006-8003	2006	24	SRC Potash Package: Ca, Mg, K, NaCl, sulphate, Moisture and Insolubles
CC-1	SRC	G-08-1192	2008	8	ICP1 Soluble, Moisture and Insolubles
CC-2 and CC-3	Actlabs	A13-13892-Final	2013	27	Code 8 Potash Package ICP-OES and Insolubles/Moisture, Code 9 XRD
CC-2 and CC-3	SRC	G-13-1220	2013	38	ICP2 Soluble, Moisture
CC-4 and CC-5	Actlabs	A14-10178	2014	13	Code 8 Potash Package ICP-OES and Insolubles/Moisture, Code 9 XRD
CC-4 and CC-5	Actlabs	A14-07769	2014	52	Code 8 Potash Package ICP-OES and Insolubles/Moisture, Code 8 Potash ICPMS Pkg ICPMS
CC-4 and CC-5	SRC	G-2014-2162	2014	9	SRC Potash Package: Ca, Mg, K, NaCl, sulphate, Moisture and Insolubles
CC-1 to CC-5	Actlabs	A15-08623	2015	18	NaCl as per ASTM D632-12 Titration
CC-1 to CC-5	Actlabs	A15-08623 SG	2015	20	Code Specific Gravity-Pycnometer (Nitrogen) Pulp by Nitrogen Pycnometer
CC-5	Actlabs	A15-09658	2015	33	Code Specific Gravity-Pycnometer (Nitrogen) Pulp by Nitrogen Pycnometer, Code 8-Potash ICPMS Pkg ICPMS
CC-4	Actlabs	A15-09660	2015	34	Code Specific Gravity-Pycnometer (Nitrogen) Pulp by Nitrogen Pycnometer, Code 8 Potash Package ICP-OES and Insolubles/Moisture
CC-3	Actlabs	A15-09661	2015	21	Code Specific Gravity-Pycnometer (Nitrogen) Pulp by Nitrogen Pycnometer, Code 8 Potash Package ICP-OES and Insolubles/Moisture, Code 8 Potash ICPMS Pkg ICPMS
CC-2	Actlabs	A15-09672	2015	47	Code Specific Gravity-Pycnometer (Nitrogen) Pulp by Nitrogen Pycnometer, Code 8 Potash Package ICP-OES and Insolubles/Moisture, Code 8 Potash ICPMS Pkg ICPMS
CC-1	Actlabs	A15-09673	2015	21	Code Specific Gravity-Pycnometer (Nitrogen) Pulp by Nitrogen Pycnometer, Code 8-Potash ICPMS Pkg ICPMS
CC-6 and CC-7	Actlabs	A22-10806	2022	39	NaCl as per ASTM D632-12 Titration
CC-8	Actlabs	A22-14353	2022	174	NaCl as per ASTM D632-12 Titration

Drill Holes	Lab	Certificate	Year	No. of Samples	Analytical Suite
CC-4	Sandberg	73645c	2022	2	BS 3247:2011 + A1:2016
CC-8	Sandberg	73645c	2022	23	BS 3247:2011 + A1:2016
CC-9b	Actlabs	A23-01590	2023	179	NaCl as per ASTM D632-12 Titration
CC-1	Actlabs	A23-02983	2023	9	NaCl as per ASTM D632-12 Titration
CC-5	Actlabs	A23-02983	2023	28	NaCl as per ASTM D632-12 Titration
CC-9b	Sandberg	74186c	2023	10	BS 3247:2011 + A1:2016
CC-1	Sandberg	74286c	2023	2	BS 3247:2011 + A1:2016
CC-9b	Sandberg	74286c	2023	12	BS 3247:2011 + A1:2016

All results were checked against the original laboratory certificates and no material discrepancies were identified, enabling the QP to conclude that the analytical database used for grade interpolation was sufficiently robust and reliable.

The following miscellaneous changes were made by SLR:

- A small number of samples returned NaCl% assays greater than 100% and were therefore modified by SLR to 100%.
- Interval for sample 922044 in CC-8 was corrected by SLR using core photos to prevent overlapping with the adjacent sample.
- Intervals for samples 922171 and 922172 were corrected through consultation with Atlas to prevent overlapping with adjacent samples.
- Interval for sample 922174 corrected in consultation with Atlas.
- Assays for sample CC9 in drill hole CC-1 added by SLR from certificate G-2008-1192.
- Assays for samples CC2-23 to 39 in drill hole CC-2 and samples CC3-17 to 26 in drill hole CC-3 from the draft (“rev1”) certificate were replaced by those in the final version of certificate A13-13892.

12.1.4 2022 Check Assay Results

During the site visit, the QP selected 25 check samples from CC-4 and CC-8 drill holes for analysis to provide further independent validation of analytical results. A summary of these samples is provided in Table 12-3, with results described in subsequent sections. This is in addition to those check assays completed previously as described in Section 11.3.2.1 QA/QC.

Table 12-3: SLR QP Check Samples

Drill Hole	SLR Sample ID	From (m)	To (m)	Thickness (m)	Description	Adjacent GAS Sample
CC-4	39847	360.00	360.10	0.10	Muddy Salt	
CC-4	39848	369.00	369.10	0.10	Muddy Salt	
CC-8	39833	278.15	278.30	0.15	Mudstone	
CC-8	39834	279.55	279.70	0.15	Salt	
CC-8	39824	284.28	284.38	0.10	Salt – Check	922022
CC-8	39832	291.90	292.00	0.10	Mudstone	
CC-8	39827	296.00	296.20	0.20	Mudstone	
CC-8	39831	298.60	298.75	0.15	Mudstone	
CC-8	39829	298.80	298.93	0.13	Mudstone	
CC-8	39828	300.61	300.78	0.17	Mudstone	
CC-8	39835	302.28	302.41	0.13	Muddy Salt	
CC-8	39830	307.83	308.00	0.17	Mudstone	
CC-8	39825	313.48	313.58	0.10	Salt – Check	922035
CC-8	39826	321.07	321.17	0.10	Salt – Check	922042
CC-8	39836	342.21	342.38	0.17	Salt – Check	922060
CC-8	39843	364.87	364.99	0.12	Salt – Check	922162
CC-8	39838	373.77	373.87	0.10	Salt – Check	922089
CC-8	39837	392.21	392.31	0.10	Salt – Check	922069
CC-8	39839	398.61	398.71	0.10	Salt – Check	922111
CC-8	39840	404.30	404.40	0.10	Salt – Check	922117
CC-8	39841	422.20	422.30	0.10	Salt – Check	922132
CC-8	39842	429.77	429.87	0.10	Salt – Check	922139
CC-8	39845	470.43	470.58	0.15	Mudstone	
CC-8	39844	472.65	472.78	0.13	Salt – Check	922167
CC-8	39846	487.84	487.92	0.08	Anhydrite	

Given previous sampling strategies and difficulty with core splitting, the QP opted to take check samples as whole core intervals for assaying. Samples were placed in sealed and labelled plastic bags for transport for assaying by Sandberg. Samples were analyzed for chloride, sulphate, and insoluble residue using the method as detailed BS 3247: 2011 and A1:2016.

Sandberg is an accredited laboratory in accordance with International Standard ISO/IEC 17025:2017 under UKAS.

The 2022 check assay results have been incorporated into the assay database used for the updated Mineral Resource estimate.

12.1.4.1 Salt Check Assays

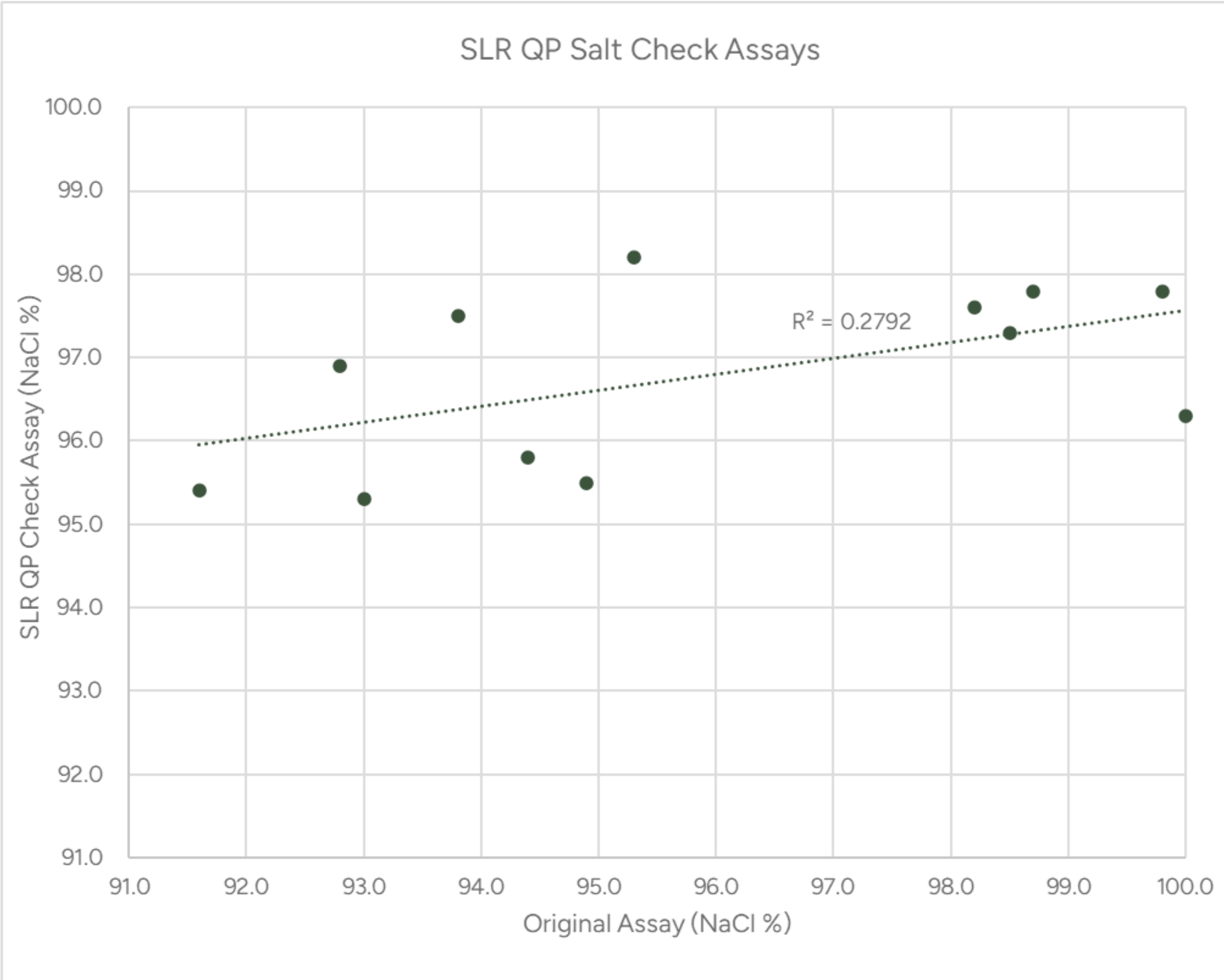
In 12 instances in CC-8, the QP took check samples adjacent to an existing sample in the same lithology, each of which was deemed visually identical from core inspection by the QP. The QP has evaluated the NaCl results as equivalent to field duplicates to assess the overall representativeness of original sampling.

Table 12-4 and Figure 12-4 show the results of the QP check samples as analyzed by Sandberg in comparison to their respective adjacent samples analyzed by Actlabs. Overall, the results indicate the results from Sandberg returned NaCl values all greater than 95%, whereas many Actlabs results were below 95%.

Table 12-4: SLR QP Salt Check Samples

SLR Sample ID	Description	Adjacent GAS Sample ID	Actlabs NaCl (%)	Sandberg NaCl (%)	Difference (NaCl %)	Percentage Difference (%)
39824	Pale Orange Salt	922022	93.8	97.5	3.7	3.9
39825	White salt	922035	91.6	95.4	3.8	4.1
39826	Dark grey salt	922042	94.4	95.8	1.4	1.5
39836	White to dark grey salt	922060	92.8	96.9	4.1	4.4
39843	Massive banded dark grey, mid grey and white salt	922162	100.0	96.3	-3.7	-3.7
39838	Massive grey salt	922089	98.7	97.8	-0.9	-0.9
39837	Massive white salt	922069	94.9	95.5	0.6	0.6
39839	Massive grey salt	922111	95.3	98.2	2.9	3.0
39840	Massive light grey salt	922117	98.5	97.3	-1.2	-1.2
39841	Massive white to pale grey salt	922132	93.0	95.3	2.3	2.5
39842	Massive banded dark and light grey salt	922139	99.8	97.8	-2.0	-2.0
39844	Massive mid-grey salt	922167	98.2	97.6	-0.6	-0.6
Average			**95.9**	**96.8**	**0.9**	**1.0**

Figure 12-4: SLR QP Salt Check Sample Results



The QP's review of the results shows that there is variability between Actlabs and Sandberg assays, with overall low correlation. Based on visual core inspections, the QP would have expected that assays between adjacent samples would show a higher degree of correlation, however, it appears that Actlabs has consistently underreported NaCl content in samples, with results deemed conservative for the purposes of the Mineral Resource estimate. The QP notes, however, that the overall range of NaCl values in check samples is narrow.

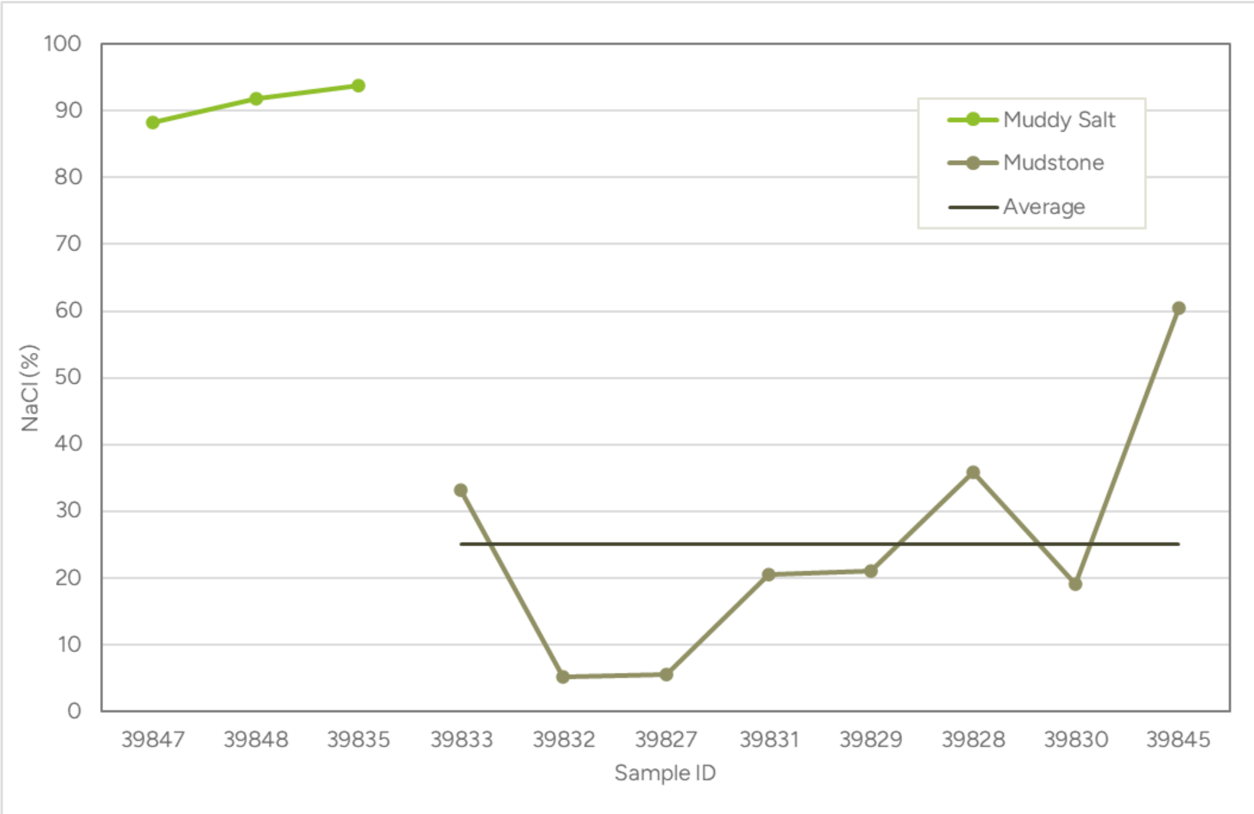
12.1.4.2 Mudstone Assay Results

In addition to check samples taken within halite intersections, the QP also obtained samples from drill core sections with varying proportions of mudstone interbeds or inclusions, i.e., interpreted as muddy salt, salty mudstone, or mudstone. A total of 11 samples were taken and analyzed by Sandberg using the same analytical methods as for salt samples. The results are listed in Table 12-5 and shown in Figure 12-5.

Table 12-5: SLR QP Salt Check Samples

SLR Sample ID	Description	Classification	Sandberg NaCl (%)
39847	Muddy salt with green mudstone inclusions	Muddy Salt	88.2
39848	Red muddy salt with minor red mudstone and anhydrite inclusions	Muddy Salt	91.9
39835	Muddy salt (4)/(5)	Muddy Salt	93.8
Average		**Muddy Salt**	**91.3**
39833	Mudstone and orange remobilised salt (3)	Mudstone	33.1
39832	Red weak mudstone with minor green mudstone bands	Mudstone	5.1
39827	Dark grey green to dark brown mudstone	Mudstone	5.4
39831	Siltstone, mudstone, and rare salt	Mudstone	20.4
39829	Green and brown banded mudstone, rare salt	Mudstone	21.0
39828	Salty mudstone (2)	Mudstone	35.8
39830	Silty Mudstone	Mudstone	19.1
39845	Red, weak, salty mudstone (1)	Mudstone	60.5
Average		**Mudstone**	**25.1**

Figure 12-5: SLR QP Mudstone Sample Results

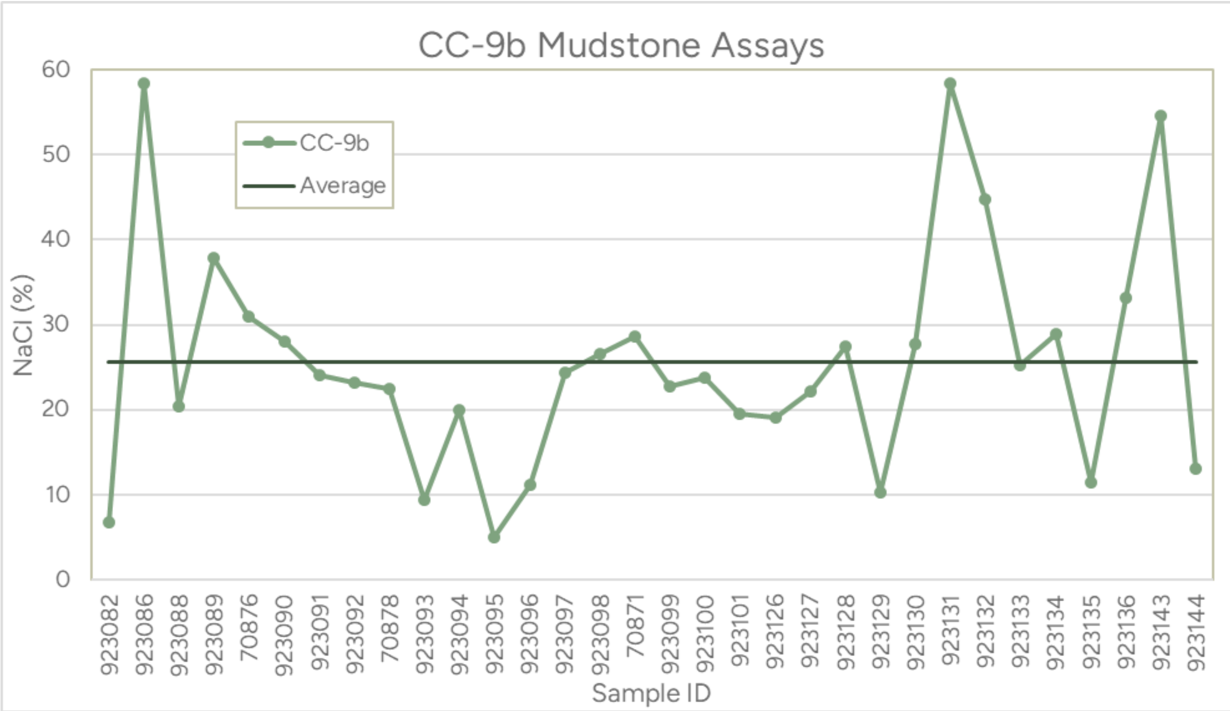


The results indicate that while three instances of muddy salt – predominantly halite with mudstone bands or interbeds – returned values below the typical road salt specification of 95% NaCl, these samples generally showed NaCl contents of approximately 90%.

The eight samples observed as being from mudstone lithologies returned results varying from 5% NaCl to 60% NaCl, averaging 25% NaCl. Excluding one instance observed to have a greater salt content (Sample 39845), the samples averaged approximately 20% NaCl.

These results have been further corroborated by 2023 assay results from CC-9b. A total of 32 samples taken within interbed or well-defined mudstone intervals returned grades between 5% NaCl and 59% NaCl, averaging approximately 26% NaCl (Figure 12-6).

Figure 12-6: Atlas CC-9b Mudstone Sample Results

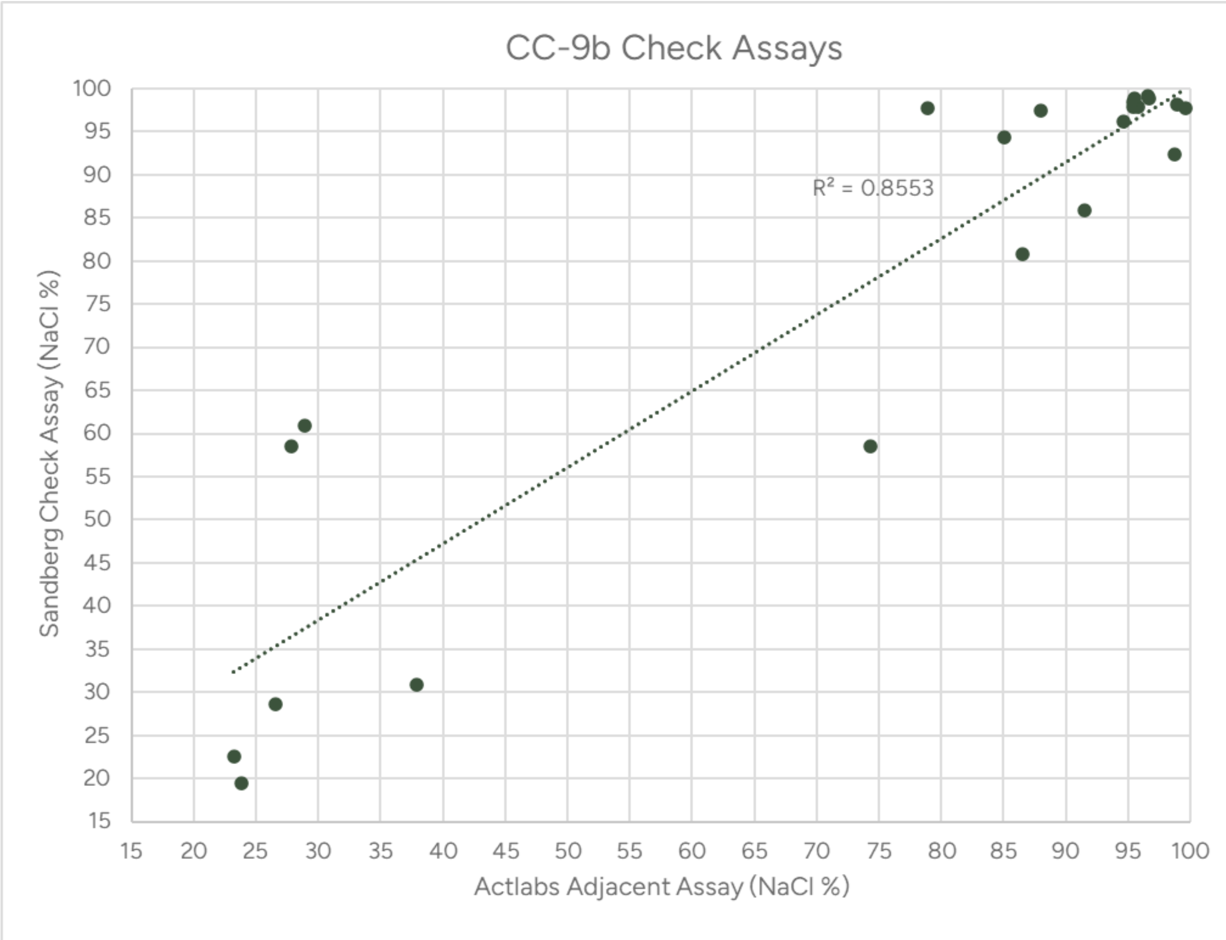


As described in Section 14.6 (Compositing), the QP has accounted for unsampled mudstone intervals by using a diluting grade of 0% NaCl when calculating composite grades.

12.1.5 2023 Check Assay Results

In 2023, a total of 22 check samples from halite and muddy salt intervals were taken from CC-9b and analyzed by Sandberg. Similar to the check samples taken by the QP in 2022, all samples were taken immediately adjacent to an existing Actlabs sample in the same lithology to enable validation of results. A comparison between the two sets of results is shown in Figure 12-7.

Figure 12-7: CC-9b Check Assay Results



The QP is of the opinion that the CC-9b results indicate overall good correlation – greater than that shown by 2022 check assays. Considering the samples do not represent true field duplicates, this further validates the assays from Actlabs and Sandberg.

An additional two check samples were taken in CC-1 and analyzed by Sandberg although neither was adjacent to an Actlabs sample and therefore no direct comparisons for validation purposes have been made. All check sample results from CC-1 and CC-9b have been included in the database used for the updated Mineral Resource estimate.

12.1.6 Conclusions of Mineral Resource Data Verification

Data verification undertaken by the QP has included validation of both spatial and analytical datasets provided by Atlas through collar coordinate checks and check assays taken during a site visit in October 2022, in addition to extensive desktop validation of the analytical database.

The QP is not aware of any limitations on data verification and is of the opinion that database verification procedures for the Project are inline with industry standards and are adequate for the purposes of Mineral Resource estimation.

Since the previous Mineral Resource estimation, additional verification in the form of check analysis has been undertaken by a second laboratory. This includes samples taken by the QP in 2022 and others by Atlas during the 2022-2023 sampling program. The QP is of the opinion that check sample results sufficiently verify analytical results from the primary laboratory for use in the Mineral Resource estimate.

With respect to the findings of the data verification undertaken for the Project, the QP offers the following additional recommendations:

- Obtain additional infill and/or check samples in drill hole CC-5. Current Mineral Resource classifications consider that grade continuity between CC-5 and CC-2, spaced at approximately 600 m, is more variable than observed between other closely spaced drill holes, which warrants validation.

12.2 Data Verification for Mining, Mineral Reserves, Capital and Operating Costs, and Economic Analysis

The QP had oversight of the selected independent third parties who conducted the field programs in the areas of geotechnical and geochemical assessments, and hydrogeological assessments from July 2021 to the effective date of this report. The QP did not visit any of the laboratories that tested for geotechnical or geochemical inputs.

The QP engaged regularly with the personnel who developed the capital and operating cost estimates and financial model. As part of the data verification process, the QP reviewed budgetary quotes or input prices provided by prospective vendors, to ensure that they were being captured correctly within the capital and operating cost estimates, and financial model.

12.3 Data Verification for Metallurgical Assumptions

The QP engaged with the Project geologists and other personnel to ensure that rock salt samples chosen for analysis were representative of the grades and locations that could eventually be extracted. The QP selected the laboratory in which the samples were sent for analysis. The QP did not visit the laboratory.

12.4 Data Verification for Marketing

The QP was responsible for the selection of firms which carried out the marketing and logistics independent assessments that occurred from July 2021 to the effective date of this report. The QP met regularly with the people involved in delivering the marketing and logistics independent assessments to ensure that their work met the overall objectives of providing the QP with information related to rock salt prices that could be realized from the Project, as well as logistics considerations for delivering rock salt to destination markets.

12.5 Data Verification for Environmental Studies, Permitting, and Social or Community Impact

The QP relied on the data and analyses carried out by independent third parties hired by Atlas Salt. Based on the QP's experience and review of the data and analysis, these studies were appropriate for the stage of the Project.

13.0 Mineral Processing and Metallurgical Testing

13.1 Overview

Test work on salt samples from new drill holes was completed as the 2022-2023 drilling program progressed. The test work included unconfined compressive strength (UCS) tests, Bond abrasion index (Ai), and Cerchar Abrasivity Index (CAI) tests. Samples were selected from drill core from CC-7, CC-8, and CC-9b, and consisted of multiple intervals within two salt horizons intercepted, 2-Salt and 3-Salt, and the QP considers these to be indicative of salt to be mined on all mining levels.

UCS results for the 30 samples from CC-8 and CC-9b ranged from 14.7 MPa to 38.8 MPa and averaged 25.3 MPa. The results are summarized in Table 13-1. Since the core was smaller diameter (approximately 35 mm) than typically used for strength test analysis (50 mm) the results have been adjusted to normalize them for comparison to generally published results. In addition to UCS testing of salt samples, 16 samples of interbed material (material between salt horizons) were tested, and while this material should not reach the processing plant, it is nevertheless useful to characterize this material in the event that some of it does get included in feed to the plant. The interbed material is generally softer than the salt, with the UCS results averaging 16.2 MPa, with 15 results ranging between 3.3 MPa and 24 MPa and one high result of 46.6 MPa.

Table 13-1: Summary of UCS Results for CC-8 and CC-9b

Sample ID	Drill Hole	Interval, From – To (m)	UCS, Adjusted (MPa)
778410, SA1	CC-8	281.41 – 281.65	34.1
778411	CC-8	281.26 – 281.41	28.6
778412, SA1	CC-8	284.42 – 284.6	28.5
778415	CC-8	355.27 – 355.54	25.8
778418, SA1	CC-8	364.79 – 365.09	31.7
778419	CC-8	365.3 – 389.3	28.7
778420, SA1	CC-8	367 – 367.33	26.8
778424, SA1	CC-8	416.22 – 416.6	26.4
778425	CC-8	388.58 – 389	28.4
778428, SA1	CC-8	415.52 – 416	26.6
778410, SA2	CC-8	281.41 – 281.65	34.4
778412, SA2	CC-8	284.42 – 284.60	38.8
778418, SA2	CC-8	364.79 – 365.09	30.7
778420, SA2	CC-8	367.00 – 367.33	26.9
778424, SA2	CC-8	416.22 – 416.60	32.1
778428, SA2	CC-8	415.52 – 416.00	23.0
912417	CC-9b	498.70 – 499.00	19.7
912520	CC-9b	403.57 – 403.90	18.7
912521	CC-9b	408.59 – 408.93	17.5

Sample ID	Drill Hole	Interval, From – To (m)	UCS, Adjusted (MPa)
912522	CC-9b	442.11 – 442.46	20.0
912523	CC-9b	516.19 – 516.52	24.2
912524	CC-9b	527.48 – 527.78	19.1
912525	CC-9b	536.69 – 537.01	18.5
912533	CC-9b	411.35 – 411.69	23.3
912537	CC-9b	534.20 – 534.52	14.7
912538	CC-9b	545.36 – 545.66	24.6
912539	CC-9b	428.32 – 428.67	23.5
912540	CC-9b	433.00 – 433.36	22.9
912541	CC-9b	539.38 – 539.72	17.7
912542	CC-9b	542.98 – 543.33	22.7
Average			**25.3**
75th Percentile			**28.6**

Source: SGS, 2022

Six Bond abrasion index (Ai) tests have been completed on six samples from CC-7 and CC-8 with Ai ranging from 0.001 g to 0.071 g and classified as very mild to mildly abrasive. The results are presented in Table 13-2.

Table 13-2: Bond Abrasivity Test Results

Sample ID	Drill Hole	Depth (m)	Salt Horizon	Ai (g)	Abrasivity Classification	Predicted Wear Rate[1] (kg/kWh)
102	CC-7	339 – 340.5	1	0.071	Mild	0.016
778417	CC-8	354.1 – 356	2	0.002	Very Mild	-
778427	CC-8	420.65 – 422.08	3	0.001	Very Mild	-
912511	CC-9b	569.1 – 570.6	3	0.001	Very Mild	-
912512	CC-9b	453.7 – 455.2	3	0.001	Very Mild	-
912513	CC-9b	265 – 266.5	1	0.002	Very Mild	-

Source: SGS, 2023

Notes:

1. For roll crusher shells

The CAI test is used to predict cutter wear during rock drilling or excavation, and six salt samples were tested. The CAI results ranged from 0.226 to 0.348, classifying the samples' abrasivity as very low.

Additional abrasivity testing was conducted on two samples from CC-7 by continuous miner (CM) manufacturers and the samples were assessed by the two manufacturers as "not abrasive" and "not very abrasive" to "slightly abrasive".

13.2 Conclusions

Eighty percent of the UCS results for the salt samples tested were within the expected range of 10 MPa to 30 MPa, and the overall average of the results fell within this range at 25.3 MPa.

Abrasivity testing of salt samples showed that the salt is very mild to mildly abrasive.

In the QP's opinion, the test results provide adequate information on the properties of the salt to size crushers and estimate costs for replacement of wear items.

14.0 Mineral Resource Estimate

14.1 Summary

Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Definition Standards for Mineral Resources and Mineral Reserves (CIM (2014) definitions) were used for Mineral Resource classification. Table 14-1 provides a summary of the Mineral Resource estimate by SLR, with an effective date of May 11, 2023 on the Great Atlantic Salt Project.

Table 14-1: Mineral Resource Estimate – May 11, 2023

Category	Horizon	Tonnage (Mt)	Grade (NaCl %)	Contained NaCl (Mt)
Indicated	1-Salt	-	-	-
	2-Salt	160	95.9	154
	3-Salt	223	96.0	214
	Total	**383**	**96.0**	**368**
Inferred	1-Salt	195	95.3	186
	2-Salt	288	95.3	274
	3-Salt	385	95.0	366
	Total	**868**	**95.2**	**827**

Notes:

1. CIM (2014) definitions were followed for Mineral Resources.
2. Mineral Resources are estimated without a reporting cut-off grade. Reasonable Prospects for Eventual Economic Extraction were instead demonstrated by reporting within Mineable "Stope" Optimised (MSO) shapes, with a minimum height of 5 m, minimum width of 20 m, length of 40 m, and minimum grade of 90% NaCl, with a 5 m minimum pillar width between shapes.
3. Bulk density is 2.16 t/m^3.
4. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
5. Mineral Resources are inclusive of Mineral Reserves.
6. Salt prices are not directly incorporated into the Mineral Resource MSO minimum target grades, however, the mean Mineral Resource grades exceed the 95.0% NaCl (± 0.5%) specification outlined in ASTM Designation D632-12 (2012).
7. Numbers may not add due to rounding.

The QP is not aware of any environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other relevant factors that could materially affect the Mineral Resource estimate.

14.2 Resource Database

The database for the Project Mineral Resource estimate consists of nine drill holes for 4,359.8 m of drilling, excluding CC-9 and CC-9a, as summarized in Table 14-2. CC-6 and CC-7 intersected the top of the uppermost halite horizon but did not drill through the complete salt interval. CC-9 and CC-9a were terminated prior to reaching the salt horizon due to drilling difficulties and were therefore not directly used.

Table 14-2: Summary of Drilling

Drill Hole ID	Owner	Year Drilled	UTM NAD83 Z21		Elevation (masl)	Total Depth (m)
			Easting	Northing		
CC-1	Vulcan Minerals	2002	386838.9	5362165.6	54.20	605.2
CC-2	Red Moon	2013	387598.9	5362877.7	47.45	466.0
CC-3	Red Moon	2013	386373.4	5361850.9	46.55	313.0
CC-4	Red Moon	2014	388120.8	5363353.0	47.41	536.0
CC-5	Red Moon	2014	387851.6	5362316.1	58.79	632.0
CC-6	Atlas Salt	2022	387914.1	5363747.8	24.86	362.0
CC-7	Atlas Salt	2022	388525.0	5363709.5	38.09	374.0
CC-8	Atlas Salt	2022	387770.4	5363177.0	54.67	491.6
CC-9[1]	Atlas Salt	2022	388374.8	5363298.8	47.55	158.3
CC-9a[1]	Atlas Salt	2022	388367.5	5363307.7	47.11	116.0
CC-9b[2]	Atlas Salt	2022	388381.1	5363303.8	47.20	580.0
Total						**4,634.10**

Notes:

1. CC-9 and CC-9a were terminated prior to reaching salt.
2. CC-9b was a redrill of 9/9a and intersected the full thickness of salt. SLR used a handheld GPS coordinate for CC-9b at the time of the Mineral Resource estimate.

14.3 Geological Interpretation

14.3.1 Halite

Geological interpretation of the GAS halite deposit has been based on a combination of geological and geophysical data from the following sources:

- Lithological boundary between the overlying Red Beds stratigraphy and the top of halite, as observed in drill core logs.
- Lithological boundary between the base of halite and the underlying anhydrite, as observed in drill core.
- Top and base of halite based on downhole geophysical logging of natural gamma in CC-2 to CC-5 and CC-9b drill holes, used to validate drill core observations and inform geological interpretations including correlation of mudstone interbeds.
- Re-processed seismic survey interpretations as contours/point data representing the top and base of salt reflector horizons.

Table 14-3 provides a summary of halite intersections observed in drill holes based on lithological logging undertaken by Vulcan Minerals and Atlas. The halite has been intersected to a maximum depth of approximately 625 m in CC-5.

Table 14-3: Summary of Intersections

Drill Hole ID	Total Depth (m)	Red Beds[1] (m)	1-Salt (m)	Interbed-1 (m)	2-Salt (m)	Interbed-2 (m)	3-Salt (m)
CC-1	605.2	212.0	55.5	9.5	51.0	2.0	27.5
CC-2	466.0	303.0	19.1	12.9	41.4	4.1	73.8
CC-3	313.0	225.4	25.4	4.2	20.3	4.5	13.8
CC-4	536.0	186.0	56.0	27.1	66.2	11.1	183.4
CC-5	632.0	394.0	11.1	3.9	85.8	2.5	127.4
CC-6[2]	362.0	314.0	25.5	21.7	0.8		
CC-7[2]	374.0	335.0	15.0	24.0			
CC-8	491.6	257.0	31.0	20.6	94.6	3.1	76.9
CC-9b[2]	580.0	242.6	56.4	7.3	100.8	19.6	149.8

Notes:

1. Includes superficial overburden
2. CC-6 and CC-7 were terminated shortly after intersecting the top of the halite. CC-9 and CC-9a were terminated prior to reaching salt. CC-9b was a redrill of 9/9a and intersected the full thickness of salt.

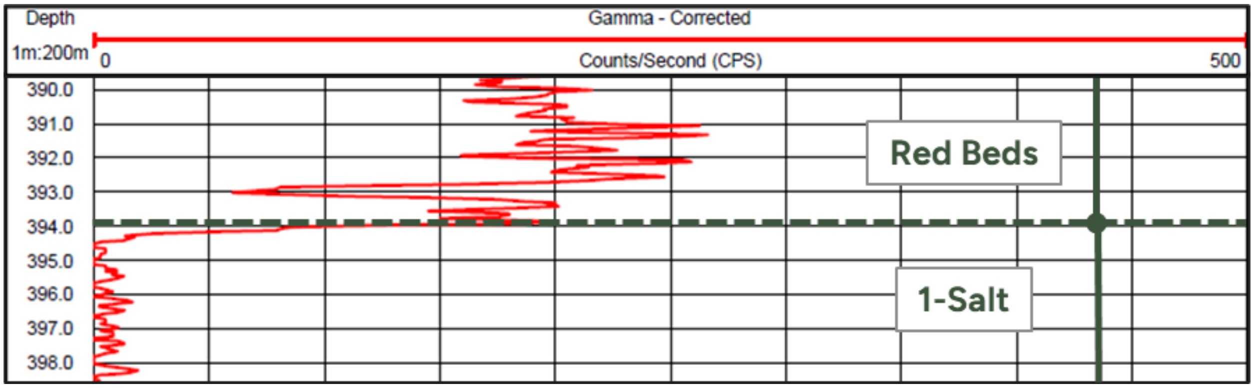
Following the review of geological logging intervals and lithological descriptions, SLR subsequently verified logging depths against downhole 10.5al logs for CC-2 to CC-5 and CC-9b. In all cases the top of salt could be clearly identified due to the contrasting natural gamma responses between the overlying Red Beds and halite.

The Red Beds, typically comprising mudstones with varying proportions of sand, silt, and gravel, show a moderate to high natural gamma response (150 to 300 counts per second: CPS), illustrated in Figure 14-1, primarily due to the existence of naturally occurring radiation in shale and clay minerals. It is also possible to identify the occurrence of distinct sandstone intervals within the Red Beds which exhibit a moderate to low (50 to 150 CPS) natural gamma response, for example in CC-3 as shown in Figure 14-3.

Conversely, the top of salt can be determined by a characteristic drop in natural gamma response, typically below 25 to 50 CPS. The top of the halite has been generally shown to have a sharp contact with the overlying Red Beds, however, mudstone inclusions in the roof of the geological horizon can make geophysical log interpretation more difficult. For this reason, geological boundaries have been determined using a combination of geological and geophysical observations.

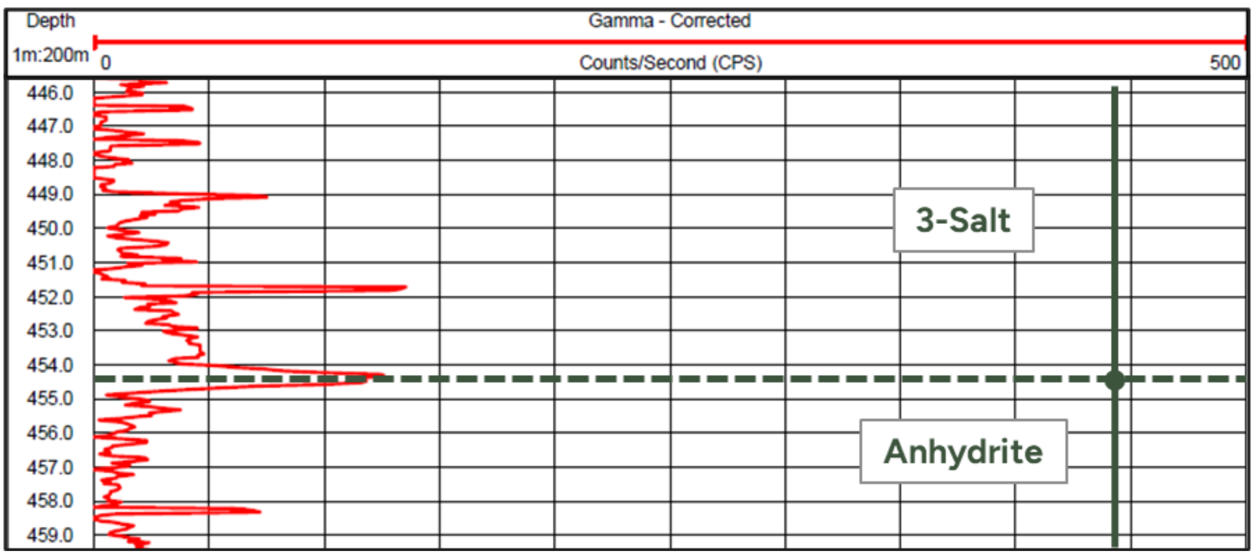
The boundary between the halite and underlying anhydrite is more challenging to determine from geophysical logging alone, although is generally characterized by a further reduction in natural gamma relative to the adjacent halite (Figure 14-2).

Figure 14-1: Geophysical Log Example: Halite Roof in CC-5



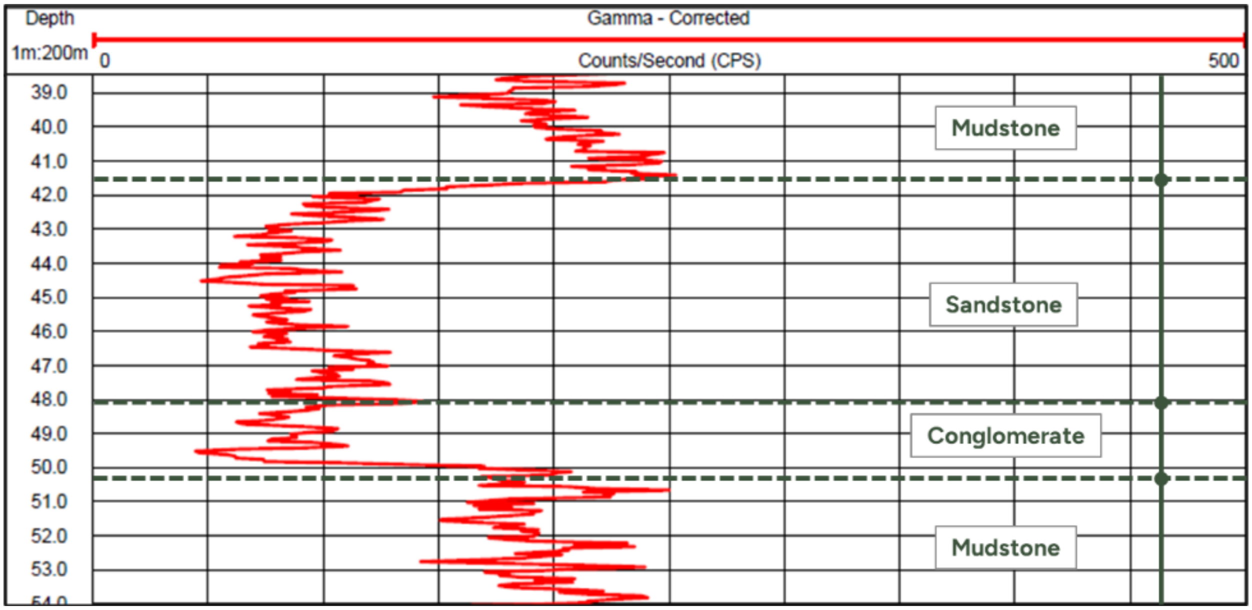
Source: SLR, 2023.

Figure 14-2: Geophysical Log Example: Halite Floor in CC-2



Source: SLR, 2023.

Figure 14-3: Geophysical Log Example: Red Beds Sandstone in CC-3

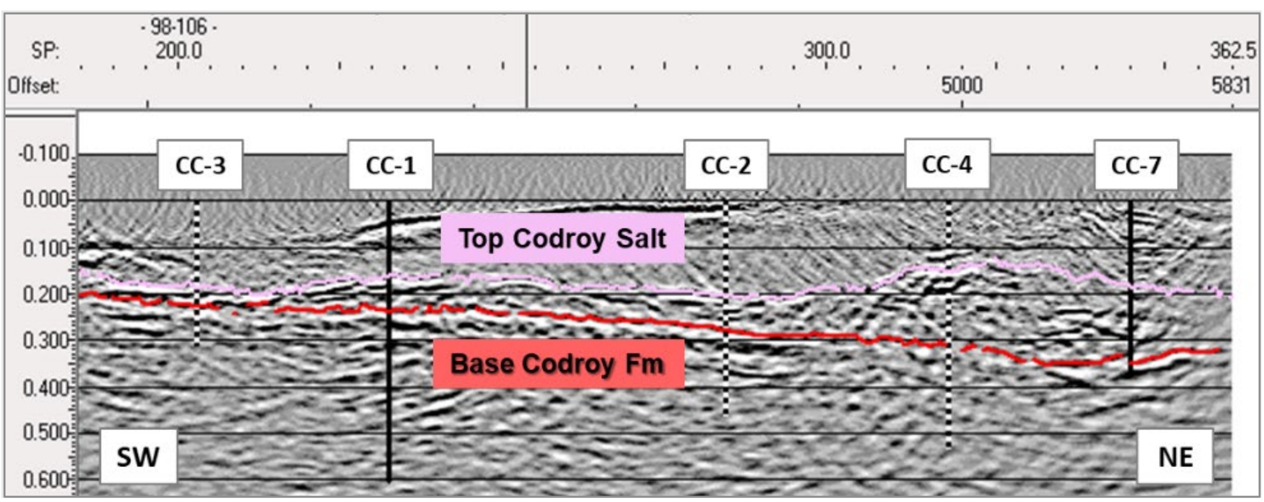


Source: SLR, 2023.

As a further stratigraphic control on the halite, Atlas commissioned an independent geophysical predictive study in 2022, which was completed by an independent third-party consultant. The study involved re-evaluating the time-depth conversions to be applied to existing seismic line data including:

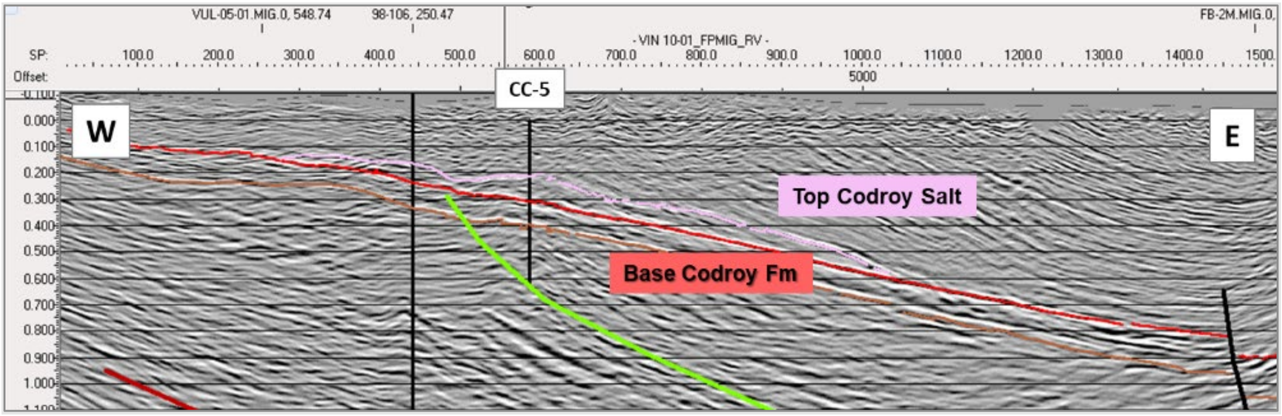
- Line 98-106: orientated northeast-southwest along the Project access road. Drill holes CC-1 to CC-4 and CC-7 have subsequently been drilled along this line (Figure 14-4).
- Line VUL-2010-01: orientated approximately east-west north of CC-1. Drill hole CC-5 was subsequently drilled to the east of CC-1 along this line (Figure 14-5).

Figure 14-4: Seismic Line Interpretation 98-106



Source: Atlas, 2022.

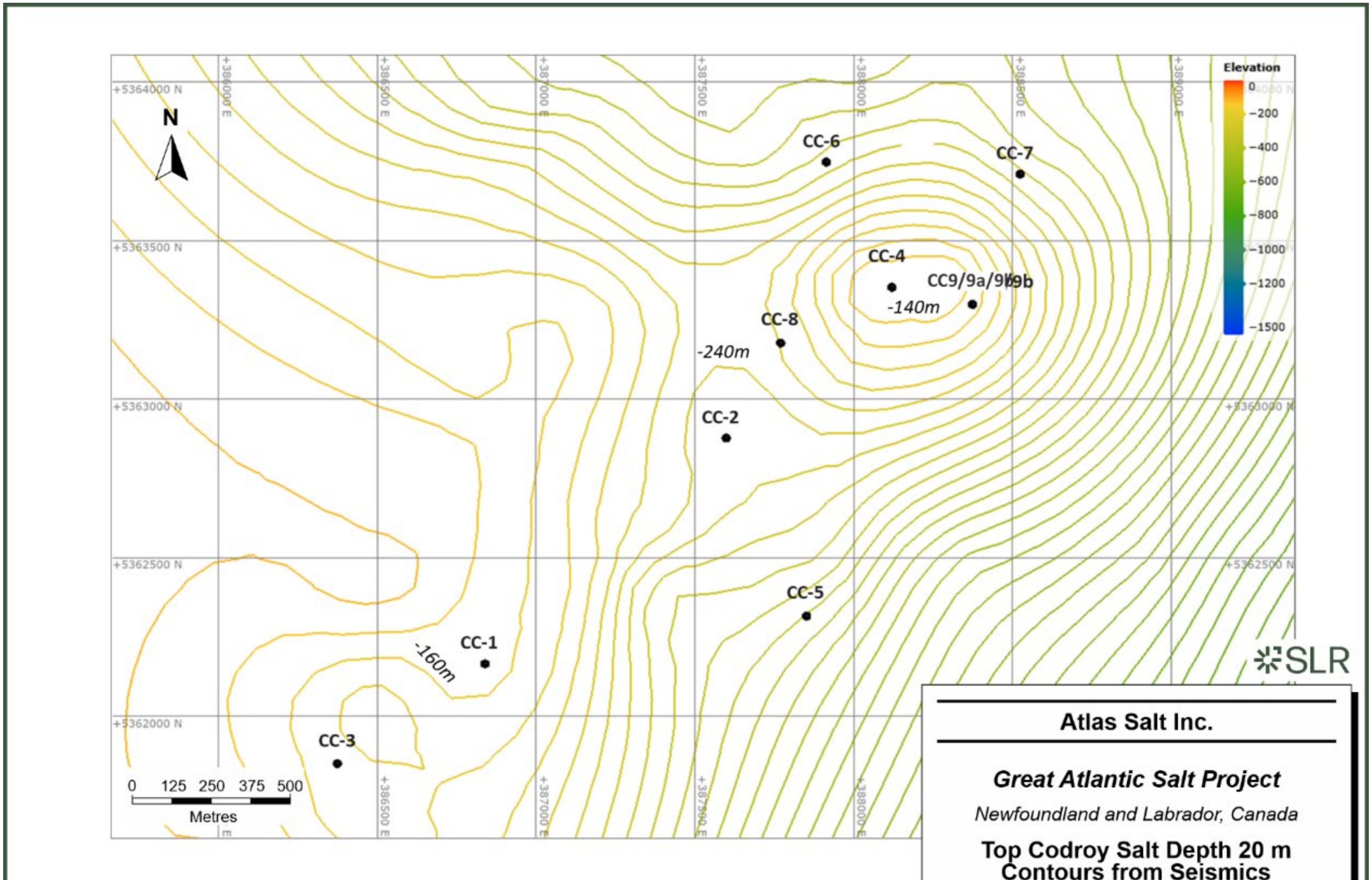
Figure 14-5: Seismic Line Interpretation VUL-2010-01



Source: Atlas, 2022.

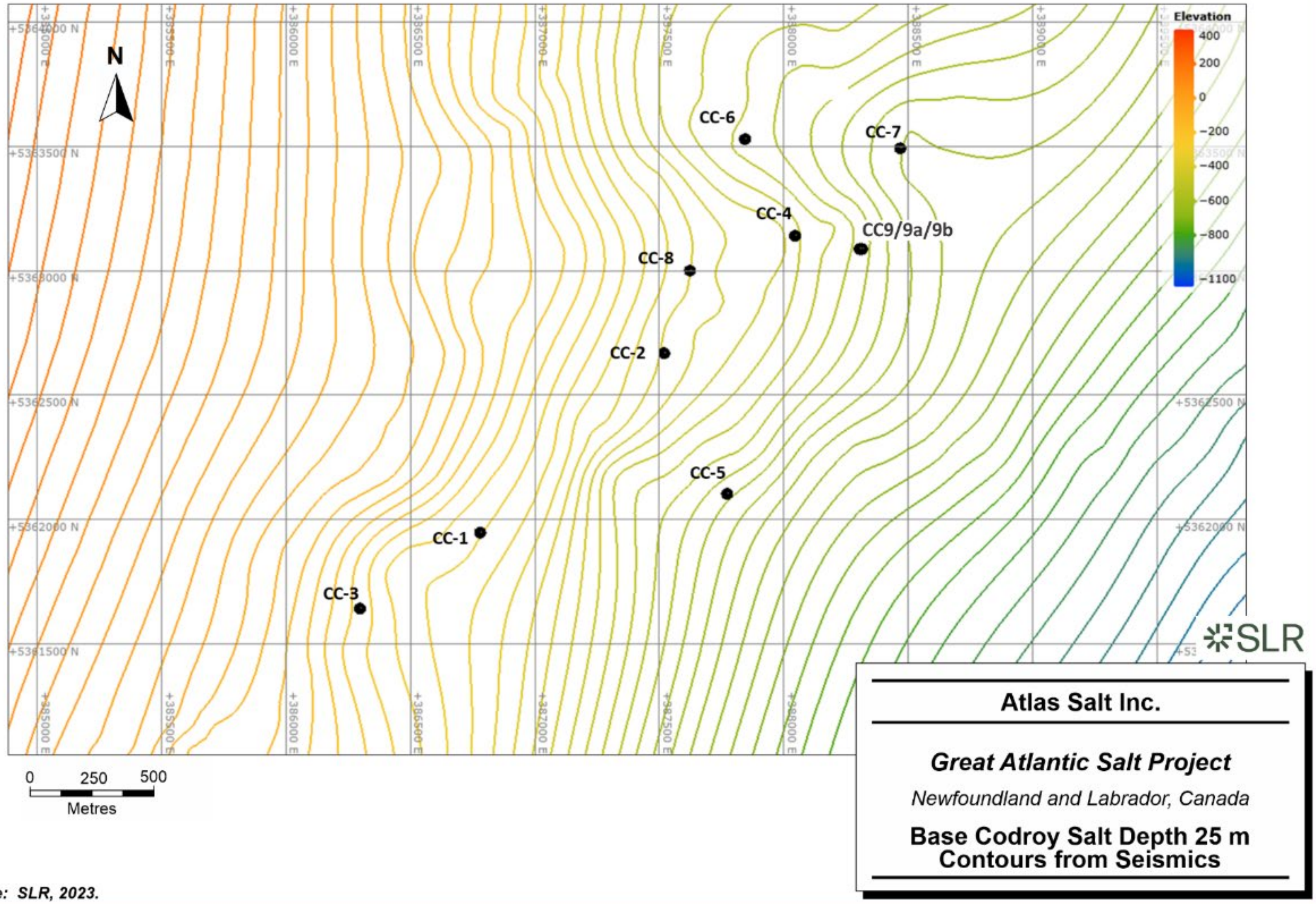
From the seismic line re-interpretations, a new conversion between TWT and TVDSS was completed using known salt roof and floor intersections from drill holes CC-1 to CC-7 and two Flat Bay drill holes FB-2 and FB-5. CC-8 and CC-9b drill holes were completed after the seismic re-interpretation. The Codroy Salt roof and floor reflector horizons are illustrated in Figure 14-6 and Figure 14-7, along with the resultant Codroy Salt isopach in Figure 14-8. The isopach illustrates the thick accumulation of halite confirmed by drilling at CC-4, thinning outwards in all directions. The halite is also shown to progressively thin towards a line of sub-crop in the west.

Figure 14-6: Top Codroy Salt Depth 20 m Contours from Seismics



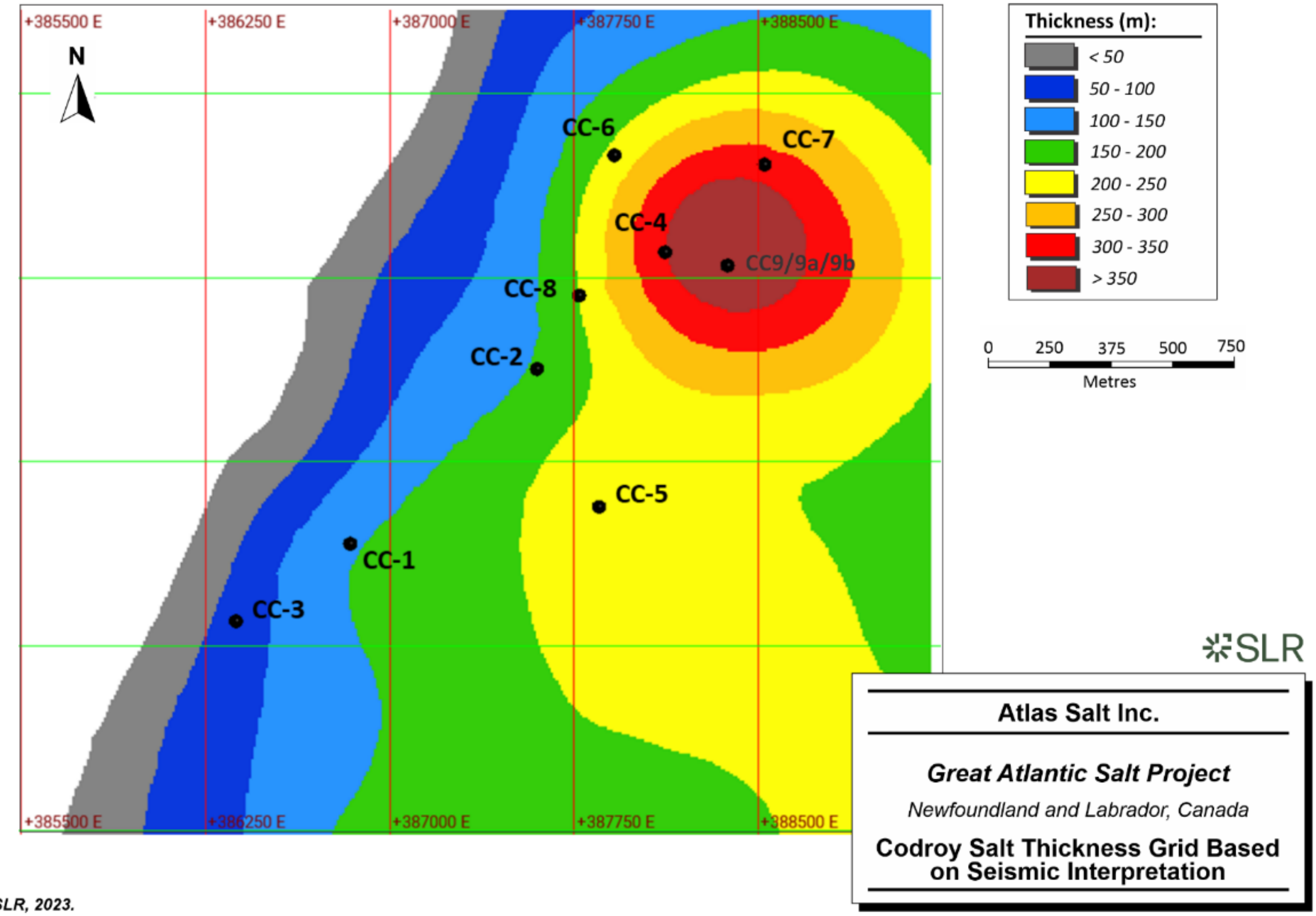
Source: SLR, 2023.

Figure 14-7: Base Codroy Salt Depth 25 m Contours from Seismics



Source: SLR, 2023.

Figure 14-8: Codroy Salt Thickness Grid Based on Seismic Interpretation



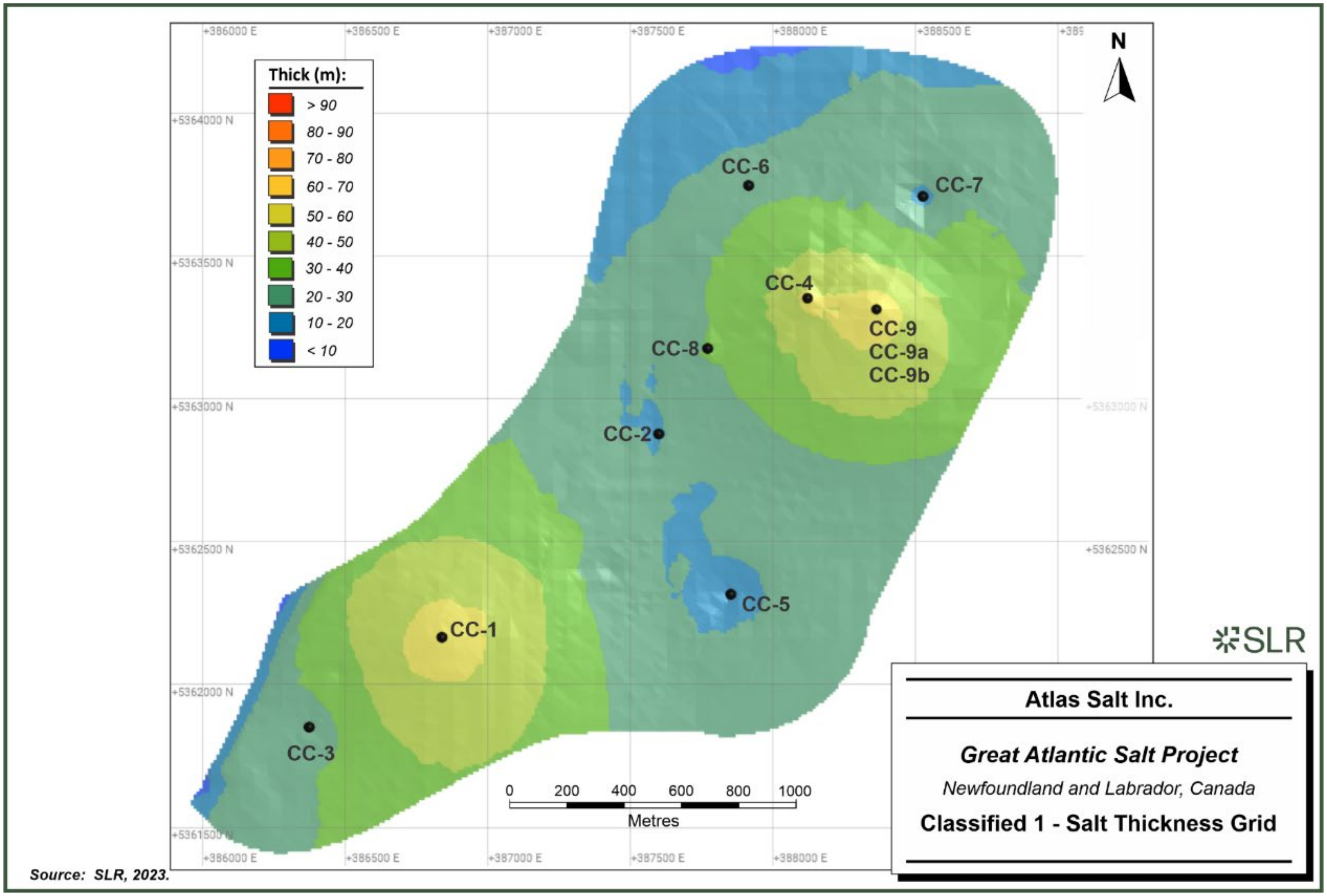
Source: SLR, 2023.

For geological modelling, SLR used the available roof and floor of the Codroy Salt reflector horizons as a guide for the ultimate roof and floor of the GAS halite deposit between drill hole intersections (i.e., to inform the position of the 1-Salt roof and 3-Salt floor between drill holes). In some cases, SLR opted to remove a selection of the seismic point dataset for the salt roof to prevent conflicts between actual drill hole points of intersections. This includes the area of closest drill spacings around CC-4, CC-8, CC-6, CC-7, and CC-9b where seismic data was used for model validation only.

Combining the available seismic data with drill hole intersections, Figure 14-9, Figure 14-10, and Figure 14-11 show thickness grids for the classified portions of 1-Salt, 2-Salt, and 3-Salt, respectively.

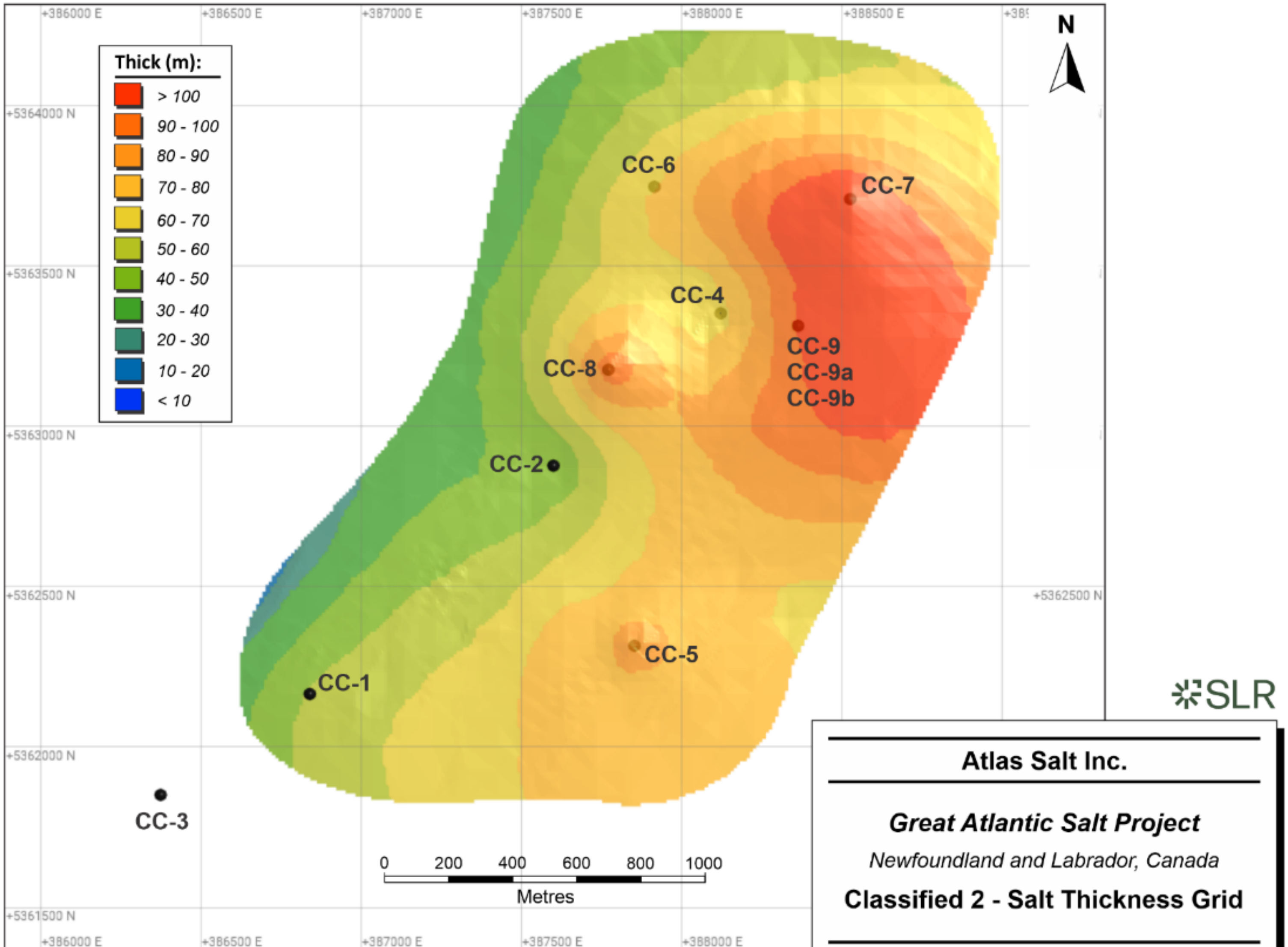
- The 1-Salt is the thinnest of the three halite horizons with a thickness of approximately 55 m in CC-1, CC-4 and CC-9b, thinning progressively outwards to 25 m to 30 m in CC-3, CC-6, and CC-8. The 1-Salt is found to be approximately 10 m to 20 m in the remaining holes and is the thinnest in CC-5 at approximately 11 m.
- The 2-Salt thickens from southwest to northeast ranging between approximately 20 m in CC-3 and 100 m in CC-7 and CC-9b. CC-6 and CC-7 lack complete 2-Salt intersections and have interpolated thicknesses.
- The 3-Salt also thickens from southwest to northeast ranging between approximately 14 m in CC-3 and 180 m in CC-4. CC-6 and CC-7 lack 3-Salt intersections and have interpolated thicknesses.

Figure 14-9: Classified 1-Salt Thickness Grid



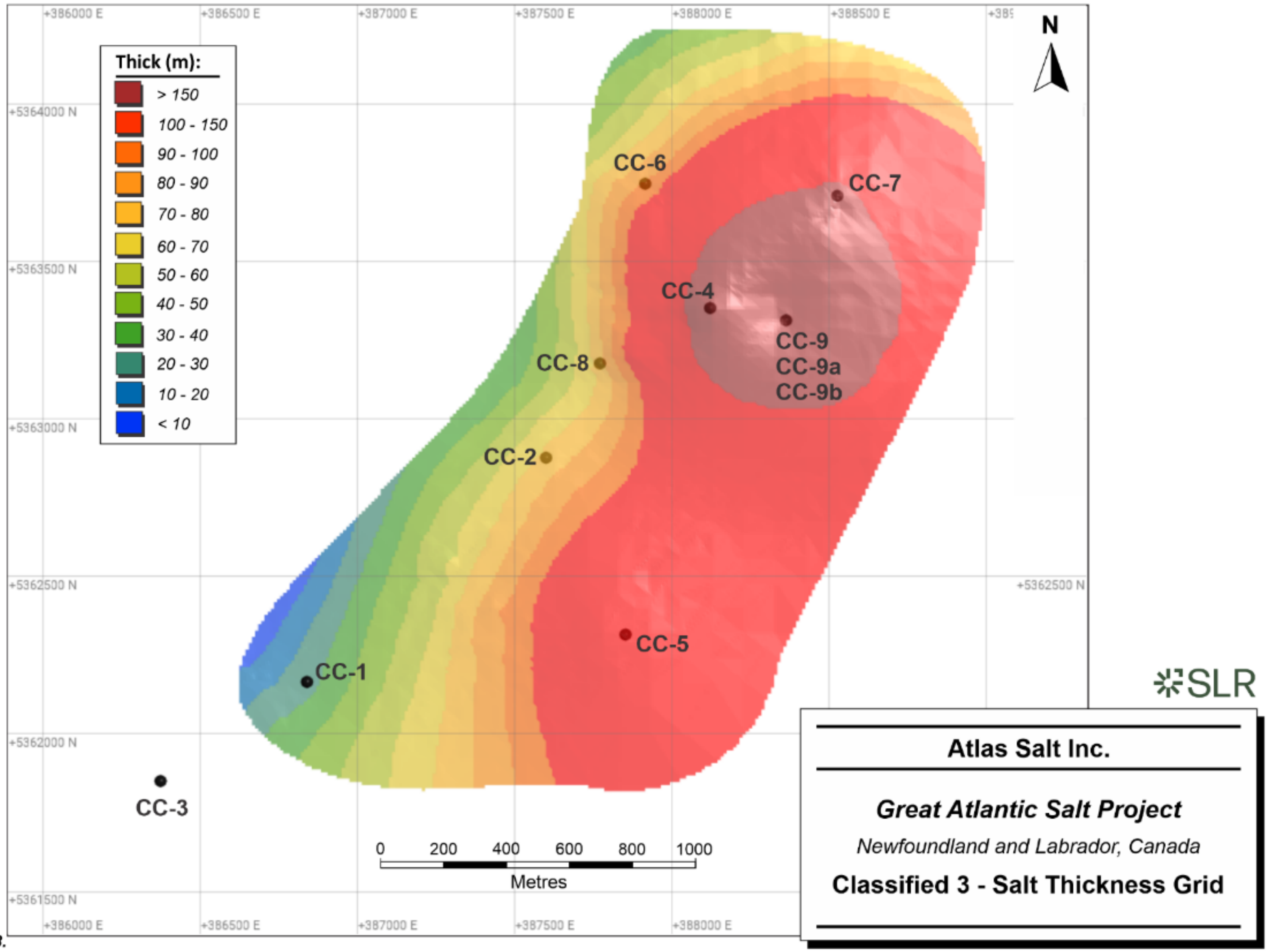
Source: SLR, 2023.

Figure 14-10: Classified 2-Salt Thickness Grid



Source: SLR, 2023.

Figure 14-11: Classified 3-Salt Thickness Grid



Source: SLR, 2023.

14.3.2 Interbeds

As described in Section 7.2, the GAS halite deposit has been split into three main salt horizons separated by two distinct and laterally continuous interbeds intersected in most drill holes, referred to as Interbed-1 (IB-1) and Interbed-2 (IB-2). This interpretation is aligned with the evaporite basin stratigraphy elsewhere in the region and was adopted for the previous geological model constructed in 2016. The interpretation for the GAS deposit has been further corroborated by SLR through a detailed review of geological and geophysical data, in addition to check logging completed by the QP in October 2022.

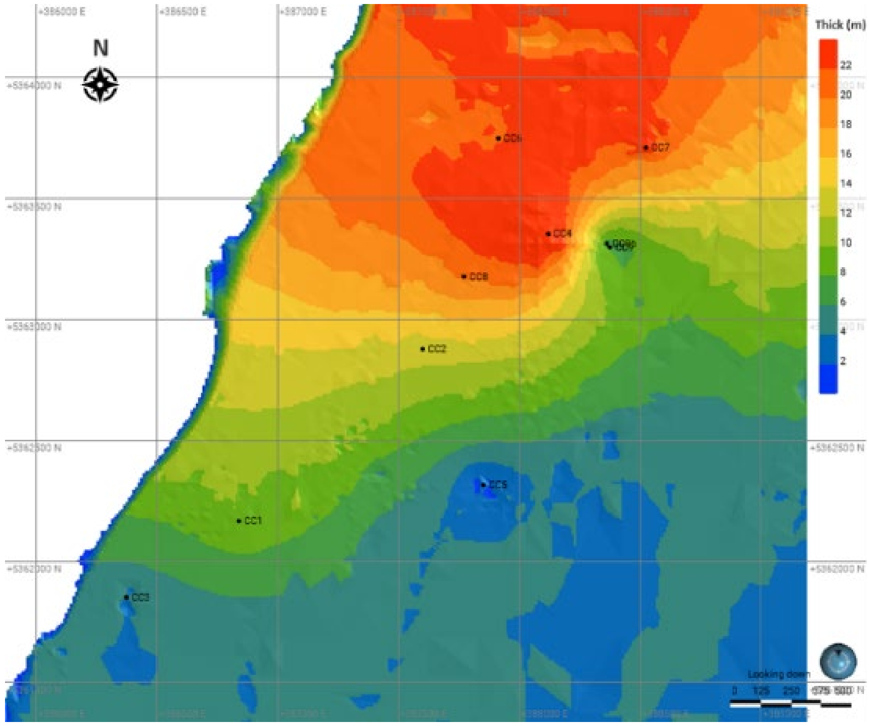
The geological and geophysical data considered by the QP during re-evaluation of interbed interpretations has included:

- Primary and secondary lithology codes based on original core logging available for all drill holes, and check logging undertaken by the QP.
- Detailed lithological descriptions providing the QP with an indication of the relative homogeneity of each logged drill core interval.
- Downhole wireline geophysical logging allowing the identification of horizons within higher natural gamma as an indicator of an increased proportion of interbed lithologies (e.g., mudstone, siltstone, sandstone, potash).
- Core recovery, noting any instances of material core loss which might affect interpretation, and the assigning of primary and secondary lithology codes.
- Sample frequency, i.e., the identification of unsampled intervals that could be indicative of or coincide with a higher proportion of interbed lithologies.

Following the verification and review of all available data pertaining to the stratigraphy of the GAS deposit, the QP updated and refined the previous interbed interpretations with consideration for new intersections in drill hole CC-9b.

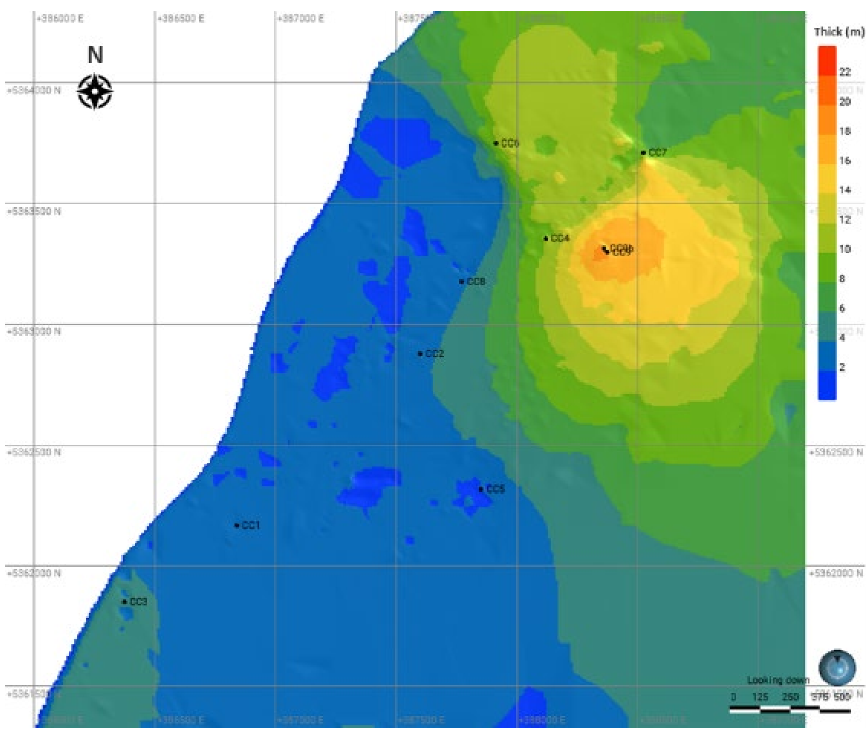
The results of these interpretations are illustrated in Figure 14-12 and Figure 14-13 showing thickness grids for IB-1 and IB-2, respectively. Drill hole intersections indicate IB-1 is thickest in the northeast of the deposit in CC-4 at approximately 27 m, thinning in drill holes to the southwest. IB-1 has been found to be poorly developed in CC-9b but identifiable from core photos and gamma logging. In comparison, IB-2 is thinner than IB-1, thickest in CC-4 (approximately 11 m) and CC-9b (approximately 20 m) but generally less than 5 m elsewhere in the deposit. IB-2 has not been intersected in CC-6 and CC-7 and the QP manually manipulated the IB-2 floor to extrapolate a thickness of approximately 8 m to 12 m to the north to prevent underrepresentation.

Figure 14-12: Interbed-1 Thickness Grid (m)



Source: SLR, 2023

Figure 14-13: Interbed-2 Thickness Grid (m)



Source: SLR, 2023

14.3.3 Isolated Mudstone Horizons

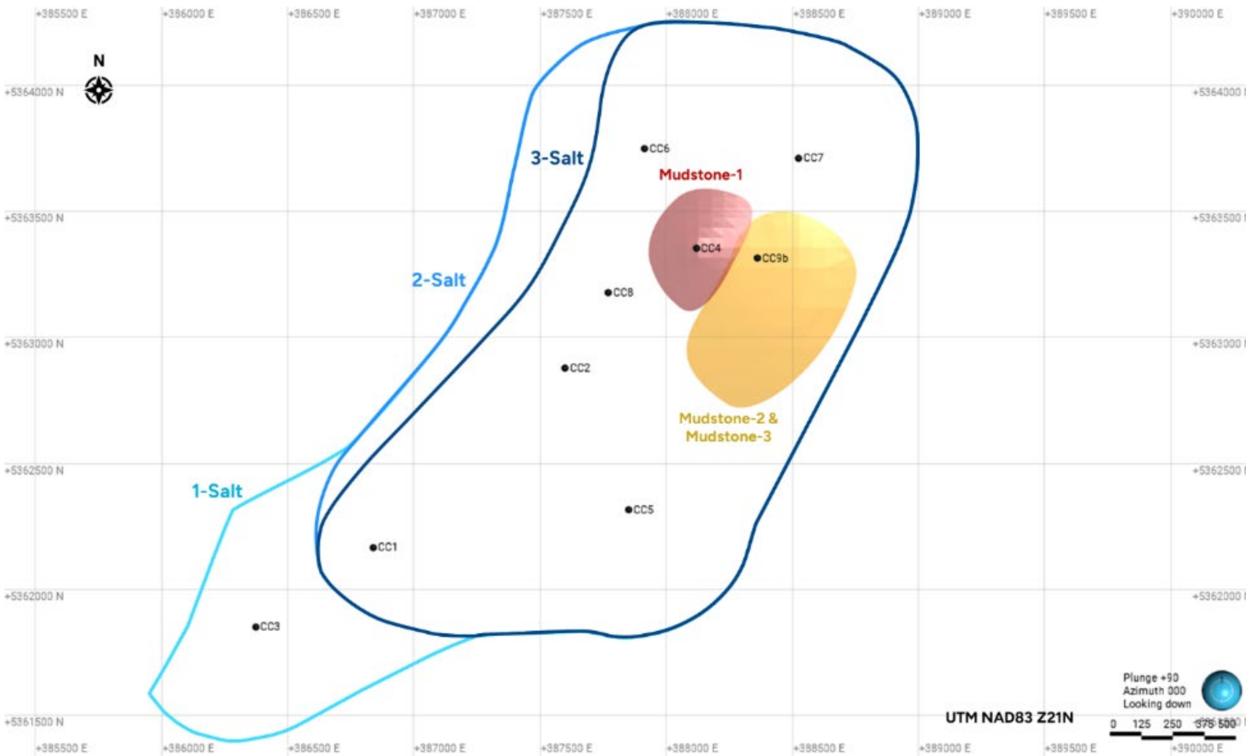
In addition to the interpretation of IB-1 and IB-2 showing a high degree of lateral continuity across the deposit, drilling at CC-4 and CC-9b has also indicated the potential for isolated mudstone/siltstone horizons or lenses to exist within the halite.

In CC-4, an interval of 4.8 m thickness logged as mudstone was intersected approximately mid-way through the 1-Salt, itself being approximately 56 m thick. The QP visually inspected the core during the October 2022 site visit, and further validated the geological logging of this horizon using geophysical (natural gamma) logging. No representative samples have been taken within this interval to further validate it as non-halite. This discrete mudstone has not been identified in any of the adjacent drill holes including CC-8 (390 m southwest) and CC-9b (245 m east-southeast), leading to its interpretation as an isolated mudstone lens localized around CC-4. For reporting/descriptive purposes, this unit is herein referred to as Mudstone-1.

In CC-9b, two intervals of 11.3 m and 1.7 m thickness logged as siltstone, silty mudstone, and mudstone and separated by approximately 10 m of halite was intersected within the 3-Salt, itself being approximately 150 m thick. The QP validated the geological logging of these horizons using core photos and geophysical logging, with assay results also confirming their low halite content averaging 30% NaCl and 32% NaCl, respectively. As with the isolated mudstone intersected in the 1-Salt at CC-4, drill holes adjacent to CC-9b including CC-4 and CC-8 (610 m west-southwest) show no clear evidence of similar intervals within the 3-Salt contributing to their interpretation as isolated mudstone units localized around CC-9b. For reporting/descriptive purposes, these units are herein referred to as Mudstone-2 (upper 11.3 m) and Mudstone-3 (lower 1.7 m).

The extents of each isolated mudstone lens have been interpreted by the QP with consideration for mudstone lens thicknesses, available intersections, and the distance between adjacent drill holes. The QP has also considered overall geological (Mineral Resource) risk when determining the extents, adopting an approach of extending each mudstone to approximately the midpoint between adjacent drill holes. The extent of Mudstone-1 in CC-4 is approximately 0.14 km^2 (14 ha). Given their stratigraphic relationship being separated by only a thin interval of halite, Mudstone-2 and Mudstone-3 in CC-9b have been interpreted to have the same lateral extent of approximately 0.35 km^2 (35 ha). This is illustrated in Figure 14-14 compared to the classified extents of each halite horizon. A vertical section between CC-4 and CC-9b through the resultant geological model is shown in Figure 14-17.

Figure 14-14: Isolated Mudstone and Classified Salt Extents



Source: SLR, 2023

The QP is of the opinion that the overall extent (and resultant volumes) of each mudstone, and the equivalent deduction of halite from the final Mineral Resource is more likely to be a conservative approach (i.e., an overestimate) on an individual mudstone basis. This is when considering the depositional environment and accumulation of siliciclastic, terrigenous sediments within a wide and largely flat closed basin where lateral extent is expected to be proportional or influenced by thickness and therefore potentially smaller than adopted, notwithstanding the potential for distinct depositional features such as channels. The final adopted extents are however deemed appropriate for accounting for their unknown lateral extents, and the potential for other isolated mudstones to exist elsewhere within the deposit.

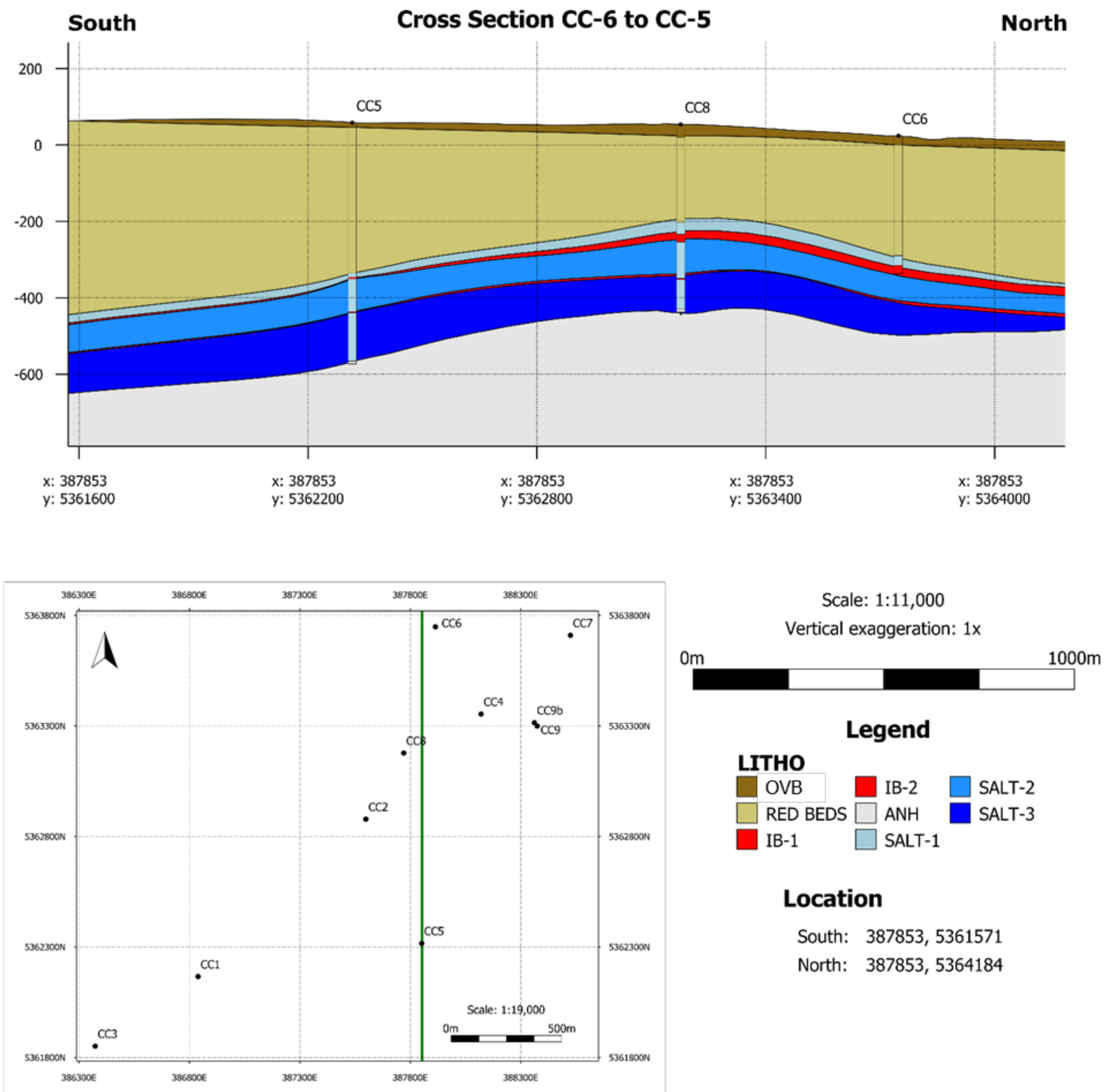
14.3.4 Geological Model

After the review of all data relating to geological interpretations including geological logs, geophysical logs, SLR check logs, seismic survey data, and assay results, SLR subsequently constructed wireframes for each stratigraphic horizon within the deposit including:

- Overburden (OVB)
- Red Beds
- 1-Salt
    - Mudstone-1 (MST-1)
- Interbed-1 (IB-1)
- 2-Salt

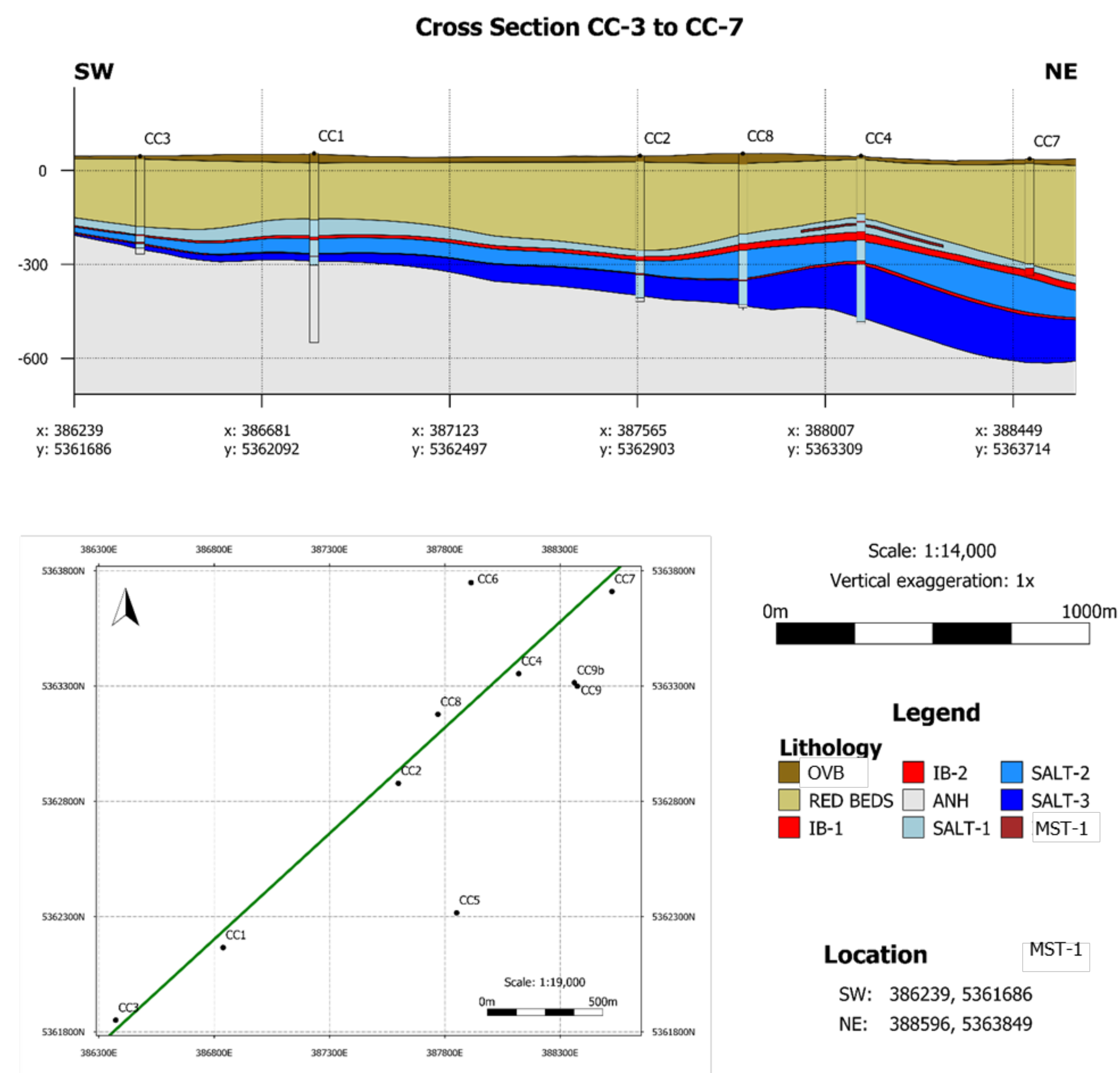
- Interbed-2 (IB-2)
- 3-Salt
  - Mudstone-2 (MST-2)
  - Mudstone-3 (MST-3)
- Anhydrite (ANH)
- The geological model is constrained vertically by the topography surface utilizing LiDAR survey data obtained by Pioneer Exploration Consultants in 2022 on behalf of Atlas. The stratigraphic horizons were subsequently used to constrain block grade estimates to within the three halite horizons. Figure 14-15, Figure 14-16, and Figure 14-17 illustrate vertical cross sections showing the drill hole intersections, seismic survey guide points for the salt roof and floor, and resultant geological model wireframes.

Figure 14-15: North-South Vertical Section (CC-6 to CC-5)



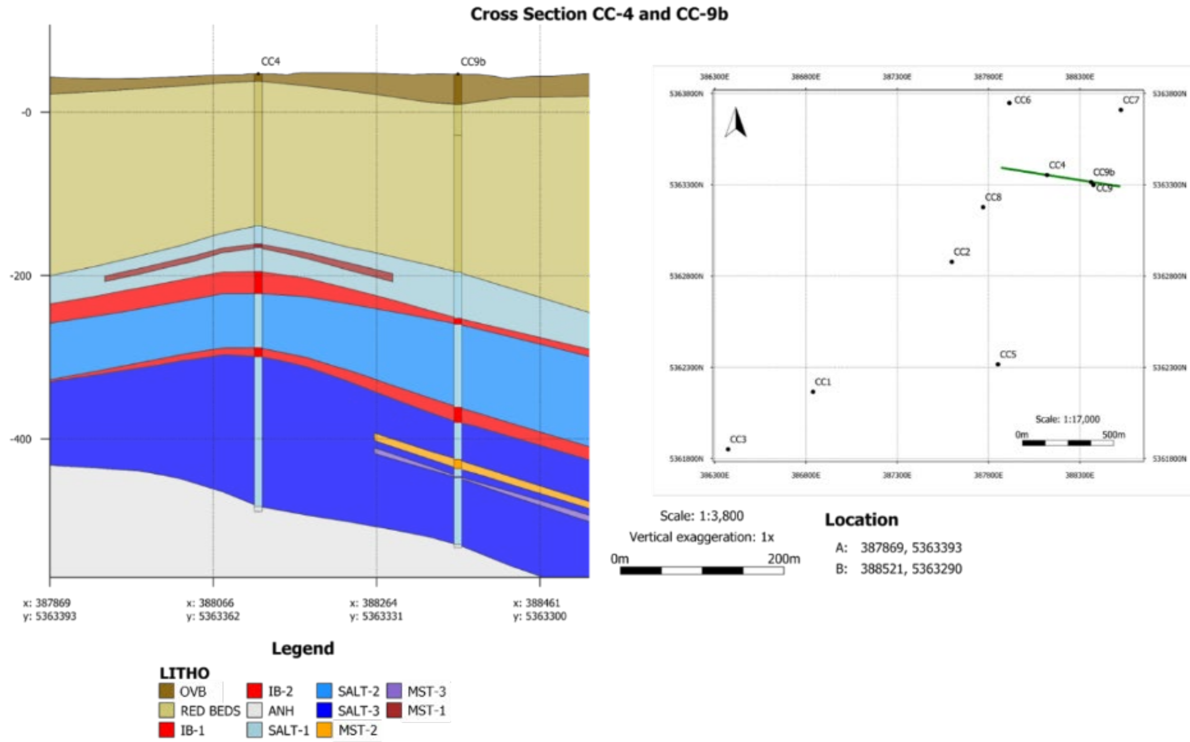
Source: SLR, 2023

Figure 14-16: Southwest-Northeast Vertical Section (CC-3 to CC-7)



Source: SLR, 2023

Figure 14-17: West-East Vertical Section (CC-4 and CC-9b)



Source: SLR, 2023

14.4 Resource Assays

14.4.1 Summary

Table 14-4 presents summary statistics of salt assays used by SLR for the Mineral Resource estimate. These are also illustrated in Figure 14-18.

The assay database for the Project comprises 782 primary sodium chloride samples obtained from analytical programs by SRC, Actlabs, and Sandberg in 2008, 2013 to 2015, 2022, and 2023. This includes samples taken within all stratigraphic units.

Table 14-4: Summary of Length-Weighted Assays

Parameter	NaCl %					
	All1	1-Salt	IB-1	2-Salt	IB-2	3-Salt
Count	782	168	27	276	41	265
Minimum	0.6	74.7	5.1	28.4	4.9	10.3
Maximum	100.0	100.0	100.0	100.0	98.5	100.0
Mean	91.8	95.1	78.3	94.2	71.3	92.7
Median	95.7	95.9	95.4	95.9	83.6	96.2
Std Dev	14.1	3.9	30.8	7.1	27.5	12.2
Coefficient of Variation	0.15	0.04	0.39	0.08	0.39	0.13

Notes:

1. Total includes an additional three samples within the Red Beds and two samples within the Anhydrite.

Of these samples, 709 are located within the three interpreted halite horizons of which 436 samples (61%) were shown to be not less than 95% NaCl and 629 samples (89%) not less than 90% NaCl. Histograms of samples within each halite horizon are illustrated in Figure 14-19 to Figure 14-21.

Figure 14-18: Histogram of All Salt Samples NaCl %

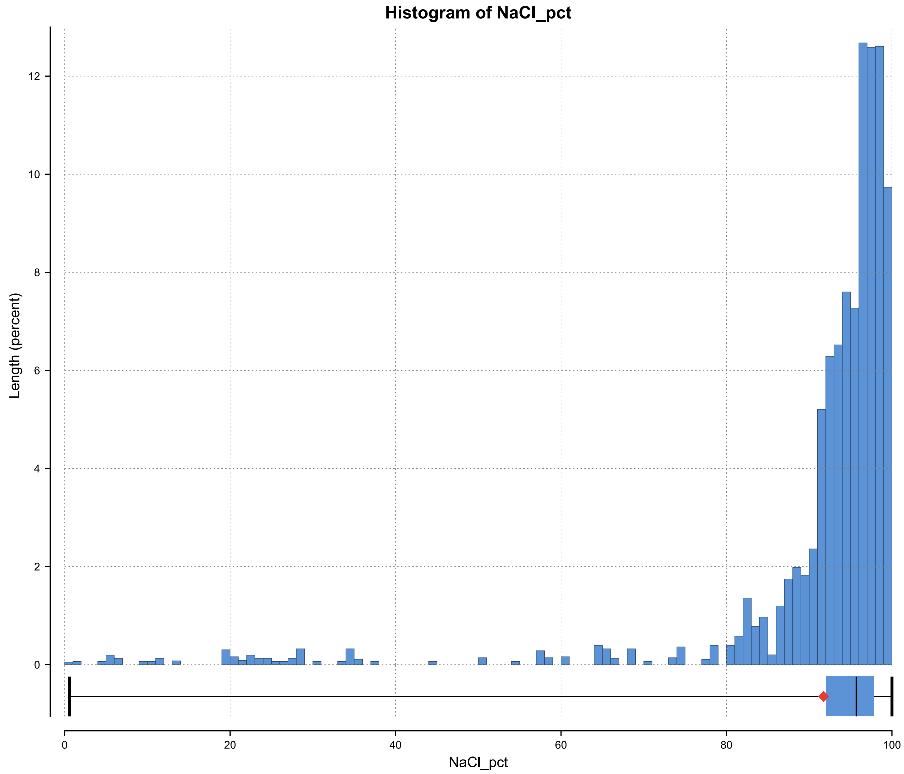


Figure 14-19: Histogram of 1-Salt Samples NaCl %

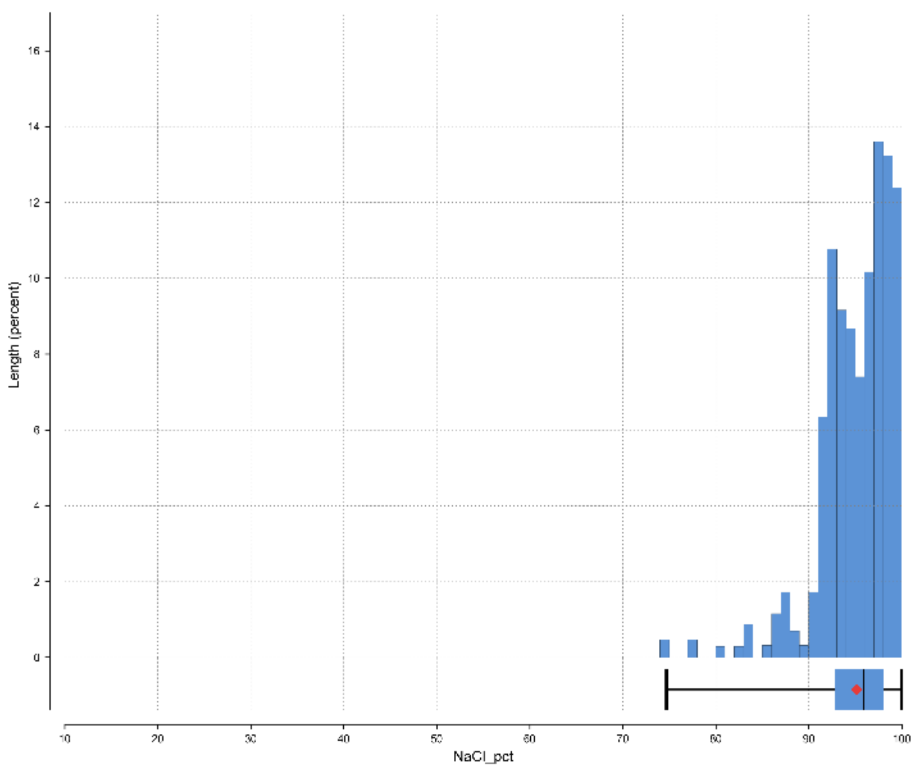


Figure 14-20: Histogram of 2-Salt Samples NaCl %

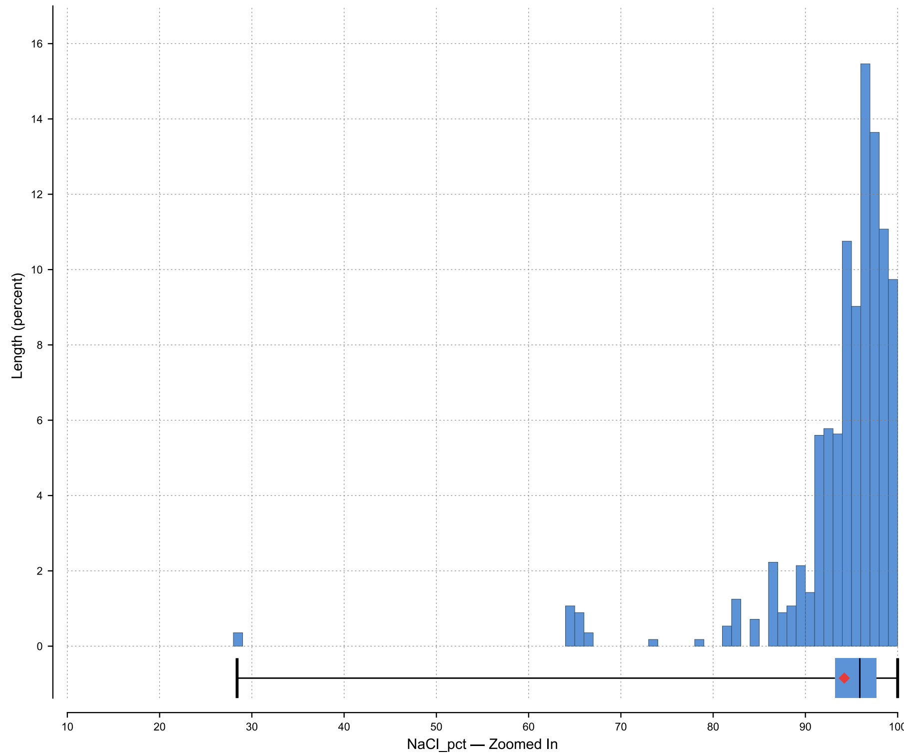
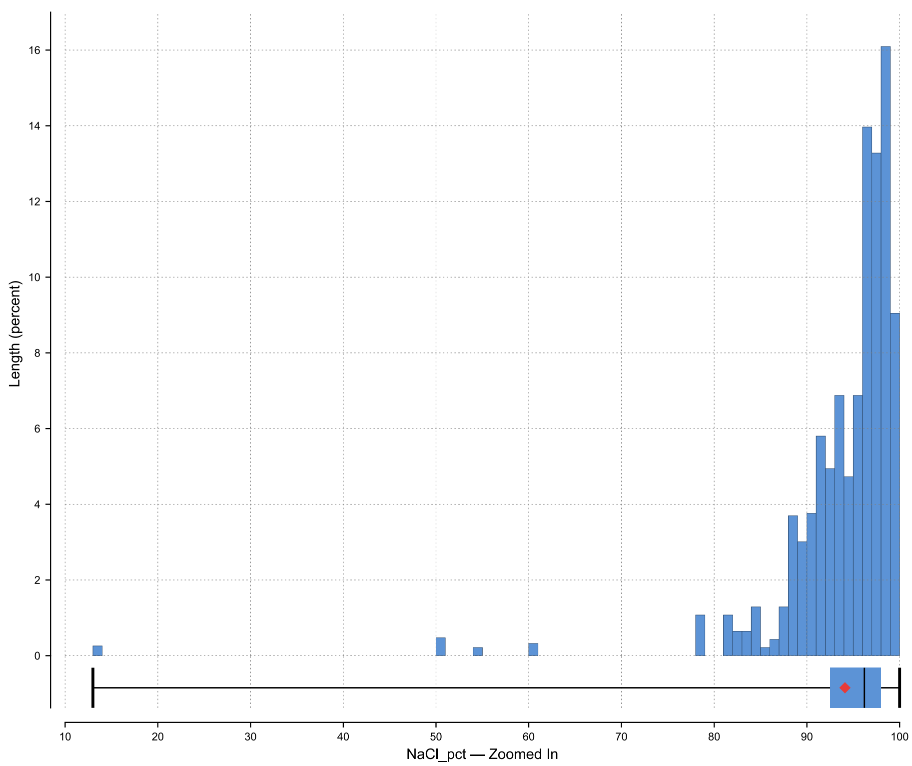


Figure 14-21: Histogram of 3-Salt Samples NaCl %



14.4.2 Sample Representativeness

Table 14-5 shows the total number of samples and sample lengths as a proportion of the total thickness of each halite horizon. The percentage sampled ranges from 5% to 30% in the 1-Salt, 5% to 33% in the 2-Salt, and 6% to 11% in the 3-Salt. Overall sampling from all drill holes is 12% in the 1-Salt and 2-Salt, and 7% in the 3-Salt.

The QP has reviewed sample representativeness and is of the opinion that while the overall sample coverage appears to be lower than expected or required for other mineral deposits, the overall sampling strategy implemented is sufficient given the massive and largely homogenous nature of the deposit. This opinion is informed by a review of sampling procedures and sample intervals during a site visit by the QP in October 2022.

Generally sampling has been observed as being representative of drill core, and while the QP is aware of instances where non-halite intervals have not been sampled, the modelling methodology and compositing approach implemented by SLR has sought to account for such instances in the final grade estimate, as described in Section 14.6. In 2022, the QP also collected additional infill samples in CC-8 to improve representativity in specific halite intervals. Additional infill check samples were taken by Atlas in 2023 in CC-9 (22).

Table 14-5: Sample Representativeness

Drill Hole	1-Salt		2-Salt		3-Salt		Total Sample Count	Total Sampled %
	Sample Count	Sampled %	Sample Count	Sampled %	Sample Count	Sampled %		
CC-1	23	10%	32	18%	10	8%	65	13%
CC-2	18	30%	39	30%	24	10%	81	13%
CC-3	21	25%	7	10%	3	11%	31	19%
CC-4	11	6%	15	7%	38	6%	64	17%
CC-5	4	12%	35	9%	41	8%	80	6%
CC-6	24	12%	2	33%	-	-	26	8%
CC-7	12	13%	-	-	-	-	12	13%
CC-8	26	15%	92	15%	60	8%	179	13%
CC-9b	29	5%	54	5%	89	6%	172	12%
Total	168	12%	276	12%	265	7%	709	10%

14.5 Treatment of High-Grade Assays

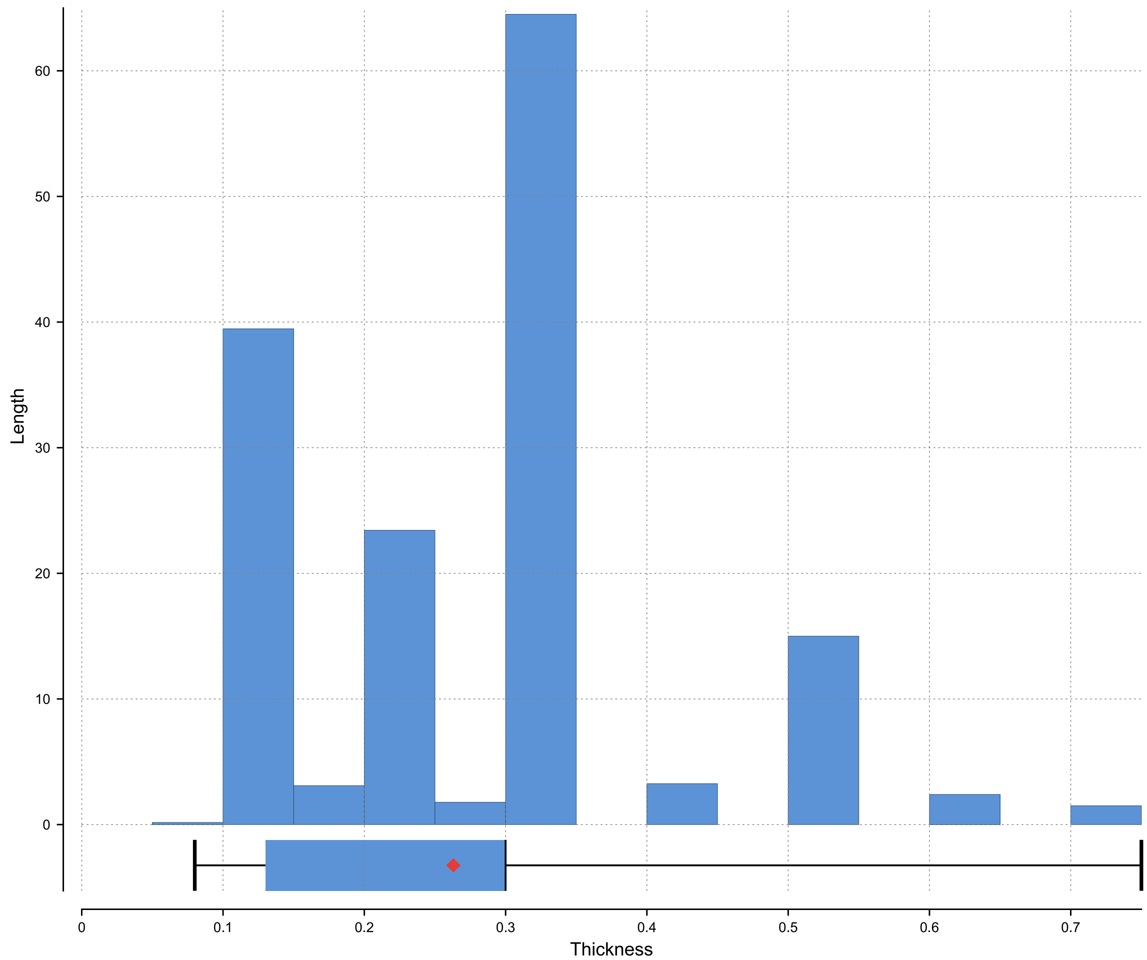
Due to the style of mineralization and overall purity of the GAS halite deposit, capping of high-grade assays is not considered by the QP to be appropriate and therefore no capping was applied. As described in Section 12.1.3, the QP adjusted six samples to 100% NaCl which were found to have returned NaCl grades greater than 100%. No other adjustments were made to the original analytical data.

14.6 Compositing

Due to the sampling strategy adopted across all drilling programs with the objective of taking representative samples of lithological intervals downhole, samples are not contiguous, and their frequency is not consistent within or between each hole.

Figure 14-22 shows a histogram of all sample lengths within the three salt horizons. Sample lengths range from 0.09 m to 0.75 m, with the majority being between 0.3 m and 0.35 m. Samples greater than 0.3 m in length are generally those originally sampled for potash analysis.

Figure 14-22: Sample Length Histogram



Due to the overall massive and homogeneous nature of the halite, the QP is of the opinion that the core sampling has generally been systematic and is a reasonable representation of overall NaCl grade within the deposit. Where present, thicker mudstone interbeds have not typically been sampled and the QP has interpreted/correlated these interbeds between drill holes for the purpose of excluding their volumes and tonnage from the Mineral Resource estimate; thereby preventing overestimation of halite grade and tonnes.

Through a combination of geological log, core photo reviews, and independent core logging undertaken by the QP during the site inspection, instances of unsampled inclusions of thin, laterally discontinuous interbeds of mudstones, potash, and anhydrite have been identified throughout the halite. Where such unsampled intervals exist, the QP considers that there is potential for localized overestimation of NaCl tonnage and grade.

Due to the presence of unsampled non-halite inclusions and the previous sampling strategy adopted, the QP does not consider it appropriate to undertake full length compositing within each of the three halite horizons. This would reduce overall grade resolution for downstream mine planning purposes and mask the potential impact of unsampled intervals. The QP instead opted to sub-divide horizontally each of the three halite horizons into numerous layers ('Zones') to allow compositing over smaller lengths. The objective of this approach is to maintain a higher degree of grade resolution within each halite horizon while simultaneously providing greater vertical control during grade interpolation and replicating the stratigraphic nature of the deposit.

The number of Zones within each salt was determined by the QP based on a review of salt thicknesses around the north-central portion of the deposit (i.e., around CC-8 and CC-4) as the area to be targeted during the initial mine life. SLR has targeted block heights of approximately 5 m in this area based on the anticipated minimum degree of selectivity from a room and pillar mining method. As a result, the 1-Salt has been sub-divided into 5 Zones, while 2-Salt has been sub-divided into 10 Zones. Due to the thickness of the 3-Salt as intersected in drilling, this horizon has been sub-divided into 19 Zones. SLR has subsequently undertaken sample compositing within each Zone.

The QP has not considered it appropriate to insert manufactured (dummy) assays with 0% NaCl to account for the full length of unsampled, non-halite intervals (e.g., mudstone, potash, anhydrite) as doing so would result in overly conservative composite grades due to the downhole frequency (refer to Table 14-5, Section 14.4.2) and thickness of actual halite samples, as shown in Figure 14-22. Alternatively, SLR has applied a dilution factor to the composited NaCl grade to account for the proportion of unsampled dilution material based on original lithological logging.

As described in Section 12.1.4.2, the samples taken by the QP samples in 2022 within mudstone intervals of CC-8 indicate that dilution material could have grades ranging from 5% NaCl to 60% NaCl, averaging 25% NaCl. Further sampling by Atlas in 2023 in CC-9b indicates that mudstone grades range from 5% NaCl to 59% NaCl, averaging approximately 26% NaCl.

The methodology for applying the dilution factor involves the following steps:

1 Calculate a 'Mudstone Indicator' for each logged interval based on lithological logging where non-halite = 1 (i.e., including where the Major Lithology is mudstone, siltstone, sandstone, potash, shale, anhydrite, etc.) and halite = 0

2 Evaluate Zones against the original lithological logging database to back-flag the drill hole data.

3 Composite the original NaCl assays as analyzed and the Mudstone Indicator within each Zone.

4 Recalculate an 'adjusted' NaCl grade where Adjusted NaCl = NaCl x (1 – Mudstone Indicator)

In some isolated instances modifications were made to the lithology model code or samples to ensure the best representation of observed lithology and grade. Modifications included:

- In CC-5, original lithological logging codes for two intervals of fully sampled potash inclusions were modified from 'potash' to 'salt' to prevent adjustment of actual NaCl grades.
- In CC-9b within the 3-Salt, the modelling code of a mudstone interval was modified to 'salt' to prevent adjustment of actual NaCl grades where sampling was considered by the QP to be representative.
- Ignoring a single 0.15 m mudstone sample of 33% NaCl in CC-8. By evaluating the scenarios of using an Adjusted NaCl with and without the inclusion of the sample, SLR determined that the best representation of the composite interval with a Mudstone

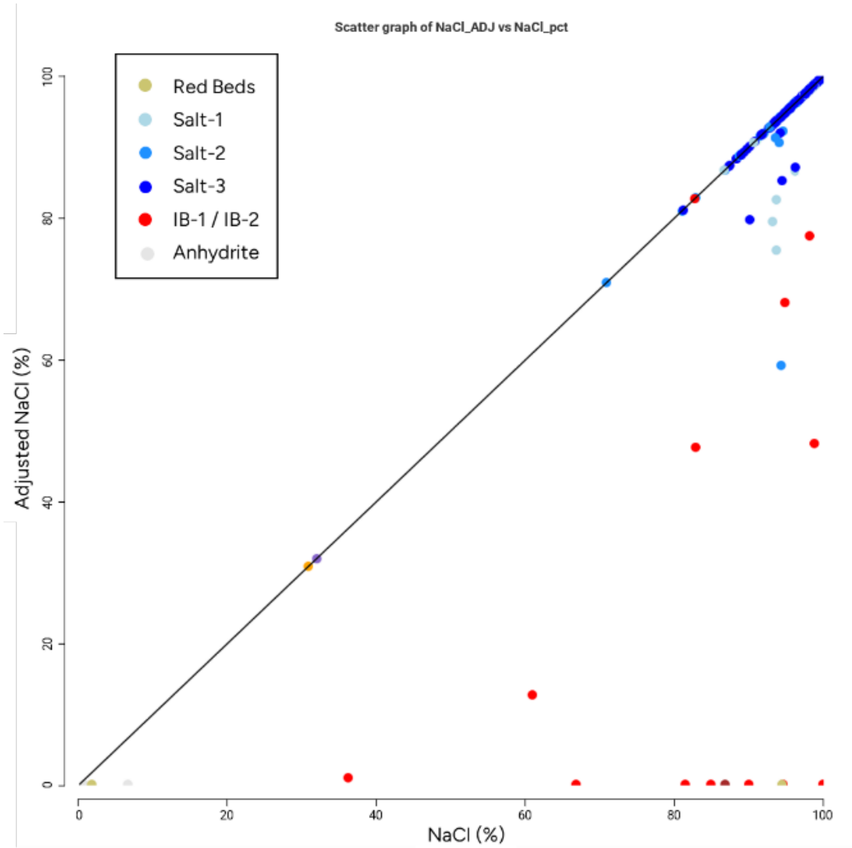
Indicator of 0.2 was achieved by ignoring the mudstone sample and adjusting the composite.

Figure 14-23 is a scatter plot of all NaCl composites and Adjusted NaCl composite grades illustrating instances where adjustments were made due to the presence of unsampled, non-halite material. Overall, only 18 composites have been adjusted, of which 12 are within the three salt horizons including four in the 1-Salt, four in the 2-Salt, and four in the 3-Salt. A summary of the adjusted NaCl composites is provided in Table 14-6.

Table 14-6: Adjusted NaCl Composite Grades in Salt

Drill Hole ID	Horizon	Composite NaCl (%)	Adjusted Composite NaCl (%)	Difference (NaCl%)
CC8	1-Salt	96.23	86.73	9.50
CC8		93.80	82.65	11.15
CC8		93.29	79.56	13.73
CC8		93.72	75.49	18.23
CC5	2-Salt	93.58	91.34	2.23
CC2		94.59	92.33	2.26
CC8		94.18	90.66	3.52
CC5		94.40	59.20	35.20
CC4	3-Salt	94.20	92.11	2.09
CC8		96.27	87.21	9.06
CC4		94.47	85.34	9.13
CC5		90.19	79.84	10.35

Figure 14-23: Composite NaCl% versus Adjusted Composite NaCl% by Domain



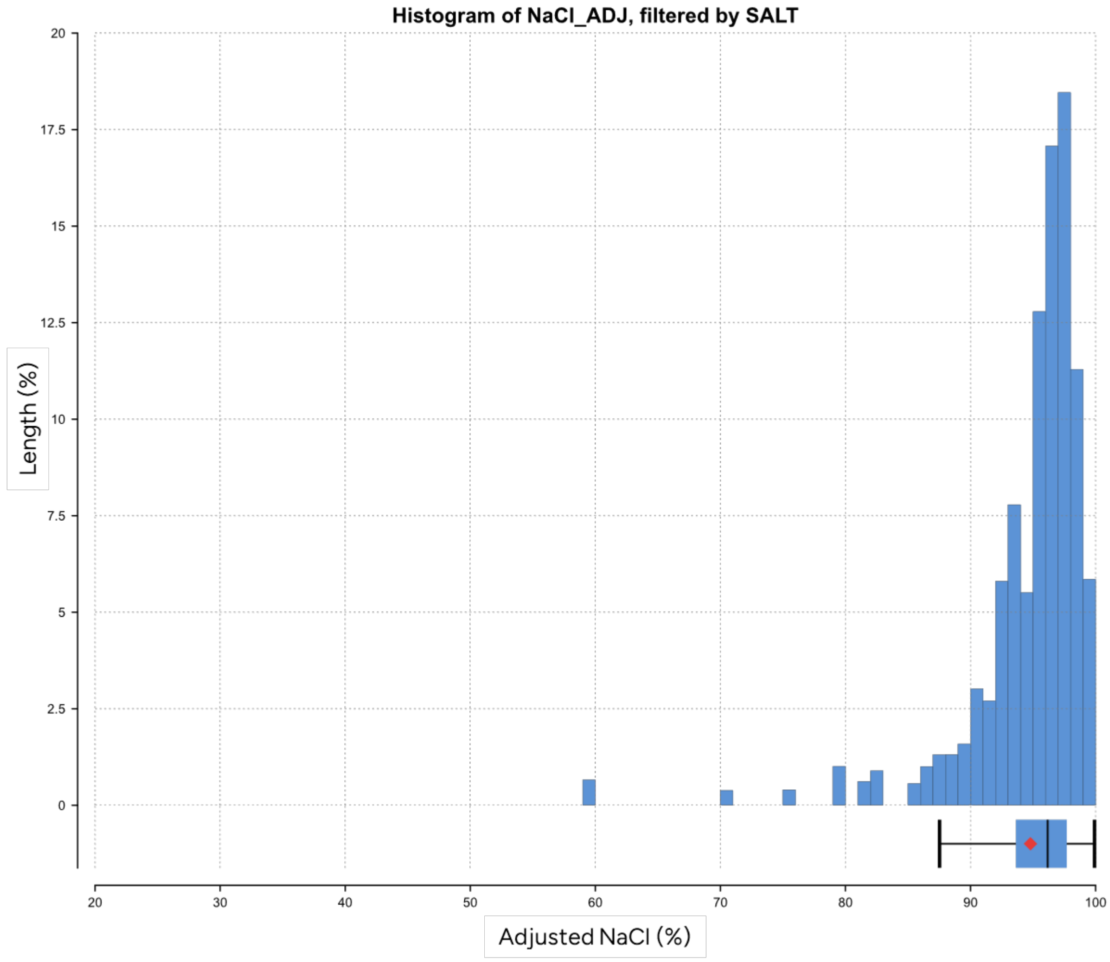
Source: SLR, 2023

Table 14-7 presents summary statistics for the final Adjusted NaCl composites within each of the three salt horizons.

Table 14-7: Adjusted Salt Composite Statistics

Parameter	NaCl %			
	All	1-Salt	2-Salt	3-Salt
Count	198	41	64	93
Minimum	59.20	75.49	59.20	79.84
Maximum	99.91	99.91	99.90	99.88
Mean	94.79	94.68	94.35	95.19
Std Dev	5.07	5.09	6.39	3.78
CV	0.05	0.05	0.07	0.04
Variance	25.72	25.93	40.88	14.29

Figure 14-24: Histogram of Adjusted NaCl Composites



Source: SLR, 2023

The QP is overall satisfied that the total number of composites requiring adjustment is small compared to the total number of salt composites (12 of 198; or 6%), which is an indication of the overall representatives of the original sampling strategy.

During a site visit in October 2022, the QP took core samples for independent QA/QC including eight samples taken within muddy salt or mudstone intervals. As described in Section 12.1.4.2, NaCl grades within mudstone intervals ranged from 5% NaCl to 60% NaCl, averaging 25% NaCl (20% NaCl when excluding the highest grade sample). These results have been further corroborated by 2023 assay results from CC-9b. A total of 32 samples taken within interbed or well-defined mudstone intervals returned grades between 5% NaCl and 59% NaCl, averaging approximately 26% NaCl. This validates the approach taken by SLR in adjusting a small number of composite grades using an assumed dilution grade of 0% NaCl.

To better understand the adopted approach and its impact on the final Mineral Resource estimate, the QP modified the assumed dilution density from 0% NaCl to 20% NaCl. The modification resulted in an approximate 1% increase in global tonnage which the QP considers to be immaterial. Considering the potential for non-halite intervals to exhibit very low grades below 5% NaCl, the QP opted to retain the assumed 0% NaCl dilution grade.

14.7 Trend Analysis

14.7.1 Variography

The QP has not deemed it appropriate to undertake variography of the Atlas assay database for the purposes of informing either grade interpolation or Mineral Resource classifications. This decision has been made with consideration for:

- The total number of drill holes, their relative positions, and that of halite intersections.
- Of the 11 drill holes, seven intersect the full stratigraphy of the deposit including all three halite horizons.
- Six drill holes are positioned along a northeast-southwest trending drilling fence line and, as a result, the ability to model a robust variogram to assess grade variability in multiple orientations would be limited. Only CC-5 provides an indication of grade continuity laterally away from this line, in addition to CC-6 for the 1-Salt only.
- Sampling strategies have resulted in a variable number and frequency of samples both between drill holes and downhole. Instances of unsampled, non-halite material have been managed through a dilution factor applied by SLR during compositing and therefore variography is not considered to be appropriate for assessing true grade continuity within the deposit at this stage.

14.7.2 Grade Contouring

Grade interpolation was constrained to numerous Zones, created by SLR as sub-divisions within each halite horizon. These were designed to have an average height of approximately 5 m, aligning with the minimum optimized mineable shape height used for Mineral Resource reporting. The final average composite lengths are 6.54 m, 7.50, and 6.09 m within the 1-Salt, 2-Salt, and 3-Salt, respectively.

14.8 Search Strategy and Grade Interpolation Parameters

Block model grade interpolation for the Mineral Resource estimate was completed using an Inverse Distance squared (ID^2) methodology, using three passes with three expanding search neighbourhoods. Only assays falling within the halite wireframes were used to estimate the blocks and SLR used soft boundaries between adjacent Zones. Table 14-8 summarizes the grade interpolation parameters used for block estimation.

Table 14-8: Grade Interpolation Parameters

Run	Minimum Samples	Maximum Samples	Search Range (m)
1	1	9	1,000 x 1,000 x 300
2	1	9	2,000 x 2,000x 300
3	1	9	3,000 x 3,000 x 300

14.9 Bulk Density

Of the primary core samples taken from CC-1 to CC-5 drill holes a total of 22 samples were tested for density by ActLabs. Results range between 2.12 t/m^3 and 2.25 t/m^3, averaging 2.16 t/m^3

(Table 14-9). For 2016 Mineral Resource estimate, APEX adopted a density of 2.16 t/m^3 for conversion of salt volumes into tonnages (APEX, 2016).

Table 14-9: Density Results

Parameter	Density (t/m^3)
Count	22
Minimum	2.12
Maximum	2.25
Mean	2.16
Median	2.16
Std Dev	0.027

A further 18 samples were tested for density as part of the previous QP site visit by APEX from September 21-24, 2015 (APEX, 2016). Results range between 2.15 t/m^3 and 2.22 t/m^3, averaging 2.17 t/m^3 (Table 14-10).

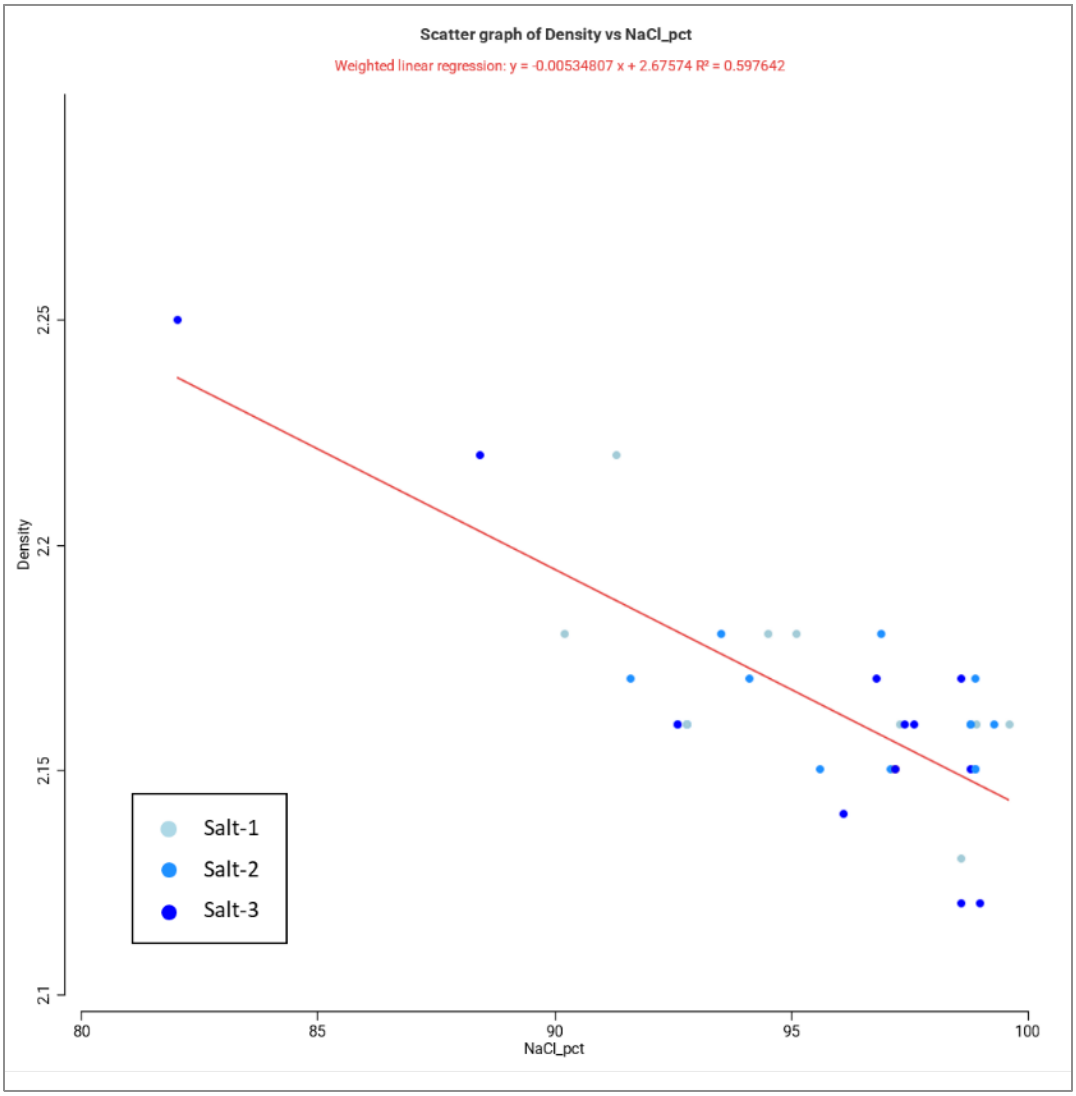
Table 14-10: QP Sample Density Results

Parameter	Density (t/m^3)
Count	18
Minimum	2.15
Maximum	2.22
Mean	2.17
Median	2.16
Std Dev	0.019

No further core samples from drill holes CC-6 to CC-9b have been tested for density.

SLR tested the relationship between density and halite grade to demonstrate a reasonable correlation (Figure 14-25). Limitations of this regression are the overall limited number of results relative to the number of assays, and the overall high NaCl grades of assays which provides a limited spread over which to define a linear regression.

Figure 14-25: Density (t/m^3) Regression with NaCl (%)



Source: SLR, 2023

Given the overall number of density results and the observed variability, the QP did not consider it appropriate to interpolate density into the block model. Considering no new density data was available since the previous estimate, the QP similarly adopted an approach of using an average value for the estimation of Mineral Resources, also using 2.16 t/m^3.

The QP tested the impact of using the above linear regression on the final Mineral Resource estimate and found it to be immaterial to the global tonnage estimate (<0.5% increase in global tonnage).

14.10 Block Models

SLR constructed a sub-blocked model using Leapfrog Geo software. The selected block sizes and block model frameworks are provided in Table 14-11. Parent block heights were specified to enable the construction of single, full height sub-blocking within each of the Zones created during grade compositing.

Table 14-11: Block Model Parameter

	Easting	Northing	Elevation
Minimum	385600	5360900	-1850
Maximum	389200	5364300	150
Parent Block Size (m)	50	50	1000
No. of Parent Blocks	72	68	2
Sub-Block Size (m)	5	5	Variable

The QP is of the opinion that the block sizes are suitable for the style of mineralization and proposed mining method.

14.11 Cut-off Grade and RPEEE

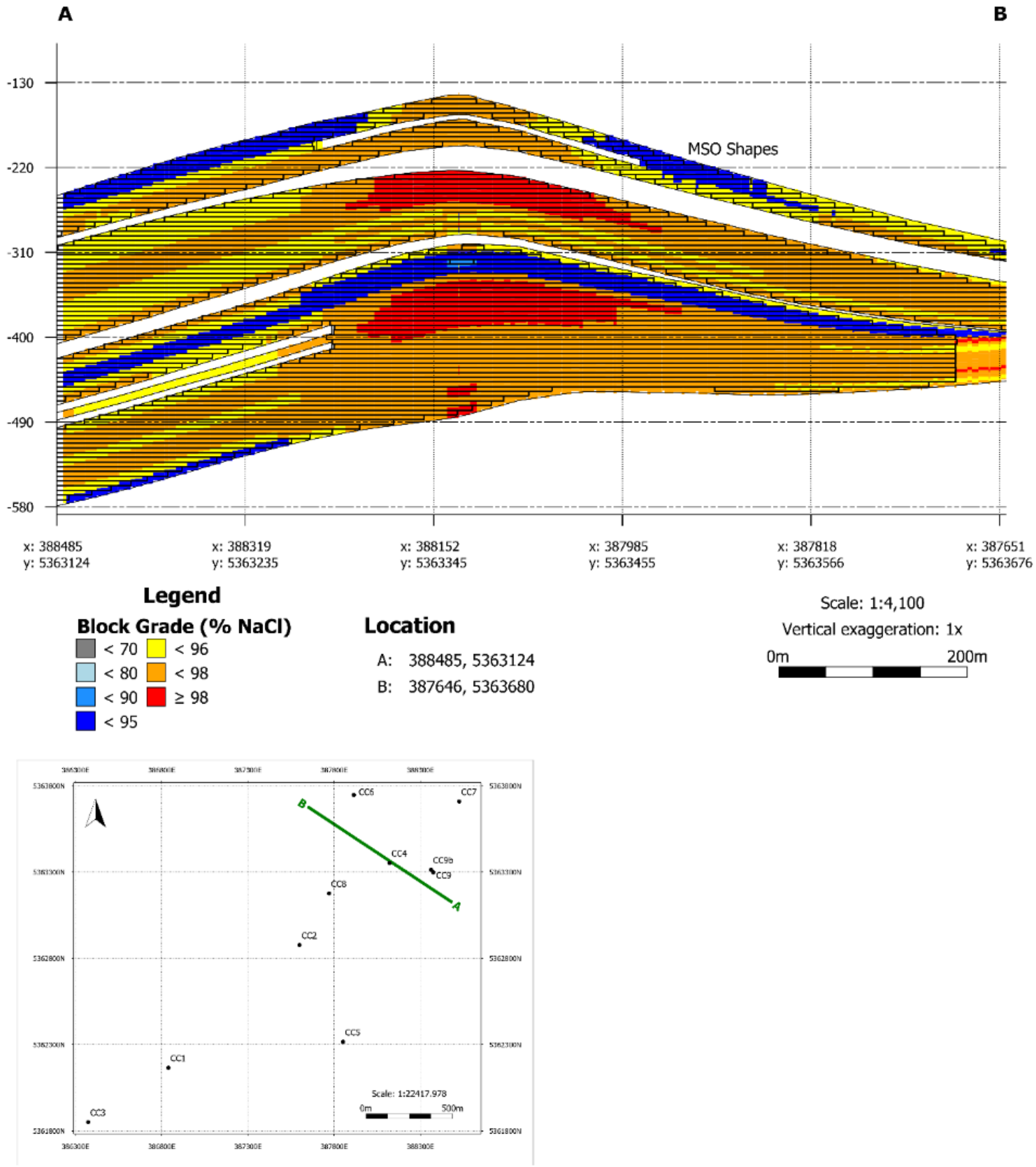
No reporting cut-off grade was applied to the estimated block grades, however the blocks were constrained within Mineable "Stope" Optimiser (MSO)[2] shapes with a minimum target grade of 90% NaCl, as a means of demonstrating Reasonable Prospects for Eventual Economic Extraction (RPEEE). While this target grade is below the 95.0% NaCl (± 0.5%) specification outlined in ASTM Designation D632-12 (2012), the mean grade after application of the MSO exceeds 95% NaCl and is intended to allow for potential blending.

Mineral Resources have therefore been estimated within the MSO shapes (Figure 14-26) developed by SLR using Deswik software with the following parameters:

- Shape height of 5 m, with no variable height shapes
- 20 m minimum width, no maximum, with a 5 m minimum pillar width between shapes
- "Strike" length of 40 m
- Fixed strike direction of 125°
- Dip of 90°
- No external dilution included
- Minimum grade of 90% NaCl
- Vertical panels
- A post-script visual review to remove isolated blocks that could not reasonably be mined alone.

[2] Stope in this context refers to the process of developing a preliminary optimised underground mining layout, irrespective of anticipated mining method, as opposed to an open pit optimisation.

Figure 14-26: MSO Outline (Black) Shown with Estimated NaCl (%)



Source: SLR, 2023

14.12 Classification

Definitions for resource categories used in this Technical Report are consistent with those defined by CIM (2014) and adopted by NI 43-101. In the CIM classification, a Mineral Resource is defined as "a concentration or occurrence of solid material of economic interest in or on the Earth's crust in such form, grade or quality and quantity that there are reasonable prospects for eventual economic extraction". Mineral Resources are classified into Measured, Indicated, and Inferred categories. A Mineral Reserve is defined as the "economically mineable part of a Measured and/or Indicated Mineral Resource" demonstrated by studies at Pre-Feasibility or Feasibility level as appropriate. Mineral Reserves are classified into Proven and Probable categories.

For the Project, the QP classified the deposit into Indicated and Inferred categories based on approximate distances from the "Point of Observation" i.e., the drill hole intersection with existing NaCl assays. The QP used a drill hole spacing of approximately 1,000 m for Inferred Mineral Resources and 700 m for Indicated Mineral Resources, although these were not applied strictly and included some modifications made based on the QP's overall opinion of lateral continuity.

No minimum sampling coverage was applied (refer to Table 14-5) on the basis that under the sampling strategy the sample frequency in each hole is likely to be inversely proportional to halite homogeneity. The QP also reviewed the overall sample representativeness with consideration for the massive nature of the halite and made adjustments through compositing for a small number of unsampled non-halite intervals.

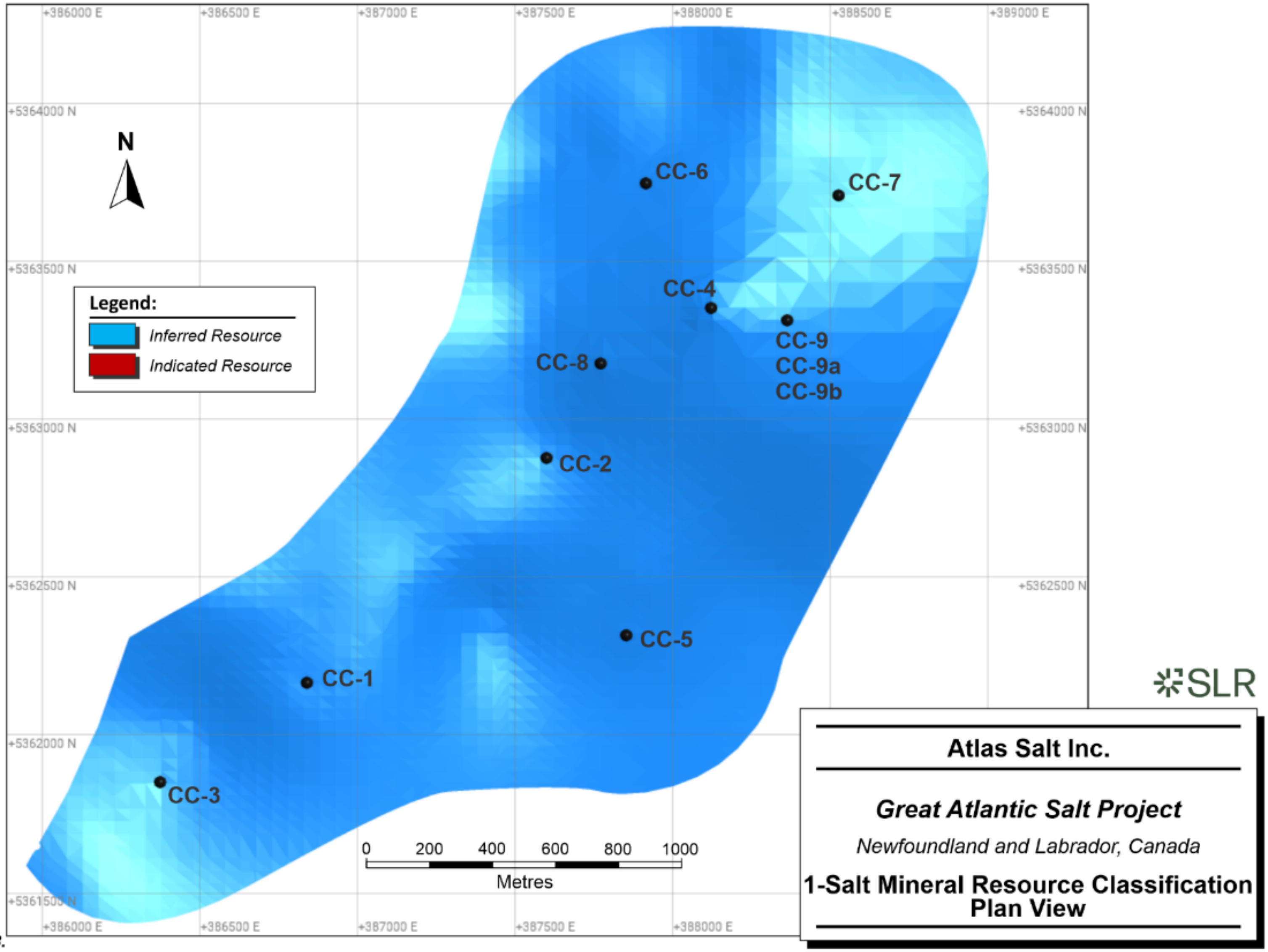
Figure 14-27 to Figure 14-29 illustrate the final Mineral Resource classification for the 1-Salt, 2-Salt, and 3-Salt, respectively. A cross section through the final Mineral Resource classification is illustrated in Figure 14-30.

Based on drill hole spacings across the deposit Indicated Mineral Resources have been defined around CC-2, CC-4, CC-8, and CC-9b, spaced at approximately 250 m to 400 m, and only within the 2-Salt and 3-Salt which show greater grade and thickness continuity between drill holes. The 1-Salt has been classified entirely in the Inferred category.

To the south and southwest, Inferred Mineral Resources have been defined around CC-5 and CC-1, which are approximately 600 m and 1,000 m from CC-2, respectively. The QP has opted not to include the 2-Salt and 3-Salt around CC-5 within the Indicated category based on more variable NaCl grades and therefore reduced grade continuity.

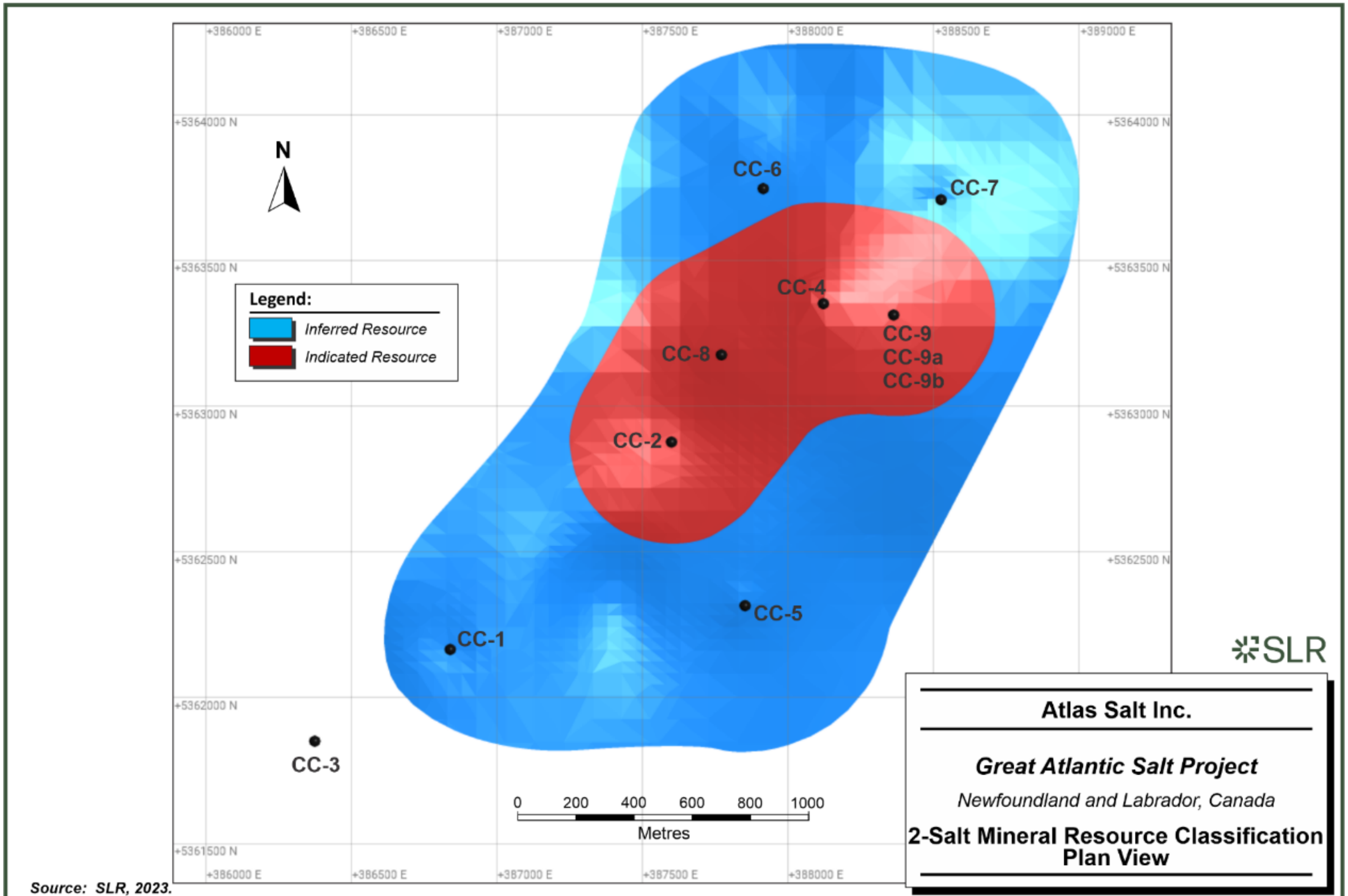
Inferred Mineral Resources have also been extended within the 1-Salt to include material supported by CC-3, located approximately 560 m further southwest of CC-1, however, the QP has opted not to do so for the 2-Salt and 3-Salt on the basis that this drill hole indicated more variable NaCl grades and material differences in salt horizon thicknesses compared to other intersections. In the northwest of the deposit, Inferred Mineral Resources have been extended to encompass both CC-6 and CC-7 on the basis that the top of the salt deposit has been confirmed through drill hole intersections, and that the base of the salt can be interpreted from and is constrained by the 2022 seismic survey reinterpretation.

Figure 14-27: 1-Salt Mineral Resource Classification Plan View



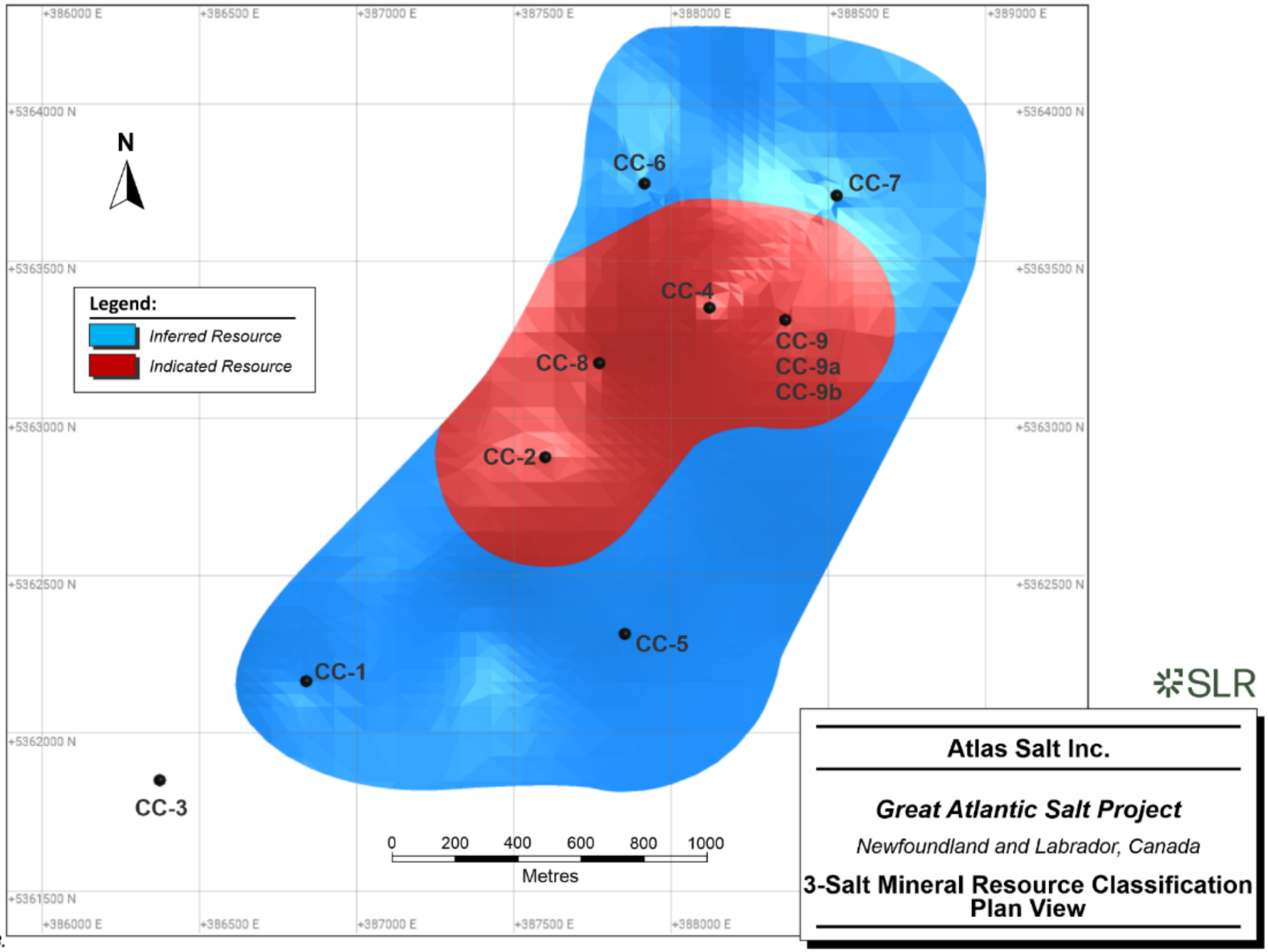
Source: SLR, 2023.

Figure 14-28: 2-Salt Mineral Resource Classification Plan View



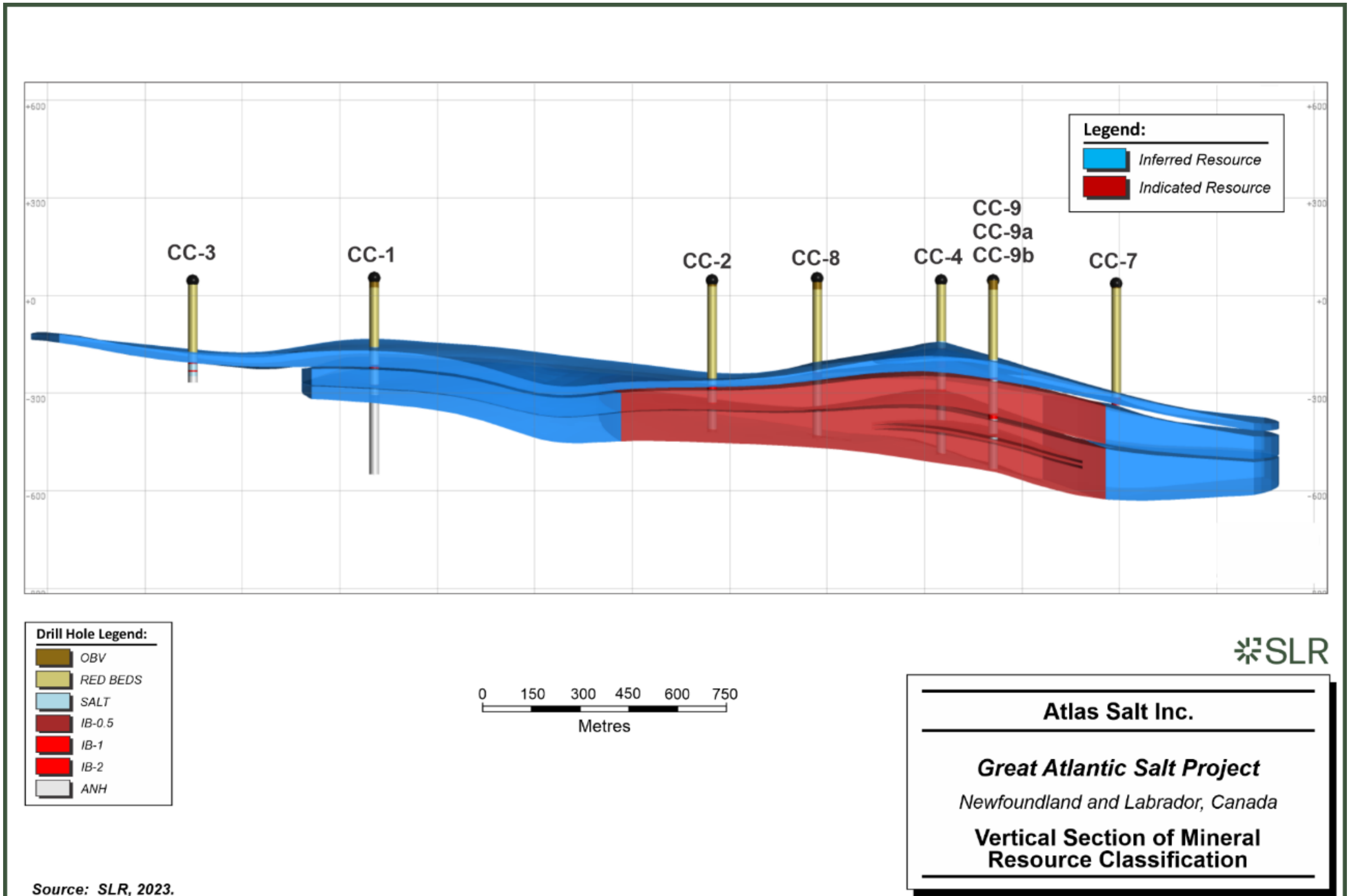
Source: SLR, 2023.

Figure 14-29: 3-Salt Mineral Resource Classification Plan View



Source: SLR, 2023.

Figure 14-30: Vertical Section of Mineral Resource Classification



Source: SLR, 2023.

14.13 Block Model Validation

14.13.1 Volumetrics

SLR initially verified the volumetrics of the resultant block model showing close adherence of the block model to the underlying geological wireframes (Table 14-12).

Table 14-12: Block Model Volumetrics

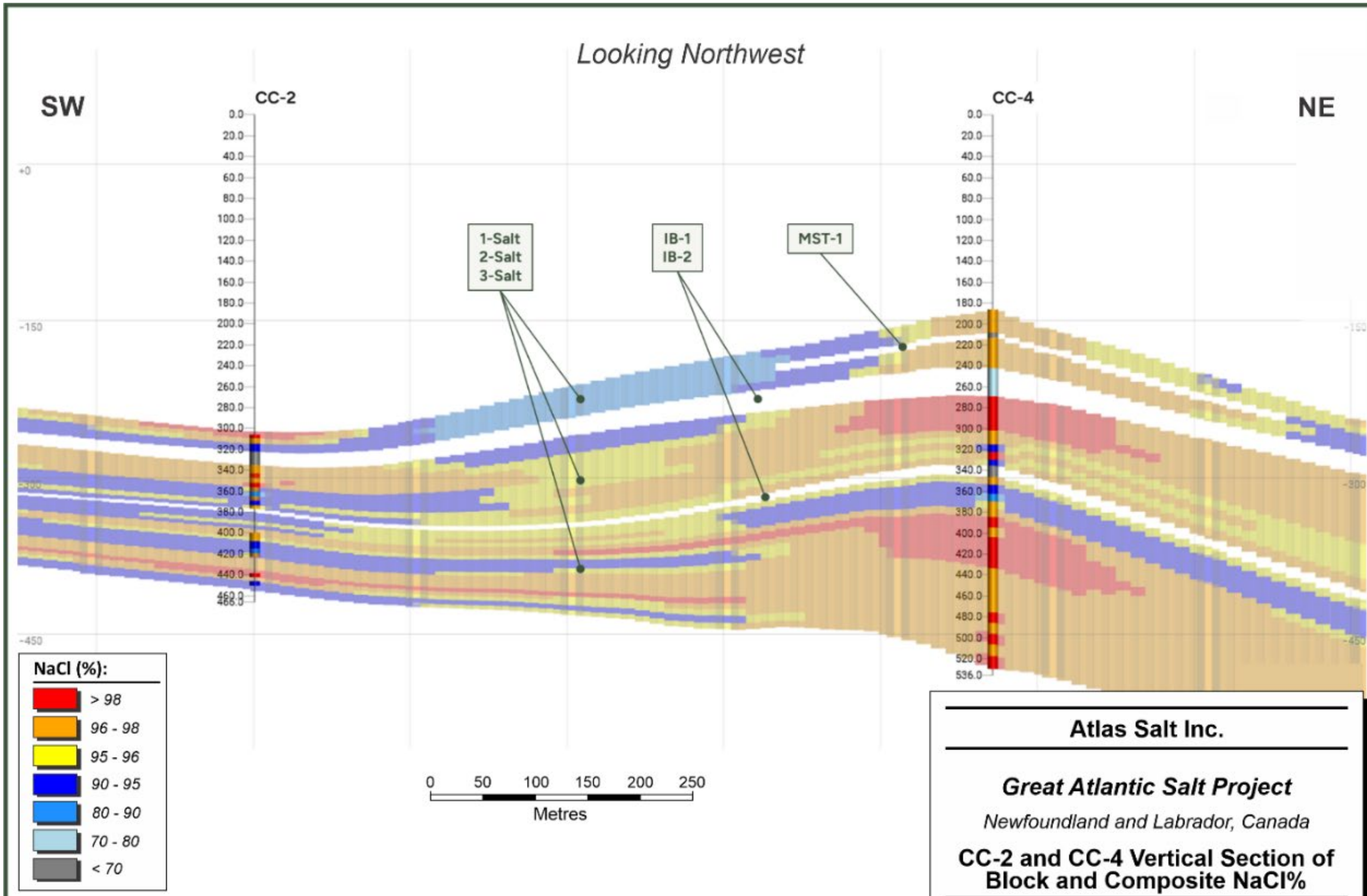
Horizon	Wireframe (m^3)	Block (m^3)	Difference (%)
1-Salt	127,980,000	127,989,071	0.01%
2-Salt	259,750,000	259,390,852	0.14%
3-Salt	333,480,000	333,549,461	0.02%
Total	721,210,000	720,929,384	0.04%

14.13.2 Visual Validation

Visual validation has been completed on the GAS deposit block model with input assay data on sections, which were examined for reproduction of the input data in the block model. The QP has found that the model is a reasonable reproduction of grades, and that the methodology adopted by SLR during compositing to separate the halite horizons into numerous sub-horizons (Zones) has had the effect of reproducing the stratigraphic nature of the deposit and grade distributions.

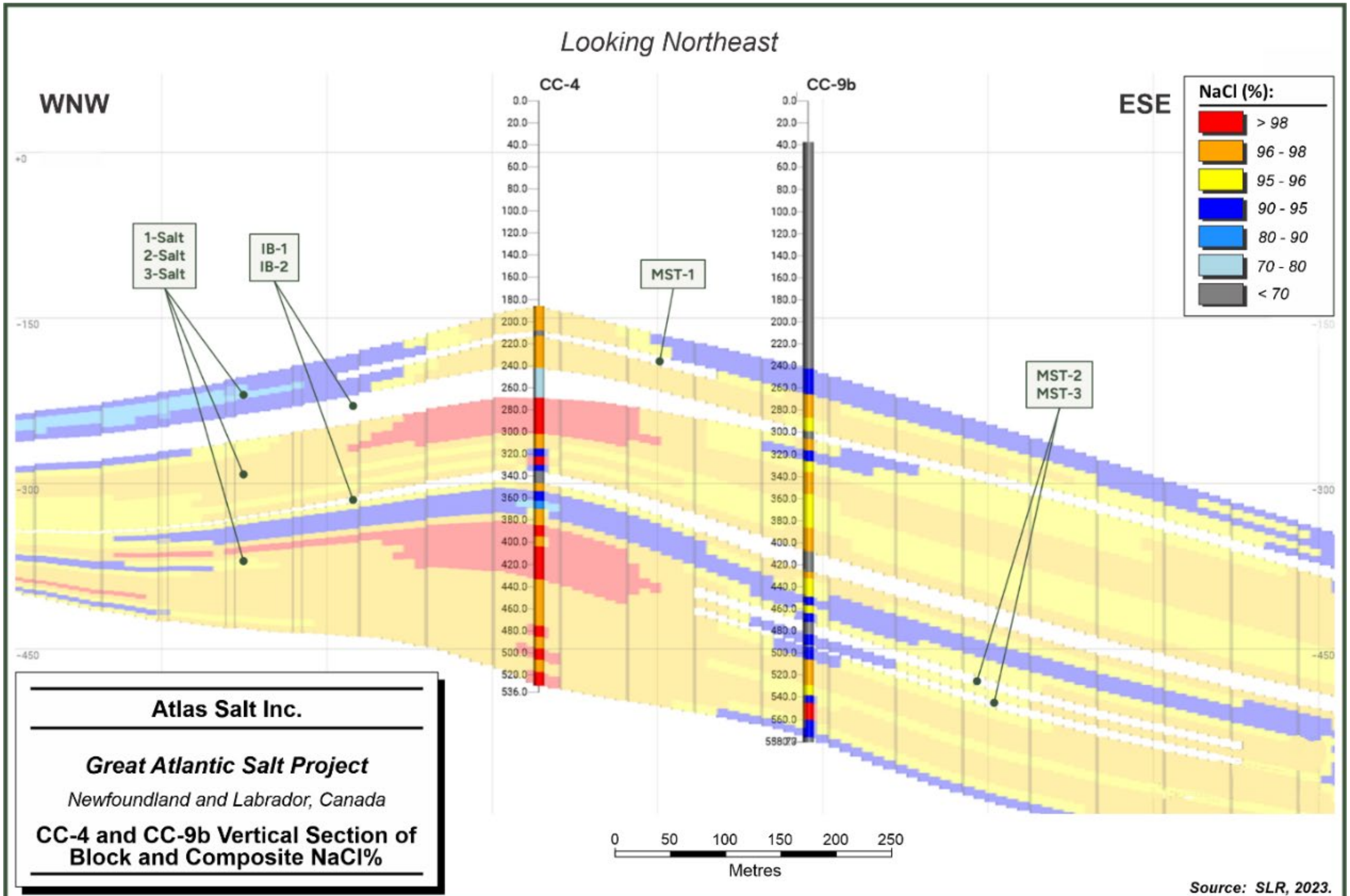
Vertical sections through the block model showing the NaCl composites versus block model grades are provided in Figure 14-31 to Figure 14-33.

Figure 14-31: CC-2 and CC-4 Vertical Section of Block and Composite NaCl%



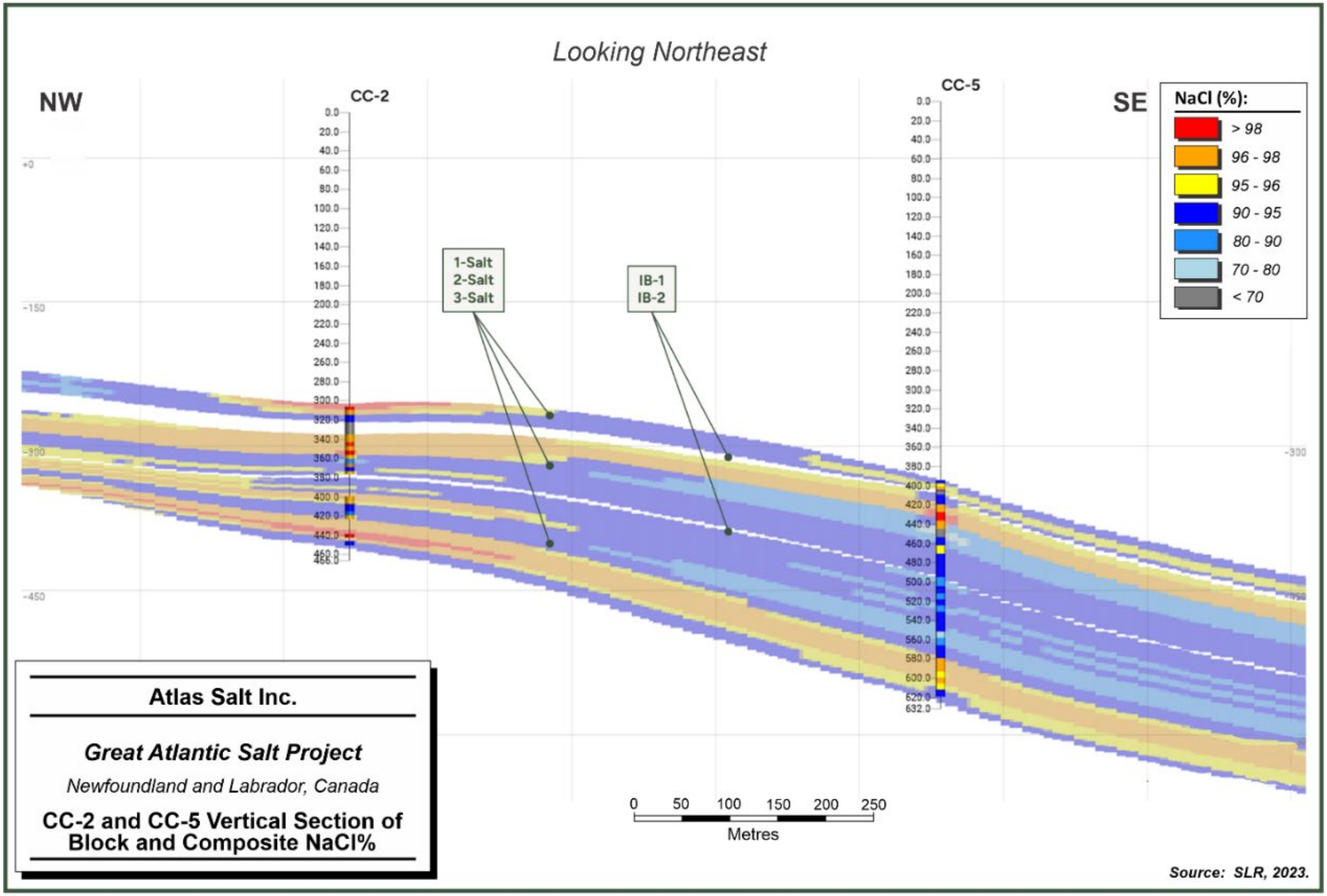
Source: SLR, 2023.

Figure 14-32: CC-4 and CC-9b Vertical Section of Block and Composite NaCl%



Source: SLR, 2023.

Figure 14-33: CC-2 and CC-5 Vertical Section of Block and Composite NaCl%



14.13.3 Statistical Validation

Table 14-13 provides summary statistics of the resultant block model, showing effective reproduction of composite grades by block grades for each salt unit.

Table 14-13: Block Model Statistics of Classified Blocks

Parameter	Block NaCl (%)				Composite NaCl (%)			
	All SALT	1-Salt	2-Salt	3-Salt	All SALT	1-Salt	2-Salt	3-Salt
Minimum	59.20	77.98	59.20	80.75	59.20	75.49	59.20	79.84
Maximum	99.91	99.91	99.76	99.80	99.91	99.91	99.90	99.88
Mean	94.70	94.66	94.44	94.91	94.79	94.68	94.35	95.19
Std Dev	3.10	2.79	3.70	2.66	5.07	5.09	6.39	3.78
Coefficient of Variation	0.03	0.03	0.04	0.03	0.05	0.05	0.07	0.04
Variance	9.63	7.79	13.72	7.05	59.20	75.49	59.20	79.84

14.14 Mineral Resource Reporting

CIM (2014) definitions were used for Mineral Resource classification. Table 14-14 provides a summary of the Mineral Resource estimate by SLR, with an effective date of May 11, 2023.

Table 14-14: Mineral Resource Estimate – May 11, 2023

Category	Horizon	Tonnage (Mt)	Grade (NaCl %)	Contained NaCl (Mt)
Indicated	1-Salt	-	-	-
	2-Salt	160	95.9	154
	3-Salt	223	96.0	214
	Total	383	96.0	368
Inferred	1-Salt	195	95.3	186
	2-Salt	288	95.3	274
	3-Salt	385	95.0	366
	Total	868	95.2	827

Notes:

1. CIM (2014) definitions were followed for Mineral Resources.
2. Mineral Resources are estimated without a reporting cut-off grade. Reasonable Prospects for Eventual Economic Extraction were instead demonstrated by reporting within Mineable “Stope” Optimised (MSO) shapes, with a minimum height of 5 m, minimum width of 20 m, length of 40 m, and minimum grade of 90% NaCl, with a 5 m minimum pillar width between shapes.
3. Bulk density is 2.16 t/m^3.
4. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
5. Mineral Resources are inclusive of Mineral Reserves.
6. Salt prices are not directly incorporated into the Resource MSO minimum target grades, however, the mean Resource grades exceed the 95.0% NaCl (± 0.5%) specification outlined in ASTM Designation D632-12 (2012).
7. Numbers may not add due to rounding.

14.15 Comparison to Previous Mineral Resource Estimate

Table 14-15 presents a comparison of the current Mineral Resource estimate effective May 11, 2023, versus the previous estimate effective January 6, 2023. The SLR estimate consists of a 5% increase in tonnage and grade reduction of 0.3% NaCl. Changes to the Mineral Resource estimate from the previous estimate are attributable to:

- Additional drill hole data obtained by Atlas in 2022 after the effective data of the previous estimate, including drilling of CC-9b. Halite intersections from CC-9b have been used to update the geological interpretation of the halite.
- Updated interbed interpretations by SLR with the inclusion of the additional drill hole data and re-evaluation of interbed lateral continuity.
- Updated Indicated Mineral Resource classification criteria including an increase to the spacing criteria from 500 m to 700 m and the subsequent inclusion of CC-9b as an Indicated "Point of Observation" for the 2-Salt and 3-Salt.
- Slight expansion of the Inferred Mineral Resource classification using the same classification criteria with the inclusion of CC-9b.
- MSO shapes with a minimum 90% NaCl target grade were applied by SLR to constrain the Mineral Resource. The MSO shape optimizer was rerun by SLR using the updated geological model.

Table 14-15: Comparison to Previous Mineral Resource Estimate

Category	SLR, January 6, 2023			SLR, May 11, 2023		
	Tonnes (Mt)	Grade (NaCl%)	Tonnes NaCl (Mt)	Tonnes (Mt)	Grade (NaCl%)	Tonnes NaCl (Mt)
Indicated	187	96.4	180	383	96.0	368
Inferred	999	95.6	956	868	95.2	827

Notes:

1. CIM (2014) definitions were followed for Mineral Resources.
2. Mineral Resources are estimated without a reporting cut-off grade. Reasonable Prospects for Eventual Economic Extraction were instead demonstrated by reporting within Mineable "Stope" Optimised (MSO) shapes, with a minimum height of 5 m, minimum width of 20 m, length of 40 m, and minimum grade of 90% NaCl, with a 5 m minimum pillar width between shapes.
3. Bulk density is 2.16 t/m^3.
4. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
5. Mineral Resources are inclusive of Mineral Reserves.
6. Salt prices are not directly incorporated into the Mineral Resource MSO minimum target grades, however, the mean Mineral Resource grades exceed the 95.0% NaCl (± 0.5%) specification outlined in ASTM Designation D632-12 (2012).
7. Numbers may not add due to rounding.

15.0 Mineral Reserve Estimate

Mineral Reserves for the Project consist of rock salt for road de-icing and were estimated by SLR as part of the 2023 FS. Table 15-1 summarizes the GAS Mineral Reserve estimate as of July 31, 2023.

Table 15-1: Summary of Mineral Reserves as of July 31, 2023

Category	Salt Horizon	Tonnage (Mt)	Grade (%NaCl)	Contained NaCl (Mt)
Probable	2-Salt	37.7	95.9%	36.2
	3-Salt	50.3	96.0%	48.3
Total		**88.1**	**96.0%**	**84.5**

Notes:

1. CIM (2014) definitions were followed for Mineral Reserves.
2. Salt prices are not directly incorporated into the Mineral Reserve designs, however the mean Mineral Reserve grades exceed the 95% NaCl (+-0.5%) specification outlined in ASTM Designation D632-12(2012).
3. A minimum mining height of 5.0 m and width of 16.0 m were used for production rooms.
4. Sterilization zone 8.0 m below the top of salt and 5.0 m above the bottom of salt have been applied.
5. A mining extraction factor of 100% was applied to all excavations.
6. Bulk density is 2.16 t/m^3.
7. Planned process recovery is 95%.
8. Numbers may not add due to rounding.

The QP is not aware of any mining, metallurgical, infrastructure, permitting, or other relevant factors that could materially affect the Mineral Reserve estimate.

15.1 Estimation Methodology

Mineral Reserves were estimated by the application of mining factors to the Indicated Mineral Resources described in Section 14 of this Technical Report. The mine planning work was carried out using Deswik mine design software and the resulting mining shapes were scheduled using the Deswik scheduler software. Indicated Mineral Resource shapes were reviewed and modified to incorporate the mine designs, minimum mining thickness, pillar requirements, and cut-off grade criteria to develop the Mineral Reserve limits. A minimum mining thickness of five metres was used for mine planning. The mine designs and economic considerations in the 2023 FS support the Mineral Reserve estimates.

Only Indicated Mineral Resources were converted to Mineral Reserves.

15.2 Cut-off Grades and Economic Factors

The road de-icing salt specification is a sodium chloride grade in excess of 95% as well as an associated particle size distribution. SLR used an average 95% NaCl grade requirement for Mineral Reserve classification. The normal terms for the sale of road de-icing salt are a 95% NaCl minimum, on a lot basis. There are not usually premiums for higher grade payment, though there may be penalties for lower grade lots.

Salt prices are not directly incorporated into the Mineral Reserve parameters. The mean Mineral Reserve grades exceed the 95% NaCl (+-0.5%) specification outlined in ASTM Designation D632-12(2012). To meet this target, SLR reviewed the block grades over a range of grades from 90% NaCl upwards. SLR determined that at a 90% NaCl cut-off grade applied to the Mineral

Resources the average production grade remains above 96% NaCl. SLR applied a 90% NaCl cut-off grade to the Mineral Resource blocks for conversion to Mineral Reserves.

15.3 Dilution and Extraction

15.3.1 Dilution

All production excavations will be in salt and therefore zero dilution was assigned to production designs. Minor mudstone inclusions will be mined as part of production which will lower the average mined grade. This material will be blended as necessary to meet the product specification. Since it is included within the Mineral Resource wireframes it is captured in the production designs and reported in the mine plan and schedule outputs.

Development headings that are excavated within salt will be treated as production and processed. Some development will occur outside the Indicated Mineral Resource limits, including excavation of some interbed material, which is considered waste. This material will not be sent to the plant, but rather separated from the salt handling stream and stored underground in mined out openings.

Minimal overbreak is expected with the use of CMs for all salt production. Overbreak would in most cases not be waste and would not be dilutive.

15.3.2 Extraction

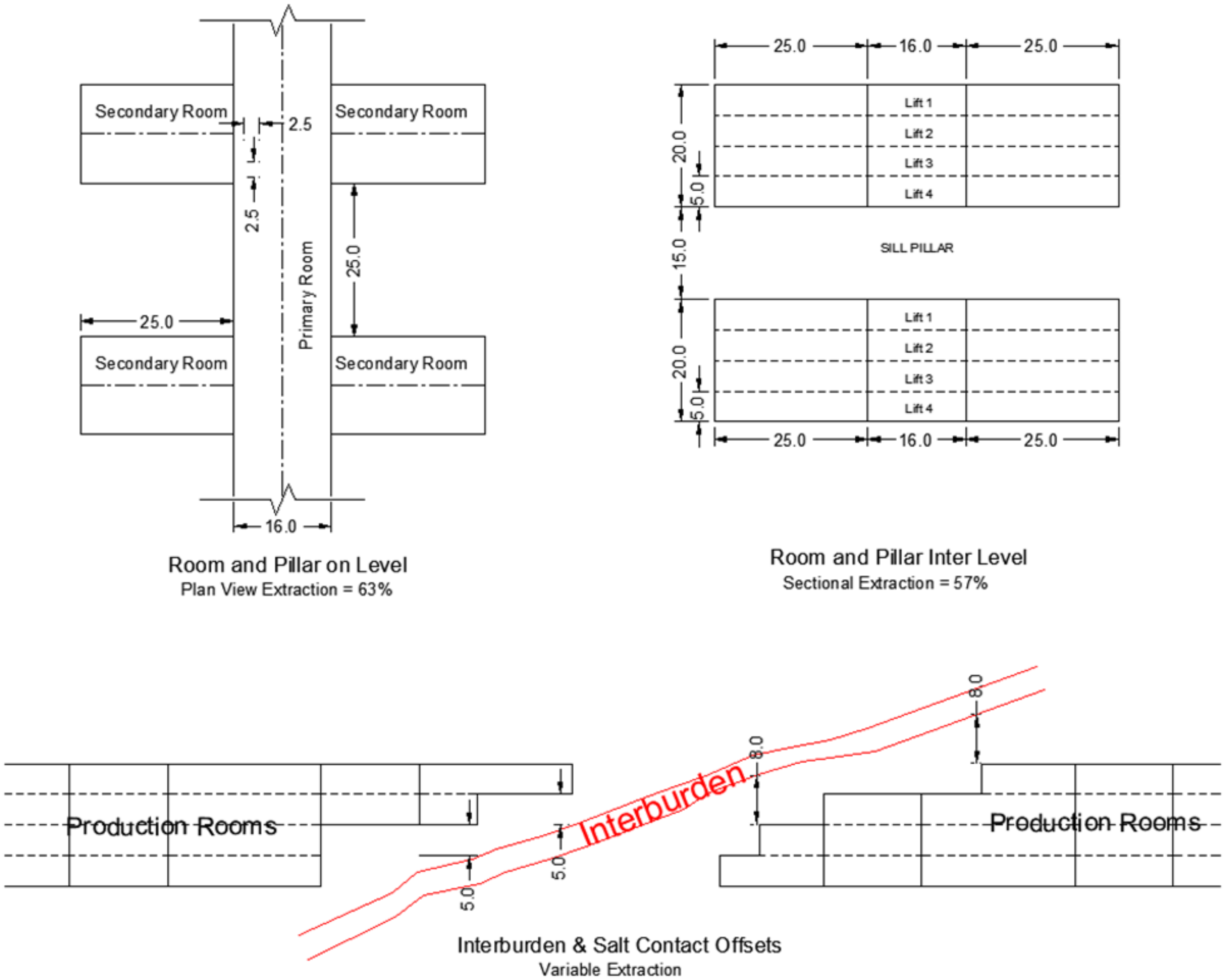
An extraction rate of 100% was applied for production salt excavations owing to the high flexibility and selectivity that CMs offer to the operation and the limits used in the mine design criteria. No underbreak should be expected within the rooms since the CMs will fully cut the design face. In the event that underbreak does occur, it will be identified by the operator during the cutting cycle and extracted at that time with the active CM.

The square room and pillar pattern represents an extraction rate of 63% on a plan basis, while the 15 m high sill pillars and 20 m high production levels represent a 57% extraction in the vertical dimension. This yields a nominal extraction rate of 36% before consideration of pillars above and below interburden layers and barrier pillars around permanent infrastructure and surface drill holes.

Exploration drill holes were completely cemented at the completion of drilling. Barrier pillars of 50 m radius are included around all drill holes from surface. For long-term stability of critical mine infrastructure, such as the access declines, 50 m barrier pillars are included around permanent excavations. Roof and floor pillars, respectively eight metres thick and five metres thick, will be maintained between production excavations and non-salt material (interburden above and below 2-Salt, interburden above 3-Salt, and anhydrite below 3-Salt). The room and pillar geometry and interburden pillar geometry is presented in Figure 15-1.

After inclusion of these pillars the overall extraction rate of the Mineral Resource is less than 30%. The tonnage mined represents 23% of the Indicated Mineral Resources.

Figure 15-1: Mining Dimensions and Pillar Offsets



Source: SLR 2023

15.4 Classification

The Mineral Reserves are all classified as Probable Mineral Reserves as they have been converted from Indicated Mineral Resources by the application of mining parameters. The QP considers this classification to be appropriate.

15.5 Comparison with Previous Estimates

There is no comparison to previous Mineral Reserve estimates as this is the initial Mineral Reserve estimate for the deposit.

16.0 Mining Methods

The deposit is large with a Mineral Reserve surface area of approximately 106 ha and a vertical extent of over 300 m starting approximately 240 m below surface. The GAS deposit is not reasonably amenable to open pit mining but is considered to be amenable to bulk tonnage underground mining. The overall size of the GAS deposit, as initially understood, indicated that a relatively high production rate may be achieved with the Project still having an extended operating life.

Mining designs, development plans, and schedules have been prepared for a mechanized room and pillar mining operation. Salt will be mined using CMs and hauled by truck to a lump breaker and conveyor system to move material to a crushing and screening plant located underground. The Mineral Reserve estimate is based upon the 2023 FS completed by SLR. The mine is designed to commence operations at a rate of 2.5 Mtpa of road salt however the major facilities are designed for a rate of up to 4.0 Mtpa of road salt. This Technical Report is based upon the production of 2.5 Mtpa of road salt product.

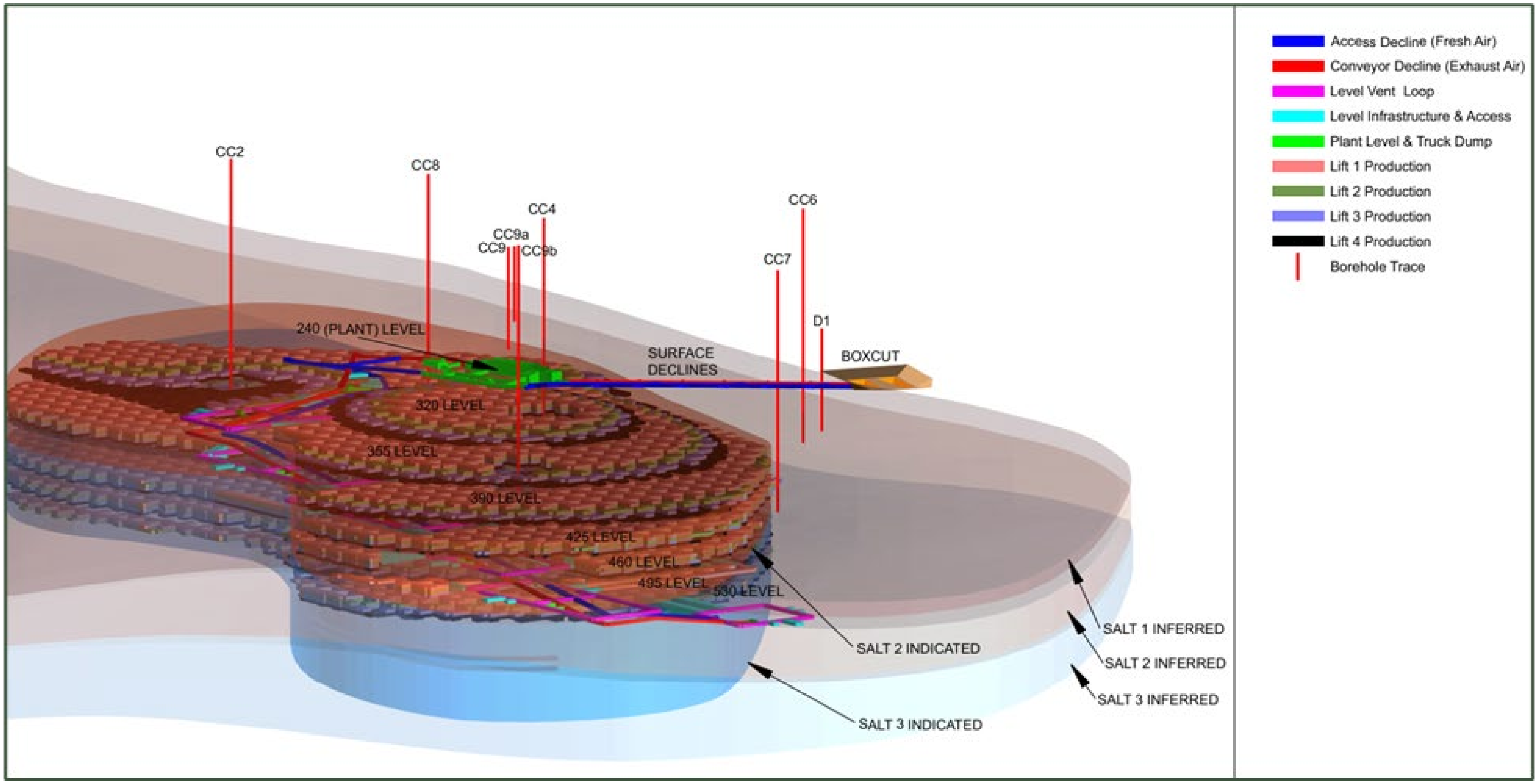
16.1 Mine Design

The plans in this evaluation are for the production of 2.5 Mtpa of road salt. Mining equipment will be mechanized using battery electric vehicles (BEV) to the extent possible. The mine will utilize CMs for production mining and internal development. The underground mine consists of two declines, a processing plant and infrastructure level, and seven production levels. The initial mining level will be approximately 320 m below surface and the deepest level will be approximately 530 m below surface.

The two access declines will be driven to the initial production level and then extended as required to the lower mining levels. Each decline will have an open area of 42 m^2 to accommodate the ventilation air flow requirements. The declines will be 1,500 m long to the 240 Level (nominally 240 m below surface) where the processing plant and related infrastructure will be located. Internal declines will then extend a further 700 m to reach the first production area on 320 Level. One decline will provide fresh air into the mine and be used for vehicle access, while the other will exhaust air and contain an overhead conveyor to transport finished salt product to surface. The second decline will also serve as an emergency egress. The declines will be separated by a 40 m pillar. The processing plant will be constructed in an underground room that will be nominally 20 m wide, 187 m long, and up to 20 m high. The main mine related infrastructure including maintenance shops, vehicle charging bays, and gear storages will be located on the 320 Level, in salt, along with the access to the first production level.

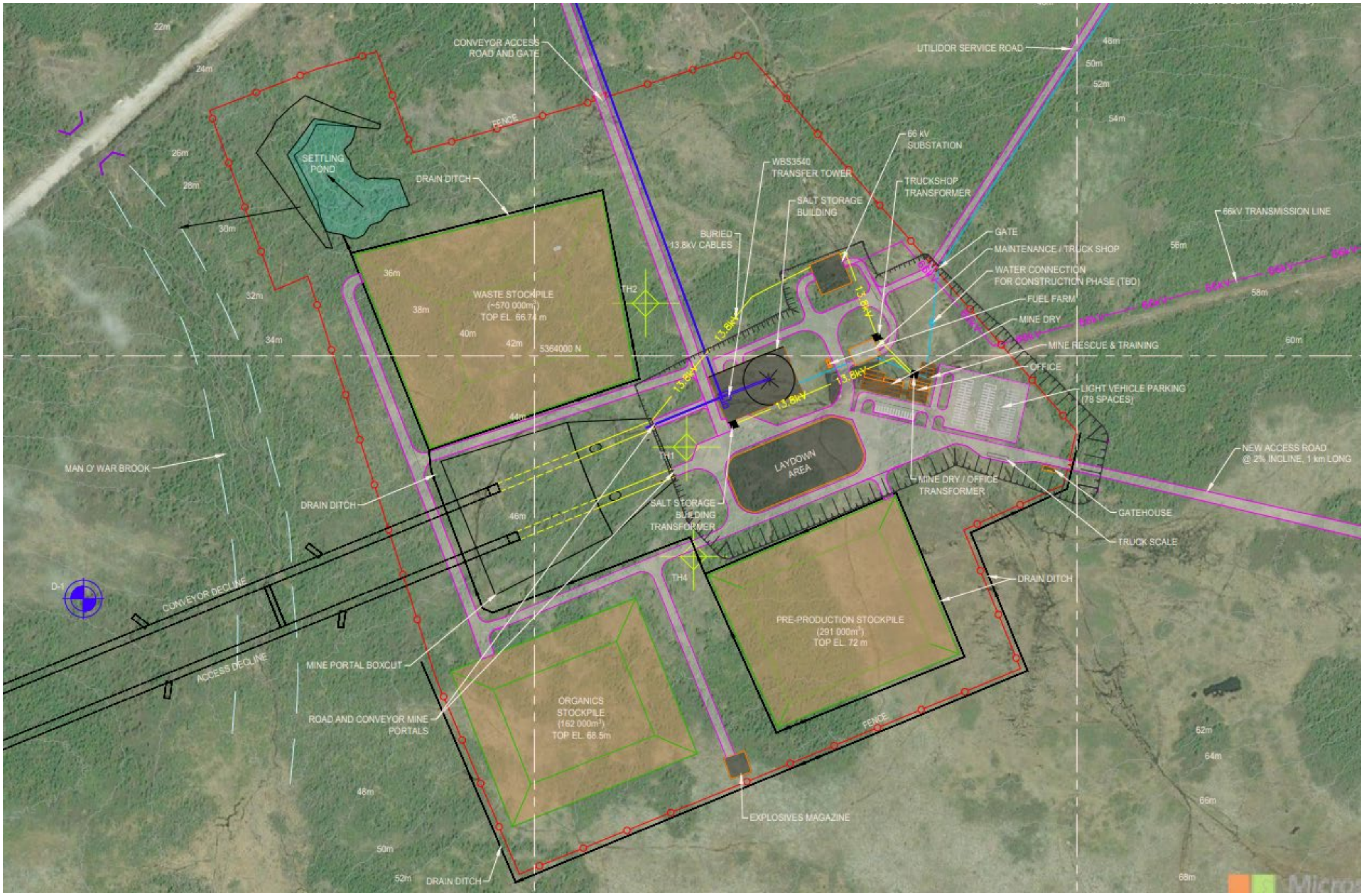
The mine will be deepened as necessary to sustain the target production rate of 2.5 Mtpa through the 34 year mine life. A total of seven production levels will be developed and extracted over the life of mine (LOM) plan. An isometric view of the mine is presented in Figure 16-1 and a view of the surface layout is presented in Figure 16-2.

Figure 16-1: Isometric View of Mine Workings



Source: SLR, 2023

Figure 16-2: Surface Arrangement



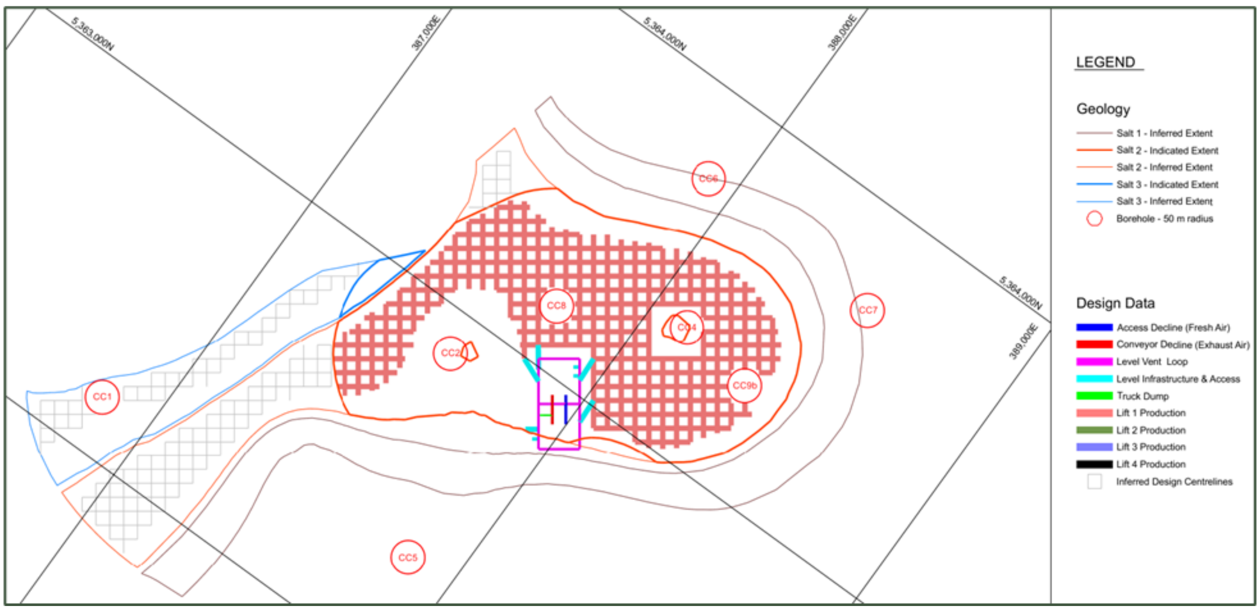
Source: Halyard, 2023

16.2 Mining Method

A square room and pillar underground mining method has been selected. Rooms and pillars will be arranged in regular patterns and the pillars will overlay one another from level to level. Room and pillar production mining will be executed in five metre high cuts, with up to three bench cuts taken below the first, resulting in a maximum room height of 20 m. The pillars will be 25 m square pillars separated by 16 m wide rooms. Each mining level will be separated from the next by 15 m thick horizontal sill pillars. Figure 16-3 is a generalized level plan showing lift 1 of the 355 Level.

Roof and floor pillars, respectively eight metres thick and five metres thick, will be maintained between production excavations and non-salt material (interburden above and below 2-Salt, interburden above 3-Salt, and anhydrite below 3-Salt).

Figure 16-3: Generalized Level Layout



16.2.1 Tonnage and Grade Distribution

The Mineral Resource model was reviewed in mine planning software to assess the distribution of the tonnages by level and grade to select an appropriate level upon which to commence mining. The estimated volume of mineable salt increases with depth from surface and the average grade of the GAS deposit decreases with depth. Laterally the GAS deposit is thinner to the southwest. There are two interburden layers in the GAS deposit and the salt horizons have been named as follows:

- 1-Salt is below the red beds and overlies the first interburden layer.
- 2-Salt is between the two interburden layers.
- 3-Salt is below the second interburden layer and overlies the basal anhydrite.

16.2.2 1-Salt Horizon

The 1-Salt horizon was observed to have a "domed" shape about the CC-4 drill hole, which limited the horizontal extent of the salt. The presence of low grade NaCl through the centre of the horizon further reduced the potentially mineable volume above the target cut-off grade when pillars above and below the mudstone layer were considered. For these reasons Mineral Resources within the 1-Salt have not been converted to Mineral Reserves. Further sampling of the mudstone may permit a re-evaluation of this decision at a later date. The QP recommends that the mining of the 1-Salt horizon be re-evaluated after the 1-Salt is exposed in the mine access development.

16.2.3 2-Salt and 3-Salt Horizons

The 2-Salt and 3-Salt horizons were evaluated using Deswik mine planning software and the tonnage per five metre interval was evaluated from the top of the horizons to the base. Above the 320 Level there was insufficient tonnages to sustain the planned production rate for a reasonable period before development of the next level would be required. Even at the 320 Level, the tonnage available is slightly less than the first two years of planned operations. To provide early production, the 320 Level was selected as the upper most mining level. There is mineable material above the 320 Level, and it is recommended that mining above the 320 Level be re-evaluated in future studies. The Mineral Reserve tonnage per level is summarized in Table 16-1. The available tonnage increases with depth, while the average grade decreases with depth.

Table 16-1: Mineral Reserves by Level

Mine Level	Level #	Total Tonnes (Mt)	Average Grade (NaCl %)
320	1	3.6	97.0
355	2	14.1	96.0
390	3	16.0	95.1
425	4	16.8	96.0
460	5	16.7	96.0
495	6	12.0	96.4
530	7	8.8	96.3
Total		**88.1**	**96.0**

Note:

1. Numbers may not add due to rounding.

16.2.4 Cut-Off Grade

The specification for production is to average 95% NaCl. To meet this target, SLR reviewed the block grades over a range of grades from 90% NaCl upwards. SLR determined that at a 90% NaCl cut-off grade the average production grade remains above 96% NaCl and applied this cut-off grade for blocks to be converted to Mineral Reserves. Production from the mine will be managed to blend the higher and lower grade materials to meet the necessary specification.

16.2.5 Level Sequencing

The mining of a level will commence with the establishment of level specific infrastructure. This will be completed by CM and include the extension of the internal declines from the level above, the excavation of a central ventilation and access loop surrounding the declines, and the excavation of level specific infrastructure such as truck dump, ore pass, vehicle charging bays, and ancillary cut-outs. Most of these drives are designed to be eight metres wide and five metres high such that they can be cut by a CM in two passes. During excavation of the access loop and ancillary cut-outs the conveyor will be extended from the level above, and feeder breaker installed at the bottom of the ore pass in the new level.

Mining will commence with driving production accesses that connect the ventilation loop to the first production areas on the level. Typically, two accesses will be driven in parallel that will establish a ventilation circuit near to the production area and allow for auxiliary fan advancement and shorter ducting runs. By developing two accesses to a production area one-way haulage will be possible which will streamline the operation and aid in maintaining high productivities. Developing a pair of access drives will typically take between two and three months depending on the level size. The excavated material will almost exclusively be salt and will be trucked to the newly completed truck dump on this level. Generally, production on a level will progress from the lateral extent inward to minimize and simplify ventilation changes through the production cycle. It is noted that balancing haul distances will become important, particularly on lower grade and larger levels, so production areas nearer to the ventilation loop may be mined earlier depending on haul truck utilizations and grade blending requirements. The associated scheduling detail will need to be investigated in future mine planning exercises.

Initially two, but up to three, CMs may be active on a single mining level through the mine life, and since a single CM will work a single area, up to three mining areas may be active simultaneously. The sequencing of areas within a level depends on the access, blending to maintain the production grade above 95% NaCl, and balancing of haulage distances such that the truck fleet does not become a production constraint.

A summary of the average haulage distance by mine level is presented in Table 16-2.

Table 16-2: Average Production Haulage Distance by Mine Level

Mine Level	320	355	390	425	460	495	530
Avg. Haul Distance (m)	340	640	820	810	1,000	1,460	1,060

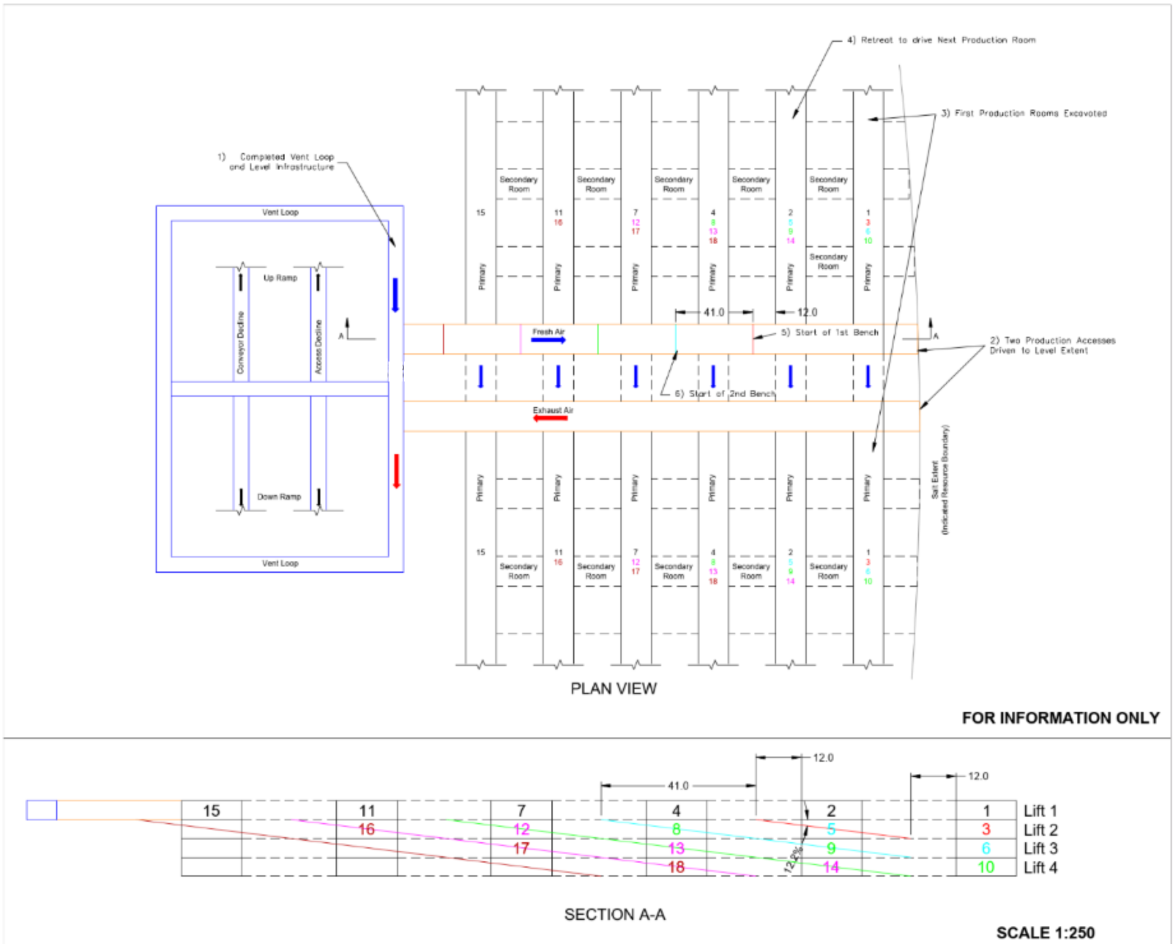
Where the Mineral Resource shapes are thick enough a mining level is designed to be 20 m high, consisting of four, five metre high lifts. This is true through the majority of the GAS deposit, except where interburden cuts through the salt horizons or the top of 2-Salt or bottom of 3-Salt are encountered. The production cycle consists of advancing the five metre high top lift to the Mineral Reserve extent and then benching down in three, five metre high benches, to achieve the full 20 m level height.

A schematic showing a standard room and pillar mining sequence is presented in Figure 16-4. Room and pillar designs are referred to as either primary or secondary headings. Primary headings (shown in solid black) are typically driven continuously from a mine access (shown in orange) to the Mineral Reserve extent. The secondaries (shown in dashed black) are designed perpendicular to the primaries, and are excavated after the primary heading has been advanced past the intersection by at least five metres. One or two primaries would be advanced at a time by a single CM depending on the number of available secondaries to mine, and the number of areas being mined that require ground support.

Once at least two primaries are mined, benching down to a lower lift can begin. This will typically consist of benching the mine access drives at -12% over a plan distance of 41 m providing access to one bench below. Mining of top primaries will progress and as more are mined out; the benches can be driven further down. Eventually each bench will provide access to three new primaries: one on each of the lower lifts.

Following this sequence provides a mixture of top lift and bench lift mining which averages the ground support installation requirements over the mine plan as compared to fully mining out a top lift (the only lift requiring support) prior to benching.

Figure 16-4: Production Cycle Schematic



Notes:

General Sequence:

1). Declines and level infrastructure completed prior to driving into production areas
2). Two production accesses driven to level extent (Indicated Resource boundary)
3). First primary rooms driven perpendicular to production access on Lift 1
** Secondary Rooms Driven as Primary Advances*
4). Next primary room (retreat by one) driven perpendicular to production access on Lift 1
** Secondary Rooms Driven as Primary Advance*
5). Bench Production Access down by 5.0 m at grade of -12% to gain access to first primary room on Lift 2
** Bench starts approximately 12.0 m back from last mined out primary room on Lift 1*
6). Repeat sequence of mining a primary room on the top lift followed by a new bench starting 41 m back from previous bench. New gives access to a primary room on each of the lower three lifts.

*** Excavations and benches are coloured coded according to the legend below with a representative Primary Room excavation sequence in the corresponding coloured numbers*

Legend:

(blue box)	*Level Infrastructure (Declines and Vent Loop)*
(orange box)	*Production Access*
XX	*Production Rooms (Primary)*
(dashed box)	*Production Rooms (Secondary)*
XX (red)	*1st Bench (First to access Lift 2)*
XX (cyan)	*2nd Bench (First to access Lift 3)*
XX (green)	*3rd Bench (First to access Lift 4)*
XX (magenta)	*4rd Bench (First full retreat)*
XX (red)	*5th Bench (Second full retreat)*

SLR

Atlas Salt Inc.

Great Atlantic Salt Project
Newfoundland and Labrador, Canada
Production Sequence Schematic

Source: SLR, 2023.

16.2.6 Mining Cycle

Mining will be completed entirely using CMs. Several production scenarios were developed to assess the range of achievable production rates depending on the location of cutting, number of faces available to a CM, and support requirements. The scenarios considered were:

- Development productivity for development of the decline and other narrow headings.
- Production access productivity for the development of a single full width heading on a production level.
- Multiple face productivity reflecting regular room and pillar mining.

The productivity of the CM in these scenarios has been calculated using the following assumptions:

- 12 hours shift duration, 10 hours worked per shift, 50 minute hour and 75% CM availability.
- Truck haulage of the salt to feed a lump breaker at the main conveyor.
- 6.7 m wide by five metre high initial cut followed by narrower, full height slashes to reach design width.
- Upper most lift is mined first.
- Upper most cut is rock bolted for support.
- CM advances 15 m before support is installed.
- CM loads 50 t capacity truck (39 t load).
- Productivity estimates based on two trucks per CM and 600 m, average one way haul.

CM productivity is summarized in Table 16-3.

Table 16-3: CM Productivity Estimate

Four Truck Fleet (two trucks per CM)					
Level	Development	Production Access	Multiple Face	Average	Annual Production/CM
	(t/h/CM)	(t/h/CM)	(t/h/CM)	(t/h/CM)	(t/yr/CM)
Lift #1	156	159	212	202	1,470,000
Proportion of Lift	5%	10%	85%		
Lifts #2, 3 & 4	156	159	212	209	1,520,000
Proportion of Lift	0%	5%	95%		
Lifts #1, 2, 3 & 4				207	1,510,000

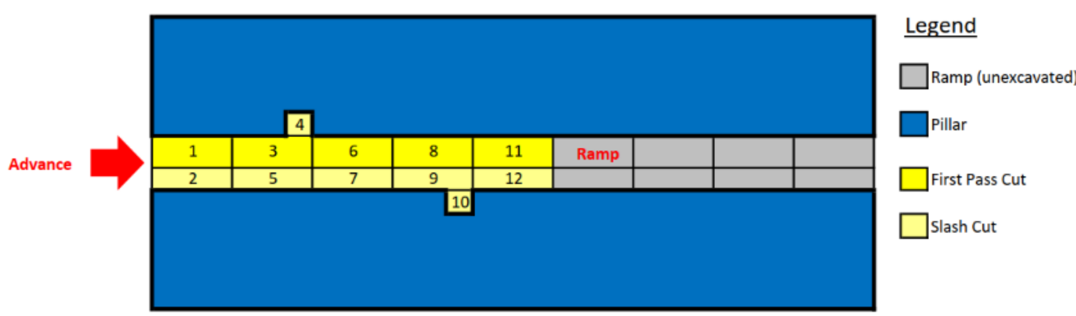
Annual production per CM is based on 365 operating days per year. Two CMs and four trucks have been deemed sufficient for initial production. A third CM and an additional truck will be required for development to the second mining level and to maintain the full planned production rate.

In the 2023 Preliminary Economic Assessment (PEA) the designs were based on a CM with a four metre wide cutting drum, as this width fit well with the planned 16 m room size. Over the course of the 2023 FS the options for units with wide drums became available including drum widths up to 7.2 m. The QP considered the wider drums and estimated the productivity with the wider cuts. The QP did not change the planned room and pillar dimensions to match the room dimensions to an exact number of cuts but instead used partial cuts, after the first pass, to attain the design room size. The wider initial cut provides more space for the use of the planned large haul trucks.

16.2.6.1 Development Productivity

Development mining is based upon a single five metre high heading driven in two passes to the required room width. This cycle is applicable for heading widths up to 13 m and includes ground support in-cycle after each advance. Small cut-outs have been included in the development cycle to account for safety bays, small laydowns, and other utility cut-outs. A sequence of headings is presented in Figure 16-5.

Figure 16-5: Development Mining Cycle

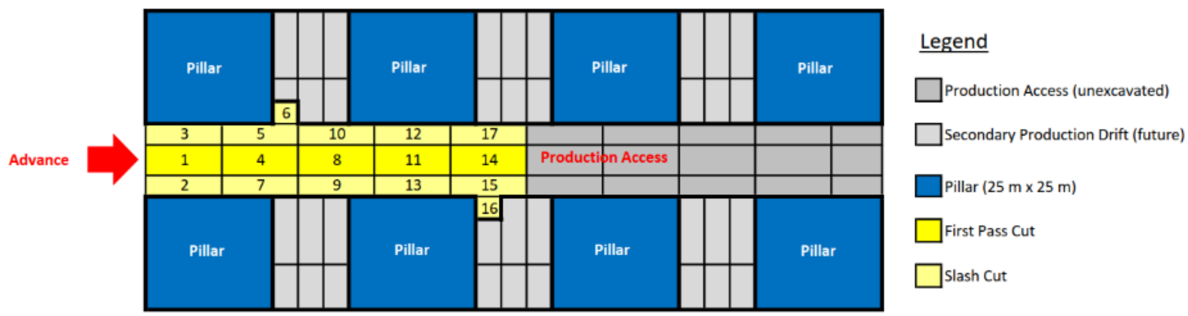


Source: SLR, 2023

16.2.6.2 Production Access Productivity

Production access mining is used for opening up new mining areas when only one face is available to advance. This occurs at the commencement of a mining level or when production begins in a new area on a level. The sequence is based upon a single five metre high heading driven in three passes to make a 16 m wide room. A sequence of headings presented in Figure 16-6 is based upon the first level criteria of 15 m advance before installation of ground support. Productivity increases as the number of available faces increases. Like the development cycle small cut-outs have been included within the cycle to account for required utility bays. These cut-outs would be developed where cross-cutting secondary production drifts would be driven in the future.

Figure 16-6: Production Access Mining Cycle

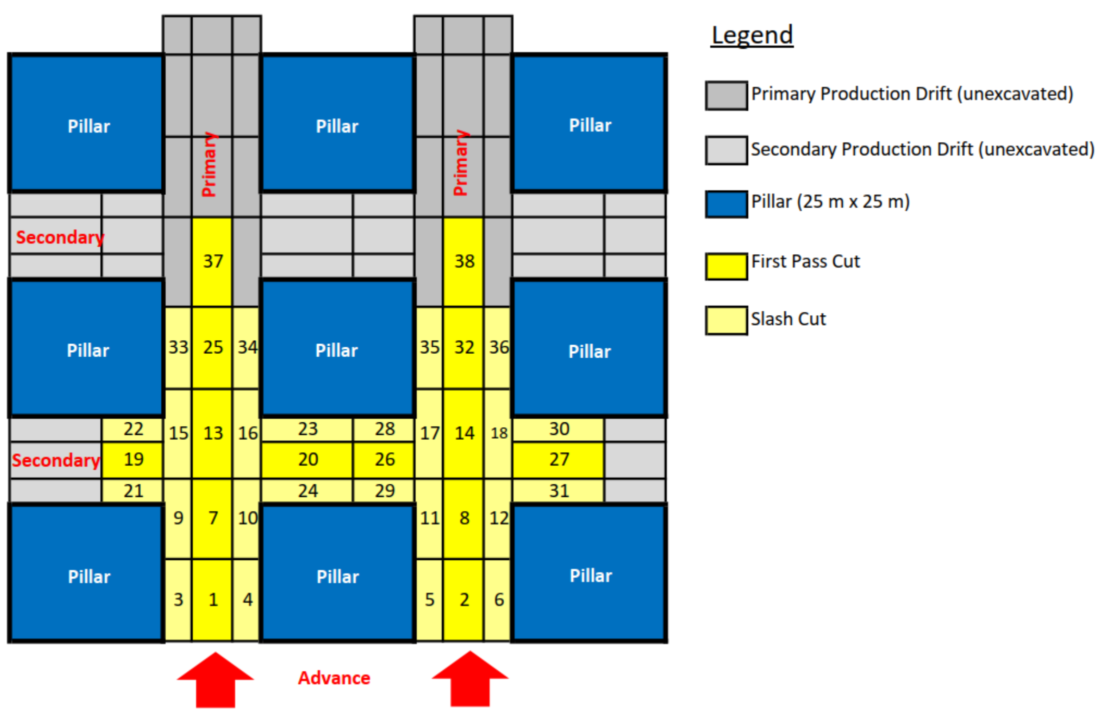


Source: SLR, 2023

16.2.6.3 Multiple Face Productivity

After the targeted production area is accessed, there are multiple faces for a CM to work in and the productivity increases accordingly. A sequence of headings is presented in Figure 16-7 based upon the first level criteria of 15 m advance before installation of ground support. The centre portion of rooms is mined out first, followed by slashing each wall out to the final 16 m width. On the top lift the CM will tram to a nearby heading when a face is not available in its current heading due to ground support installation. On the lower lifts the 15 m length restriction is not applicable.

Figure 16-7: Multiple Face Mining Cycle



Source: SLR, 2023

The QP recommends that as planning is advanced the room and pillar dimensions be reconsidered and optimized in light of the mining equipment options available. The optimization and review should include:

- Efforts to maximize mining productivity through review of the mining and level development sequencing.
- Optimization of the square pattern dimensions considering the chosen mining equipment.
- Review of the mining level selection.
- Consideration of rectangular pillars.
- Geotechnical review of the need to overlay pillars from level to level.
- Consideration of alternative production patterns such as a herring bone pattern.
- Assessment of truck dispatch systems to maximize production.
- Assessment of automated control of CM alignment to maximize production.

16.2.7 Dilution

All production excavations will be in salt and therefore zero dilution has been assigned to production designs. Minor mudstone inclusions will be included as part of the production and material will be blended as necessary to meet the product specification. Interbed material will not be sent to the processing plant and will generally be separated from salt production by pillars left between the salt and interburden material. Minimal overbreak is expected with CMs for all salt production.

The QP recommends the development of procedures for:

- The identification of the salt grades to permit production planning and grade control to meet product specifications.
- The ongoing definition of the location and character of the interburden layers and larger mudstone inclusions.
- The assessment of the material being mined (salt quality and dilution materials).
- Identification and disposal of dilution materials that are not plant feed.

16.2.8 Extraction

An extraction rate of 100% was applied for production salt excavations owing to the high flexibility and selectivity that CMs offer to the operation.

The room and pillar pattern represents an extraction rate of 63% on a level, the 15 m sill pillars and 20 m mining level represent 57% extraction in the vertical dimension. This yields a nominal extraction rate of 36% before consideration of pillars above and below interburden layers and barrier pillars around permanent infrastructure and surface drill holes. After consideration for these additional pillars the overall extraction rate of the whole mineable area is less than 30%. Losses from the face (mainly fines) to the final product are estimated to be 5%.

The QP recommends further analysis and review of the following design parameters:

- Planned room and pillar dimensions.
- Planned sill pillar thickness.

- Barrier pillar dimensions and requirements.

16.3 Geomechanics and Hydrology

The geomechanics of the red bed and halite units differ greatly, and each were characterized and analyzed independently. A summary of the data collection, analysis, and geotechnical design undertaken in the 2023 FS for each unit follows in the subsequent subsections.

16.3.1 Red Bed Geomechanics

This section focuses on the units overlying the GAS deposit and is a summary of the work undertaken for the FS geotechnical analysis and inputs into the decline design.

16.3.1.1 Geotechnical Data Collection

Geotechnical information used to characterize the rock and rock mass through which the decline will be constructed was obtained from the various drill hole campaigns that have been completed over the GAS deposit. Most of the drilling completed to date has been Mineral Resource drilling, used primarily for orebody definition with drill holes spaced widely across the GAS deposit area. Early drill holes were logged geologically but no geotechnical data was collected. Geotechnical data has been collected in more recent drill campaigns, both from additional Mineral Resource drill holes and geotechnical holes drilled in the surface decline and box cut area. A summary of the available geotechnical data collected relevant to the surface decline and box cut is presented in Table 16-4. For reference the last column presents the approximate distance from the drill hole to the nearest point on the decline alignment.

Table 16-4: Summary of Available Drill Hole Data

Drill Hole	Depth (m)	Year Drilled	Intact Strength Testing	Televiewer	Packer Testing	Distance to Decline/ Box Cut (m)
CC-6	362	2022	Yes	Yes	Yes	475
CC-7	374	2022	Yes	Yes	Yes	00
CC-9b	580	2023	-	-	-	50
D-1	160	2023	Yes	-	Yes	50
TH-1	12	2023	-	-	-	20
TH-2	12	2023	-	-	-	105
TH-4	29	2023	-	-	-	65

Core log data from drill holes CC-7, CC-9b, and D-1 were used for analysis of the surface declines. These three drill holes are the nearest to the planned decline alignment and had core logged consistently and continuously by onsite geologists and geotechnical staff. Each of the three drill holes demonstrated globally similar results for overburden characterization, consisting of a repeating mudstone, sandstone, and conglomerate sequence of various distributions and layer thicknesses. This sedimentary complex has considerable variability by drill hole and is referred to colloquially as a red bed complex or overburden in reference to lying above the salt deposit. The proportion of the three lithologies varies widely by drill hole with a breakdown presented in Table 16-5.

Table 16-5: Lithological Breakdown by Drill Hole

Lithology	CC-7	CC-9b	D-1	All Drill Holes
Mudstone	64%	49%	20%	50%
Sandstone	31%	37%	29%	33%
Conglomerate	5%	14%	51%	17%

Drill holes were geotechnically logged using both the 1976 Rock Mass Rating (RMR_{76}) and Q-systems. While there are some instances where consistent lithological layers up to 50 m in thickness exist, typically lithology changes quickly with most layers between one metre and five metres thick. Mudstones dominate the core in both CC-9b and CC-7, while a sequence of thin layers of sandstone and conglomerate are more prevalent in D-1.

Intact rock strength (IRS) tests were completed on drill core obtained from drill holes CC-6, CC-7, and D-1. Table 16-6 presents a summary of the strength tests performed by lithology.

Table 16-6: Summary of Red Bed Strength Tests by Lithology

Test Type	Total Tests Performed	Mudstone	Sandstone	Conglomerate
Triaxial	15	5	10	0
UCS	28	12	8	8
Brazilian (Indirect Tensile)	18	7	7	4
Point Load	72	22	27	23
Slake Durability	5	3	2	0
Direct Shear	3	0	3	0
CAI	10	4	4	2

An optical and acoustic televiewer was used to structurally log the CC-6 and CC-7 drill holes. Though an attempt was made to survey the D-1 hole with a televiewer, an obstruction was encountered at approximately 40 m depth and the survey was stopped.

16.3.1.2 Geotechnical Data Analysis

Rock mass quality ratings vary widely by lithology with the mudstone on average of poorer quality than the sandstones and conglomerates. The range of encountered values for both RMR_{76} and Q systems are presented in Table 16-7.

Table 16-7: Rock Mass Classification Range by Lithology

Lithology	RMR_{76}		Q'	
	Range	Mean	Range	Median
Mudstone	8 – 54	27	0.07 – 14	0.22
Sandstone	18 - 61	43	0.30 – 50	3.3
Conglomerate	18 - 53	40	0.11 - 33	3.6

A rock mass classification system was developed such that core log and IRS data could be utilized in empirical and numerical geotechnical design work. Often this classification would relate directly to lithology, however, it is noted that lithology alone is not a good predictor of either the IRS or the rock mass quality. Based on the high variability in strength and rock mass quality across the sandstones and mudstones, and the generally good correlation between the IRS and rock mass quality, the decision was made to develop three rock mass classes representative of weak, moderate, and strong IRS and rock masses. A summary of the key core logging parameters associated with each class is presented in Table 16-8.

Table 16-8: Rock Mass Classes

Rock Class	Intact Strength	Weathering	Typical RMR_{76}	Typical Q'
Weak	R0 – R1	W5	20	0.04 – 0.07
Moderate	R2 – R3	W3 – W4	30 - 40	0.12 – 0.65
Strong	R3 – R4	W2	55 - 65	3.3 – 10

The Geological Strength Index (GSI) value, a key input to certain empirical and numerical design methods, was estimated for each defined rock class. Hoek developed a GSI rating system specifically for use with heterogenous rock masses with descriptions that are representative of the red bed complex. A suitable range of GSI values was estimated for each rock class which correspond closely to the logged RMR_{76} value.

The IRS data and GSI values representative of each rock class were used to develop corresponding failure envelopes. The Brazilian, UCS, and Triaxial test datasets were split into low, medium, and high values and assigned to the corresponding rock class of weak, moderate, and strong. The average values for each test type and rock class were used as representative strength values for the class and entered into Rocscience's RSData software. Hoek-Brown and Mohr-Coulomb failure envelopes were determined for each class using the built-in curve fitting algorithm. Curve fitting was completed with the GSI set to 100, representing fully intact rock. Finally, the GSI was lowered to the midrange value for each of the rock classes to estimate the rock mass parameters.

The weak rock class is of sufficiently low strength that Mohr-Coulomb failure criteria is expected to be more representative of rock mass behaviour than Hoek-Brown. Equivalent cohesion and friction angle values were calculated with RSData for the weak class.

A summary of the rock strength parameters and failure criterion are presented in Table 16-9.

Table 16-9: Intact Rock Strength and Failure Criterion by Rock Class

<table>
<tr><th>Rock Class</th><th>Rock Mass Description</th><th>UCS (MPa)</th><th>E_i (GPa)</th><th>σ_t (MPa)</th><th>Bulk Density (t/m^3)</th><th>Poisson's Ratio</th><th>m_i</th><th>GSI</th><th>coh (kPa)</th><th>Φ (°)</th><th>E_{rm} (Gpa)</th></tr>
<tr><td>Weak</td><td>Highly weathered mudstone, typ. R0 to R1. W4. Muddy/friable. Easily broken. Clay infilling.</td><td>5.3</td><td>1.30</td><td>0.31</td><td rowspan="3">2.37</td><td>0.25</td><td></td><td>15 – 20</td><td>0.4</td><td>31</td><td>0.054</td></tr>
<tr><td>Moderate</td><td>Moderately weathered sandstone/mudstone/cong. Mix. R2 to R3. Clay infilling.</td><td>18.0</td><td>3.76</td><td>1.5</td><td>0.25</td><td>16</td><td>25 – 40</td><td rowspan="2"></td><td rowspan="2"></td><td>0.373</td></tr>
<tr><td>Strong</td><td>Sandstone, low weathering. Typ. R4, W2</td><td>52.8</td><td>12.35</td><td>1.9</td><td>0.25</td><td>17</td><td>55 – 65</td><td>6.40</td></tr>
</table>

Structural data was plotted and analyzed in Rocscience's Dips software. It is noted that due to the vertical nature of the drill holes, there is a bias to intersecting flatter dipping joints/bedding which could explain the higher proportion of bedding occurrences as compared to the steeper lying joints. Although not frequently logged, two joint sets were selected for further kinematic analysis to ensure that structurally controlled failures were adequately investigated. A summary of the orientation of the discontinuities identified is shown in Table 16-10.

Table 16-10: Discontinuity Geometry

Discontinuity Type	Dip (°)	Dip Direction (°)
Bedding	38	31
Joint 1	44	162
Joint 2	53	274

16.3.1.3 Geotechnical Design

Ground support requirements were estimated using the Q-System. For this analysis the core data from holes CC-7, CC-9b, and D-1 down to the depth of planned decline intersection were used. The excavation span was set to 7.8 m and an excavation support ratio (ESR) of 1.6 was used. This is the recommended value for permanent mine openings.

The core logging data presents Q' values consisting of parameters for rock quality designation (RQD), joint set number (J_n), joint roughness number (J_r), joint alteration number (J_a). Q-System support estimation requires a Q value which requires two additional parameters, joint water reduction factor (J_w), and stress reduction factor (SRF). For these a range of values were assigned to represent the best and worst case scenarios expected to be encountered.

A summary of the parameters use for Q-System support are presented in Table 16-11.

Table 16-11: Inputs for Q-System Rock Support Analysis

Parameter	Best Case	Worst Case
Q'	0.30 – 4.06 (1^{st} and 3^{rd} quartile values)	
Jw	0.66 (medium inflow)	0.33 (large inflow with joint outwash)
SRF	2 (Single weakness zone/mild squeezing)	10 (mid-range squeezing rock pressure)
Q	0.10 – 1.34	0.01 – 0.13
Span (m)	7.8 (design span)	
ESR	1.6 (permanent mine opening)	

These values are plotted on the Q-System support chart according to Grimstad & Barton (1993). Under 'best case' conditions systematic support recommendations range from between six centimetres and 12 cm of shotcrete with bolt spacing of approximately 1.7 m. Under 'worst case' conditions the support recommendations are increased to between 12 cm and 20 cm of shotcrete and bolt spacings of approximately 1.2 m.

These support guidelines were developed empirically from a host of case studies, primarily in a civil tunneling environment. Civil projects often require more stringent control with respect to overbreak, ground deformation, and ground support damage. Potvin and Hadjigeorgiou (2016) recognized these limitations with respect to the applicability to the mining industry and developed a comparable ground support guideline specifically for mining environments based on collected data from mine sites. Using similar adjustments to the logged Q' values summarized in Table 16-11, Q values were calculated and then plotted on the Ground Support Guidelines for Mine Drives. The ground support recommendations using this method are typically less than those proposed using Grimstad & Barton (1993), with a proposed shotcrete thickness of between and five centimetres and 10 cm. Although this Q-System support estimate is perhaps more applicable to the Project than the Grimstad & Barton (1993) method due to its roots in the mining rather than civil tunneling industry, the results must be used cautiously as the methodology was developed specifically for excavations between four metres and six metres wide, 1.8 m narrower than the proposed decline. Additionally, the method is not recommended for use in squeezing ground environments, which are expected in the lower portions of the decline.

To confirm ground support designs, two-dimensional finite element analysis (FEA) was undertaken using Rocscience's RS2 software. A set of nine models were initially developed that represented the range of rock mass and stress conditions expected along the decline alignment. Each of the three rock masses was modelled under three different stress conditions, shallow (50 m depth), middle (125 m depth), and deep (225 m depth).

The Q-System ground support recommendations were used as a model starting point and adjusted to match the predicted displacements and stress conditions. No in-situ stress measurement data from the Project site exists. A unit weight of 2.4 t/m^3 was used to calculate vertical stress, an average value from geomechanically test sample measurements. A horizontal to vertical stress ratio of 1:1 was used.

Shotcrete was modelled as an elastic standard beam with a Poisson's ratio of 0.2. Two stage stiffness was used to simulate the three-dimensional effects of tunnel face advance during the shotcrete curing process. Early-stage shotcrete was assigned a stiffness of 8 GPa and was used in the face-softening stage of the model. Stiffness was increased to 16 GPa in the final stage representing fully cured shotcrete. Shotcrete was modelled elastically such that liner forces could be calculated and compared to support capacity plots prepared external to the program. For these capacity plots a shotcrete strength of 40 MPa was used.

Two types of rock bolts were used in the various models with strength parameters obtained from DSI Underground's Ground Support Catalogue.

All modelling was completed assuming dry conditions. This simplification was made due to a lack of data at the time of modelling. It is recommended that the effect of groundwater be further investigated.

An overview of the model outputs and applied ground support elements for each model is presented in Table 16-12.

Table 16-12: Numerical Modelling Output Summary

No.	Model		Shotcrete Thickness (mm)	Bolt Type	Crown Displacement (mm)	Plastic Depth (m)
	Rock Mass	Depth				
1	Strong	225 m	50	#7 Rebar	6	0.5
2	Moderate	50 m	50	#7 Rebar	17	0.6
3		125 m	100	#7 Rebar	47	1.0
4		225 m	100	#7 Rebar	90	1.2
5	Weak	50 m	50	#7 Rebar	52	0.0
6		125 m	150	R32S	311	0.9
7		225 m	200	R32S	690	1.8

Structurally controlled failure analyses were completed in Rocscience's Unwedge software using the collected televiewer data and structural analysis. Probabilistic analyses were completed to understand the probability of failure (PoF) when varying the dip, dip direction, and plane strength criterion. With no installed ground support, the highest PoF is 89%, in the middle-back. This PoF for this segment is reduced to 16% when only rock bolts are installed, and to 0% with the application of five centimetres of shotcrete. This support regime is the lowest level of support used in the RS2 modelling. The results demonstrate that kinematically controlled failures are unlikely to be of major long term stability concern for the Project given that the lowest ground support class adequately controls all identified wedges. Ground support designs are governed by stress induced failures associated with the low IRS and high fracture density, and the bolt lengths are of sufficient length to reach beyond the typical wedge depth and achieve sufficient bond in the immobilized rock mass.

Intersections will be created throughout the decline at all cross passages, remucks, sumps, and pump stations. All stub tunnels are designed to be five metres wide by five metres high and intersect the main declines perpendicularly or at a 60° angle. To analyze the required secondary support measures for the intersection spans a simplified half-span failure analysis was used. Using this method assumes that the worst case structurally controlled failure that will occur is equal in height to half the span of the intersection. In this case the span can be defined using a circle with radius of 4.7 m.

16.3.1.4 Ground Support Summary

Four main ground support classes are proposed for use in the declines through the red beds. In addition, two ancillary support classes are proposed for use in the cross passages and stub headings, one for use in the declines through salt, and one for use near the portal. A total of eight ground support classes have been developed and are summarized in Table 16-13.

Table 16-13: Summary of Ground Support Classes

Support Class	Use	Shotcrete Thickness (mm)	Bolt Type & Length (m)	Bolt Spacing	Support Notes
D1	Main Declines	50 mm	#7 Rebar, 3.0 m	1.5 m x 1.5 m	Single layer shotcrete
D2		100 mm	#7 Rebar, 3.0 m	1.5 m x 1.5 m	Single layer shotcrete
D3		150 mm	#7 Rebar, 3.0 m	1.25 m x 1.25 m	Shotcrete applied in two equal layers
D4		200 mm	R32S, 6.0 m	1.25 m x 1.25 m	Shotcrete applied in two equal layers
A1	Ancillary Stubs (shallow)	75 mm	#7 Rebar, 2.4 m	1.5 m x 1.5 m	Shotcrete applied in two equal layers
A2	Ancillary Stubs (deep)	150 mm	#7 Rebar, 2.4 m	1.25 m x 1.25 m	Shotcrete applied in two equal layers
P1	First 20 m of Main Declines	150 mm	#7 Rebar, 3.0 m	1.25 m x 1.25 m	Shotcrete applied in two layers. P70-20-36 Lattice girder installed at 2.0 m spacings
S1	All Salt Excavations	-	#7 Rebar, 3.0 m	1.5 m x 1.5 m (roof only)	-

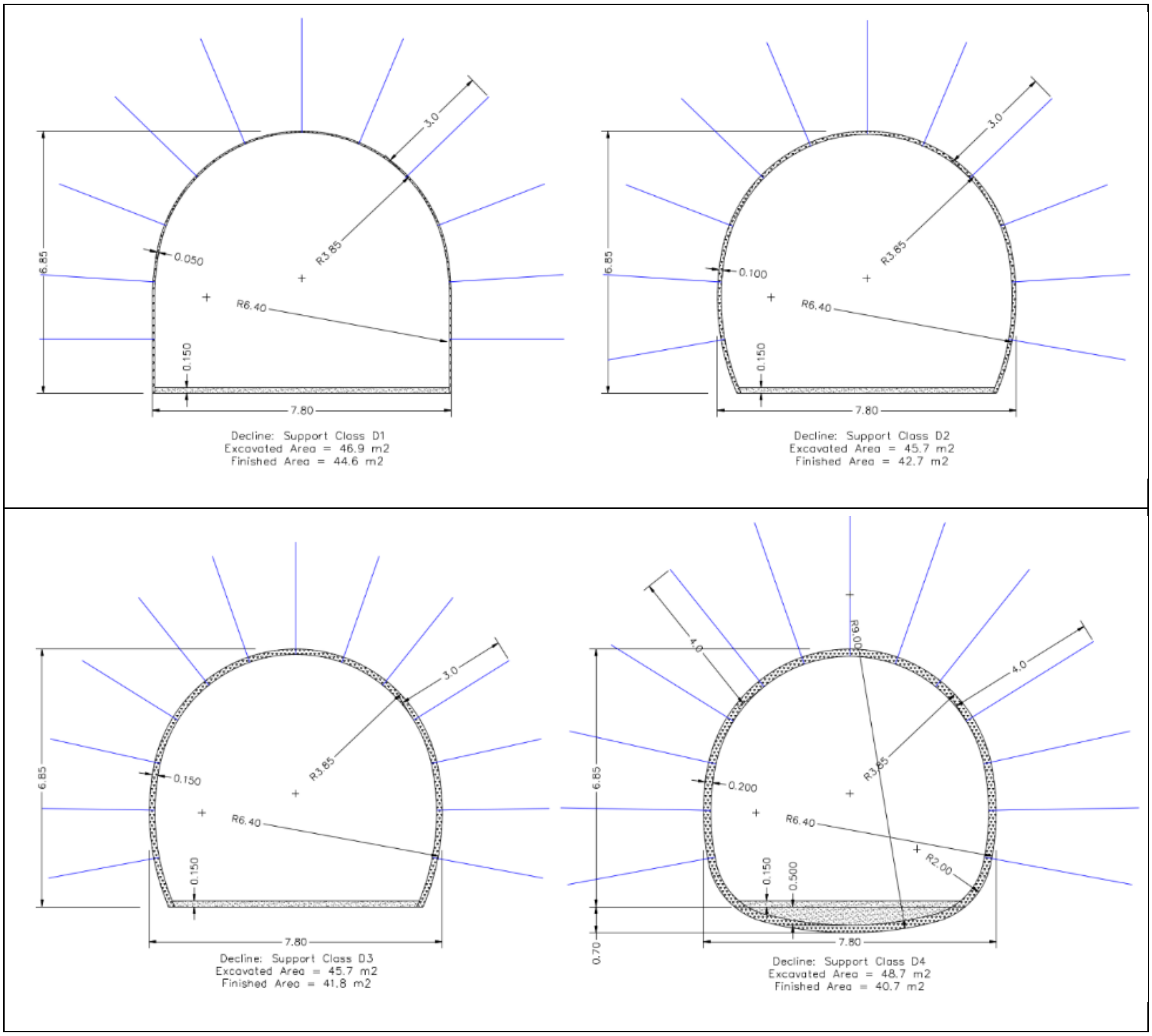
The two declines will enter 1-Salt at a chainage distance of approximately 1,280 m. A summary of the geotechnical analysis and design for excavations within salt is included in Section 16.3.2 of this Technical Report. Typical development excavations within salt will be five metres high by eight metres wide and will be supported by 2.4 m long fully grouted bolts on a 2.5 m by 2.5 m spacing.

In the case of the surface declines the bolting regime within salt has been increased due to the excavation's importance to the operation and long design life. The bolt lengths have been increased from 2.4 m to three metres and spacing reduced to 1.5 m by 1.5 m. Although a higher ground support standard than used in salt for the rest of the mine this offers considerable savings compared to all ground support used in the red beds. Thus, the goal is to transition to this ground support regime within the declines as soon as possible.

For intersection support six metre R32S bolts, those specified for use in the highest standard support class have been selected. With these bolts installed on a 1.5 m by 1.5 m pattern around the centre of the intersection the entire cone is supported with a factor of safety (FoS) of 1.3. This analysis fully discounts the additional support provided by the three metre bolts and shotcrete, so is considered very conservative.

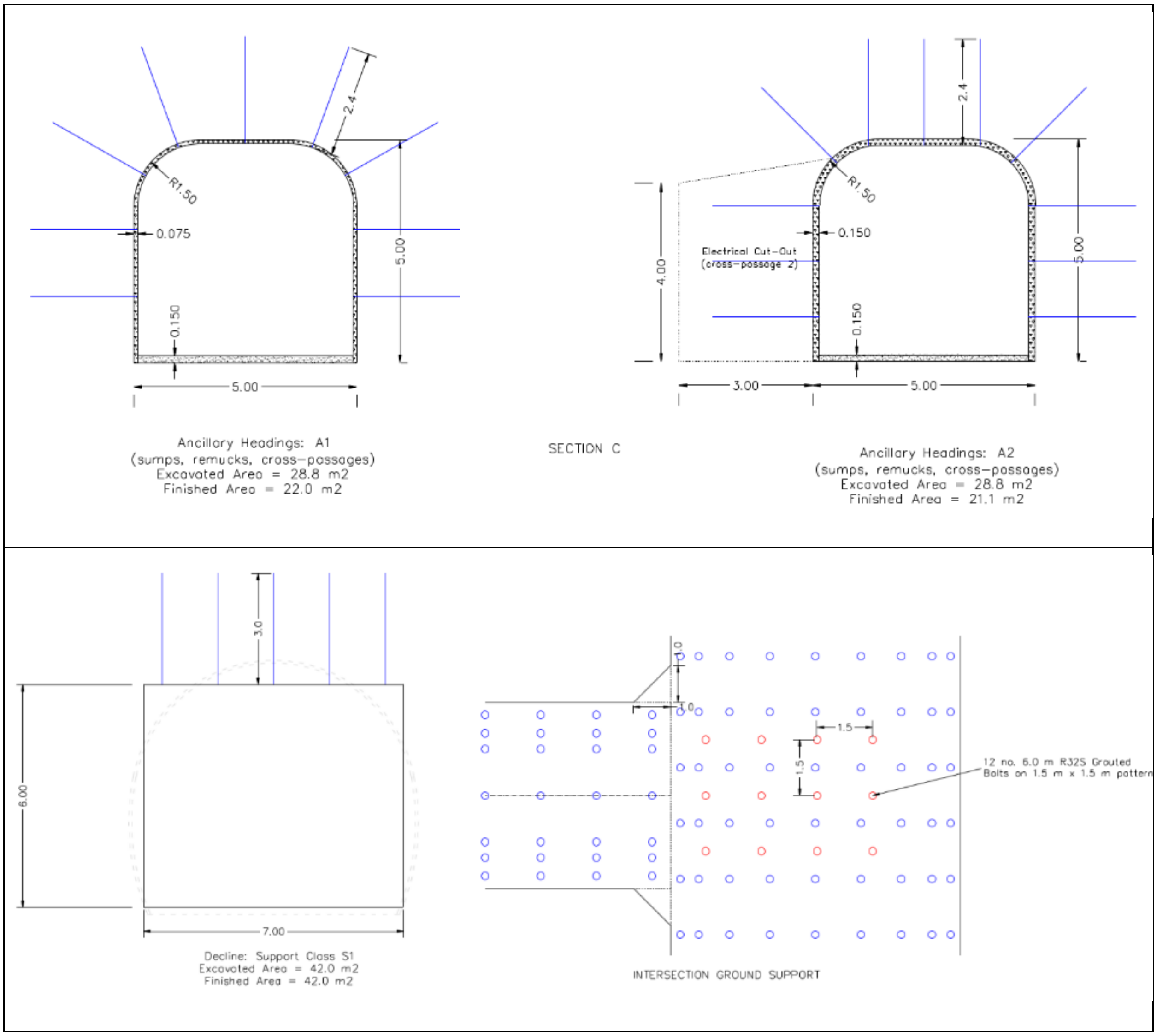
The ground support classes in the main decline and ancillary headings are presented in Figure 16-8 and Figure 16-9, respectively.

Figure 16-8: Ground Support Classes in Main Declines



Source: SLR, 2023.

Figure 16-9: Ground Support Classes in Ancillary Headings



Source: SLR, 2023.

16.3.2 Salt Geomechanics

16.3.2.1 Approach and Basis for Geotechnical Model

This section is a summary of the work undertaken for the geotechnical analysis and inputs into the mine design.

Analogous mines, such as Boulby Mine (United Kingdom), Mines Seleine (Canada), Pugwash Mine (Canada), Cote Blanche Mine (USA), Fairport Mine (USA), Goderich Mine (Canada), and Kilroot Mine (Ireland), were used as initial guidance and for comparative information. They are all salt/potash mines, use similar room and pillar approaches, and are of comparable depths.

Empirical, analytical, and numerical modelling has been completed to derive geotechnical inputs to the mine design.

The geotechnical model follows the geological stratigraphy presented in Figure 16-10, while the geotechnical model domain summary is presented in Table 16-14.

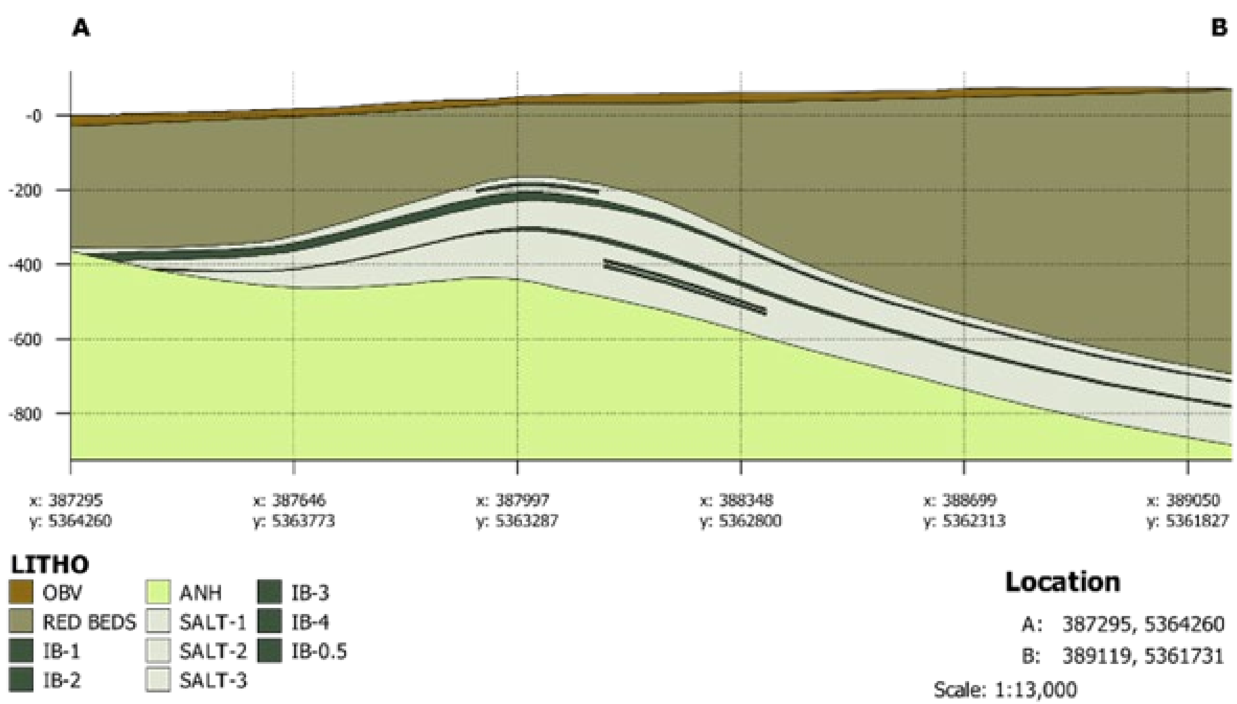
The design basis criteria used is as follows:

- As salt typically behaves in a ductile manner, the pillars between rooms have been designed to be "rigid", i.e., not yielding pillars. As such the FoS used in the numerical analyses was above 1.0, with values preferred above 1.10, to account for variation in material strengths. It is noted that a FoS below 1.0 would indicate that yielding, rather than brittle failure could occur.
  - Empirical analyses use a higher FoS threshold, depending on the specific method employed.
  - Ground support also uses a differing threshold, covered in more detail in Section 16.3.2.7.
  - Whilst the pillars are designed to be rigid, an assessment of creep/closure was made.
- The geotechnical mine design is based on the 380 Level, which encompasses 10 years of mine life. While mining is planned to occur in deeper horizons, where higher stresses are present (primary controlling factor for stability), the mine staff will have gathered further data and knowledge of the ground performance to update the room and pillar design accordingly.
- The geometries are to be maintained for each mining level to coincide pillars.
- While subsidence is expected to occur due to creep/closure, it should be minimised due to the rigid design. It is not currently considered as a material constraint to the mine design, i.e., subsidence will not cause adverse surface or aquifer impacts.
- While it is has been calculated, closure is not considered a limiting factor.
- While the drilling density limits the chance of intersecting faults, they were not identified in the geological modelling, and as such are not expected and were not considered in the geotechnical analyses. Any faults would be expected to be healed, though nothing of that nature has been identified in the core.
- While mining will be horizontal, the geological inclination is important as inclined partings could affect pillar and roof stability. This has been assessed in the pillar and ground support analyses.
- Three passes by a CM will excavate a 16 m wide room. Rooms will be executed in four, five metre high cuts up to a maximum mining height of 20 m for a single level.
- The requirement for roof support is not considered to be a limiting factor for room width, as this is driven by equipment operating widths.
- While potash seams are described in historical geological reports, recent drilling and logging indicates that there is no significant presence of adverse geotechnical minerals in the mining target horizons, e.g., Carnallite.
- No mining is planned in 1-Salt, though the mine decline will access this horizon, and the processing plant (the Plant Area) will be placed in 1-Salt. The Plant Area is planned to be 20 m wide and 20 m high, and approximately 187 m long.

Table 16-14: Geotechnical Model Domain Summary

Code	Lithologies	Comment
OVB	Overburden	As this is only a few metres thick (10 m to 30 m) and 250 m to 300 m from the mining horizons, it was not considered in these analyses.
RED BEDS	Red Beds (interbedded siltstones and mudstones)	190 m to 330 m (vertically) thick interbedded sandstones, mudstones, and conglomerates. While this is a significant thickness of material, no mining will occur and it is separated from the mining levels in 2-Salt, by 1-Salt.
1-SALT	1 Salt (including Interburden 0.5)	40 m to 50m (vertically) thick. No salt production will occur in 1-Salt; however, the Plant Area will be placed in this horizon. Interburden 0.5 (IB-0.5) is modelled as a limited-extent lateral mudstone horizon.
IB-1	Interburden 1 (mudstone)	12 m to 25 m (vertically) thick mudstone, separating 1-Salt and 2-Salt. Five metre high by six metre wide development will be driven through the interburden to access 2-Salt from 1-Salt.
2-SALT	2 Salt	60 m to 100 m (vertically) thick. Salt production will occur in 2-Salt.
IB-2	Interburden 2 (mudstone)	Three metres to 10 m (vertically) thick mudstone, separating 1-Salt and 2-Salt. Five metre high by six metre wide development will be driven through the interburden to access 3-Salt from 2-Salt.
3-SALT	3 Salt	85 m to 175m (vertically) thick. Salt production will occur in 3-Salt. Interburden 3 and 4 (IB-3 and IB-4) are modelled as limited-extent lateral mudstone horizons.
ANH	Anhydrite	3-Salt is underlain by a least 100 m thick anhydrite layer.

Figure 16-10: Cross Section through the Lithology Model



Source: SLR, 2023

16.3.2.2 Geotechnical Data Collection

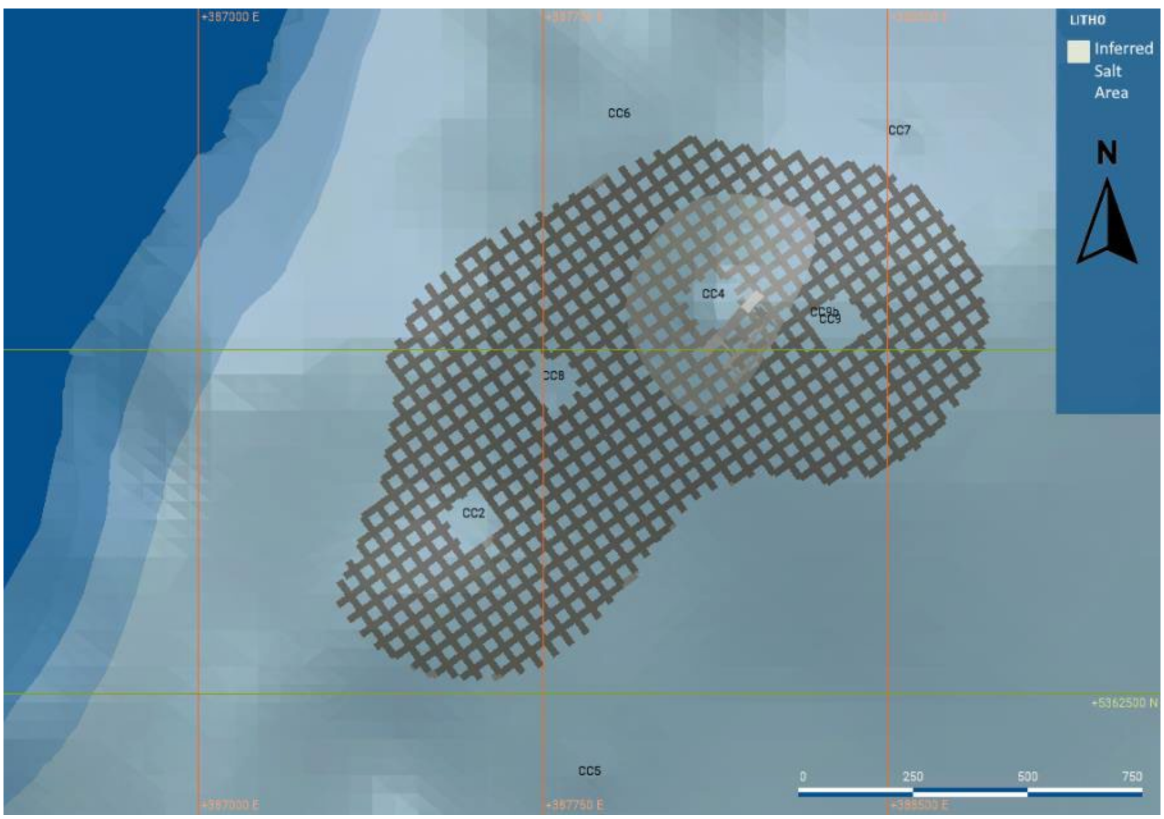
Material properties have been compiled following a site investigation campaign targeting salt domains, and interburden. Five drill holes (though only two intersected salt) were used to retrieve core for geotechnical logging and collect samples for laboratory testing.

Figure 16-11 presents the plan view of the mining area alongside drill hole locations. CC-8 and CC-9b are the sources of the salt geotechnical input data.

The geotechnical core logging, including sample collection was undertaken by Terrane Geoscience with initial guidance from the QP in the form of a logging manual. The QP provided occasional minor input into geotechnical data capture requirements from planned Mineral Resource drill holes and performed QA/QC on the final logging database. Material testing was completed by Geomechanica Inc, under instruction from the QP.

The salt geotechnical data was collected from CC-8 and CC-9b, while red bed data was collected from CC-6, CC-7, CC-8, CC-9a, and CC-9b. The remaining drill holes, CC-1 to CC-5, were not logged or sampled for geotechnical data (as these were drilled for the Scoping Study). Visual review of the available photos indicated no significant difference in the salt or interburden between these drill holes and those geotechnically logged. Material testing samples were selected through salt horizons 2-Salt and 3-Salt and are considered to be representative of salt to be mined on all mining levels.

Figure 16-11: Plan View of GAS Project Showing Drill Hole Locations



Source: SLR, 2023

Note. Room and pillars denote Indicated area (brown). CC-8 and CC-9b are the sources of the salt geotechnical input data.

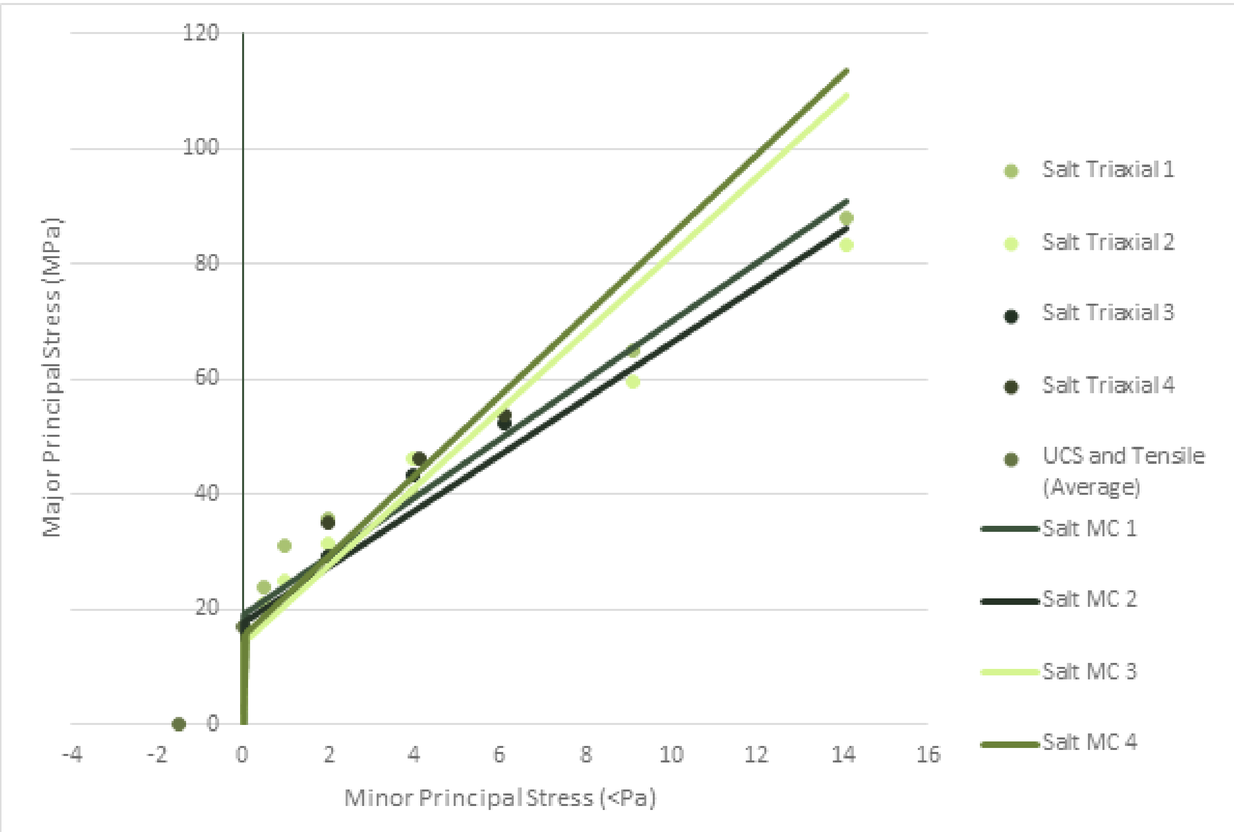
16.3.2.3 Geotechnical Data Analyses

SLR has conducted geotechnical analyses in support of mining the GAS deposit using available site characterisation data, producing a geotechnical model considering the following elements: geology, rock mass, structure, hydrogeology, and geotechnical domaining. The geotechnical model is the basis of geotechnical analysis and mine design.

The material analyses culminated in the development of strength envelopes for salt and interburden. A sample principal stress plot for the Project is provided in Figure 16-12.

Dunn (2015) presents a subjective scheme for rating the reliability of the component of a geotechnical model. Table 16-15 provides a summary of the geotechnical model reliability for the Project's mining domains. It is noted that this does not pertain to the requirements for Mineral Resources and mining, only geotechnics.

Figure 16-12: Principal Stress Plot for the GAS Project



Source: SLR, 2023

Table 16-15: FS Geotechnical Model Reliability

Component & Description	Reliability and Comment	FS Target
Geological Lithology, alteration, weathering, mineralised zones and the in-situ stress state.	65% – The geologic model provided is suitable for basic delineation of geotechnical regions. The 3D location and geometry of geotechnically-problematic domains is uncertain. Only regional stress data is available	65%–85%
Rock Mass IRS, defect shear strength, rock mass strength and rock mass classification.	60% – The laboratory testing program has provided a reasonable understanding of the IRS. Salt strengths were only sources from two drill holes; there is a risk that there is variation across the mining regions.	60%–75%
Structure Major structures (large faults, bedding, folds) and rock fabric (e.g., joints and minor faults).	50% – No large-scale faults are expected across the deposit, though small scale (mining-horizon) faults could be present; there is not enough spatial data to warrant a structural model of that scale currently.	45%–70%
Hydrogeology Hydrogeological units, hydraulic conductivities, flow regimes, phreatic surfaces and pore pressure distribution.	40% – There is no water in the salt. There is water expected in the red beds, however, information on aquifers is currently limited.	40%–65%
Geotechnical Domaining Domains that exhibit similar rock mass and structural characteristics.	60% – Salt is set as a single geotechnical domain for this study, though there is some evidence to suggest that the salt strength varies slightly between them. Interburden horizons are distinctly weaker than the salt and are avoided wherever possible in the mine design.	50%–75%

Source: modified from Dunn, 2015 and Read and Stacey, 2009.

16.3.2.4 Geotechnical Mine Design

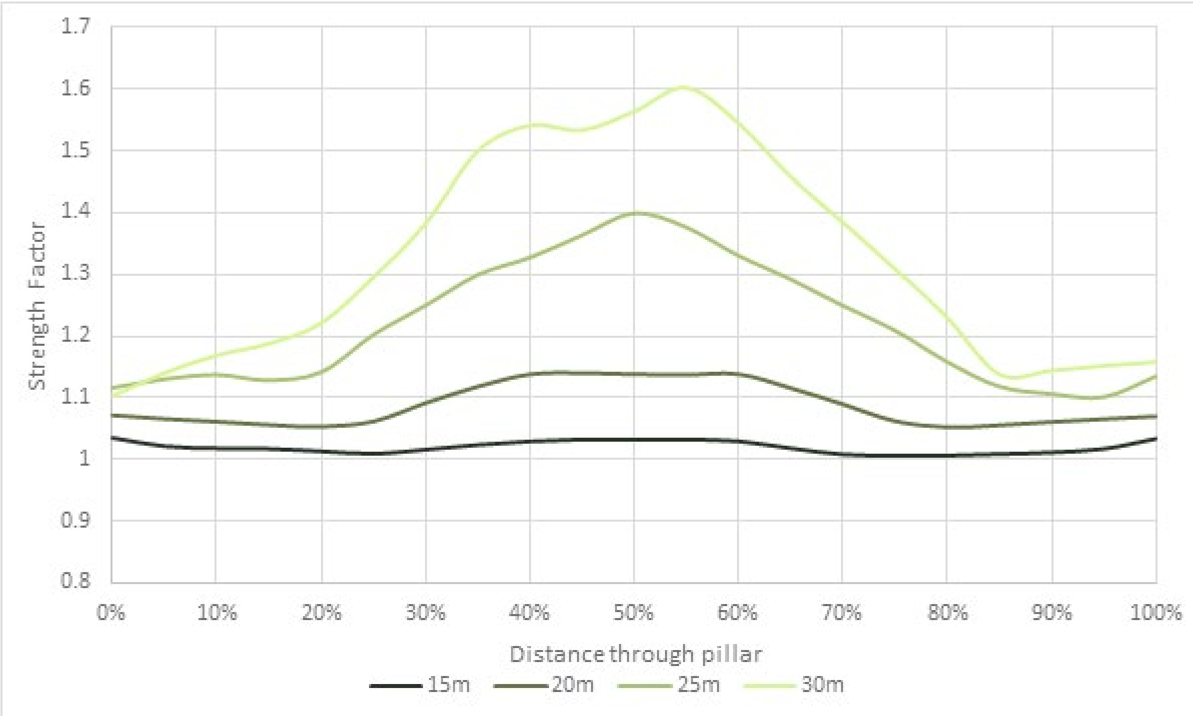
The following mine design conclusions are drawn from the analysis work in the 2023 FS.

The selected pillar width/height ratio was initially based upon benchmarking with similar mines. The ratio is lower than that of some the other analogous mines. An assessment of the empirical pillar stress/strength calculation methods (Uhlenbecker (1971) and Dreyer (1967)) indicate that the pillars are sized appropriately for the upper four working levels. While these approaches suggest that the pillars below this level may yield, it is noted that these empirical approaches are considered to provide conservative pillar FoS estimates.

The numerical models were established using a schematic cross section room and pillar layout so that the geometry variations could be standardized. A sample numerical analyses output (pillar width analyses) is provided in Figure 16-13. The numerical analyses using the input data collected indicate that the pillars at the first 10 years of operations, and even at the lowest mining depths, satisfy the FoS thresholds. Notwithstanding this, the 420 Level and deeper are due to be mined later in the mine life, allowing for engineering improvements to the design as the ground characteristics and stresses are better understood.

A summary of the geotechnical mine design parameters is provided in Table 16-16.

Figure 16-13: Strength Factor Chart for Each Pillar Width Analyzed (Fourth Mining Level from FEA Models)



Source: SLR, 2023

Table 16-16: Summary of Geotechnical Mine Design Parameters

Mining Element	Metres (m)
Room width:	16
Room height:	20
Pillar width:	25
Sill pillar vertical thickness:	15
Roof pillar between Salt and Interburden:	8
Floor pillar between Salt and Interburden:	5
Barrier pillars (drill hole):	50

16.3.2.5 Creep, Closure, and Subsidence

Though closure through salt creep will occur, as working locations are transient and short term, it is considered that only the main roadways and access drives will require rehabilitation associated with closure. The pillars are designed to be rigid, and thus limited subsidence is anticipated. This should not affect the surface, nor any overlying aquifers.

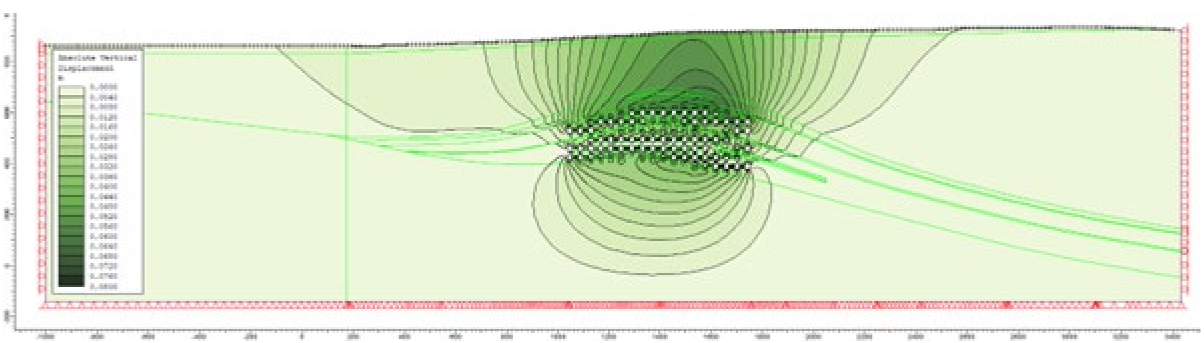
Vertical and horizontal displacement outputs from selected rooms in the centre of the mining area were collated from the cross section FEA model. In the centre of the room a vertical closure of up to 12 mm can be expected. Horizontal closures can be expected to reach 23 mm. As this is the maximum closure, it can be assumed that a closure rate of 6 mm/year would occur. This is commensurate with Level 3 rates experienced at Mines Seleine (approximately 300 m below surface).

The vertical displacements along the surface of the numerical models have been extracted and plotted against the length of the sections (a sample model output is provided in Figure 16-14). The change in elevation per metre ("tilt", mm/m) was also calculated. The results indicate that the maximum vertical displacement can be expected to be from 52 mm to 62 mm above the centre of the mining region. While this represents a relatively low value when compared to the benchmarked Mines Seleine and Pugwash (200 mm to 250 mm), these mines cover a larger areal extent than the proposed GAS mine. Similarly, the tilt prediction is lower than the benchmarked subsidence (less than 0.1 mm/m).

While there are no provincial guidelines for subsidence limits, the Subsidence Engineers' Handbook 1975 edition (SEH'75) has been used to judge the potential impact on surface structures. SHE'75 was developed based on actual cases and field observation for the British coal mining industry. According to SEH'75 general guidance, strain (tilt) of 1 mm/m and below would cause "very slight or negligible" damage for 25 m long structure. It is noted that no structures of that size are present, nor planned, above the mining area.

The red beds, in which there could be aquifers, could experience slightly higher subsidence to that seen at the surface. The tilt is greater, as it's closer to the mining horizons, though still very low at a maximum of 0.2 mm/m. While hydrogeological/mechanical modelling would confirm, this is unlikely to cause rupture or dislocation between the 1-Salt and (any) red bed aquifers (or any associated faults).

Figure 16-14: Model Cross Section through Lithology Model and Mine Design



Source: SLR, 2023

Note: final step (all rooms excavated) – approximately 3.5 km width

16.3.2.6 Mining Geotechnical Risk and Opportunity Evaluation

The primary geotechnical risks associated with the Project are:

- Due to drilling difficulties, there is limited geotechnical data coverage across the GAS deposit. There may be variation in rock mass and structural conditions in areas of the mine outside of those that were available for this study.
- While analyses have suggested that there is little/no material variation between the main salt domains (1, 2 & 3), and they have been combined in this study, any variation in the strength across domains and laterally within the domains themselves could lead to unoptimized room and pillar sizing and ground support recommendations.

- There are no regional ground stress measurements. Atlas should consider options to obtain site specific stress measurements prior to production, such as drill hole break-out measurements.

The primary geotechnical opportunities are:

- Ground control classes (see Section 16.4 of this Technical Report) can be further optimised once additional data on ground conditions and performance is gained through monitoring during production (e.g., lower bolt density, or elimination).
- Varying bolt types can be trialled during production to test effectiveness (and potential cost saving).
- Mining barrier pillars on-retreat when moving from one mining level to the next is a potential option that can be explored further once additional geotechnical data and ground performance information is collected during operations. The degree of pillar extraction has not been explored for this study. Subsequent studies can assess this potential and will result in increased surface subsidence, although this does not appear to be an issue in this environment. The risk of high pillar stresses and uncontrolled pillar yield/failure is possible if too high a proportion of the pillars are removed.
- Updating and obtaining mine-specific ground stress measurement will help predict future room and pillar performance, particularly at depth.
- Routine monitoring of the rooms and pillars will provide further data and understanding of performance.

16.3.2.7 Ground Support and Monitoring

Ground support should be commensurate with ground monitoring to be able to judge the effectiveness of the support implementation and to allow for optimisation when further understanding of ground performance is available. Ground support is described in this section, where monitoring (as part of a Ground Control Management Plan (GCMP)), is described later.

For ground support design, while the conventional rock mass classification approaches (i.e., Q and RMR_{76}) can be used to define interburden support, they cannot be reliably used for salt. These classifications systems have been developed primarily for jointed rock mass conditions. Application of classification-based support design for salt excavations generally result in non-conservative support system estimates. As such, an analytical approach alongside benchmarking has been made for the salt support design.

Salt is typically supported using bolts. Pattern bolting is used at Goderich, Mines Seleine and Boulby. At the latter, monitoring and measurements demonstrated there was very little ground movement that warranted bolting. Systematic pattern bolting is planned at Woodsmith, although very little, if any movement is anticipated.

While being mindful of the previous statements, it is considered prudent to plan and cost for systematic bolting at GAS. Though the most effective type of bolt to provide support is debated, with many mines having trialled many variations, the two primary methods are end-anchored or fully grouted bolts. Each bolt provides advantages to mitigate specific salt support issues.

As rooms are designed to be up to 20 m high, it is prudent to install systematic roof support on the first cut, as installing support after the second to fourth cut would be problematic and affect production.

Eight metre wide tunnels and declines are planned to be cut in the salt. While a reduction in width reduces the risk of unstable block formation, the increased exposure means that these excavations should be supported in the same manner as the mining rooms.

The following conclusions are offered for the support design:

- Closure will not have a significant impact on the choice of bolt-type where corrosion is likely to be the limiting factor.
- Three differing bolting approaches for the salt horizons have been provided. Either of the following approaches can be adopted:
    - Fully Grouted
        - Bolt length 2.4 m
        - 90% at 0.34 MN/m bond strength
        - Spacing 2.5 m x 2.5 m (in/out of plane) (0.16 bolt/m²)
    - End-Anchored (Option 1)
        - Bolt length 3.0 m
        - Plate and end-anchor capacity 0.15 MN
        - Spacing 2.5 m x 2.0 m (in/out of plane) (0.2 bolt/m²)
    - End-Anchored (Option 2)
        - Bolt length 2.4 m
        - Plate and end-anchor capacity 0.15 MN
        - Spacing 2.5 m x 2.0 m (in/out of plane) (0.2 bolt/m²)
        - Combined with 3.7 m long “angel bolt” in centre of room at 10 m spacing
- While there is variation in the interburden, a single support strategy is recommended:
    - Systematic rock bolting on roof and sidewalls
        - 2.4 m long resin rebar
        - 20 mm diameter
        - 0.5 bolts/m²
    - Welded wire mesh on roof and sidewalls
        - 50 mm mesh
- If deemed necessary after geotechnical assessment(s), application of 100 mm thick fibre-reinforced shotcrete.
- The Plant Area should have the same support as the interburden, but with 3.0 m long bolts.
- Stand-up time analyses indicate that the worse sections of the interburden could only stand-up unsupported for one hour to ten hours. This highlights the need for slow development and efficient installation of ground support when mining through the interburden and Plant Area.

A GCMP and associated monitoring plan should be implemented. GCMP development is a process for creating a secure geotechnical environment in a mine and it is the responsibility of management, technical support services, and mine operations. It is considered that the policies, protocols, designs, processes, roles, and responsibilities to achieve this goal should be clearly documented in a GCMP.

Frequent monitoring stations in the roof along the roadways are recommended, enabling a rapid response to adverse movement rates and to judge the effectiveness of the ground support.

- Strain gauge bolts (SGB) – suggested to be installed in main roadways and select working rooms.
    - These are instrumented bolts and are usually installed as an array and substitute standard bolts in the support pattern. Apart from shearing across the bolt, the following can be understood; total bolt loading, position of bolt loading, rate of bolt loading, characteristic behaviour of the bolt loading, confirmation that bolt loading has stabilised, confirmation of any spare capacity remaining within the bolting system; culminating in an improved understanding of the quality of bolt installation.
- Extensometers – suggested to be installed in areas near to the interburden.
    - Multi height tell-tale/extensometers monitors (e.g., Magnasonic).
    - Anchored at two metres, four metres, and six metres into the roof.
    - Installed at every junction and the centre-point of each room, and (some) sidewalls providing strata displacement/movement.
- InSar surface deformation monitoring be implemented two years prior to the commencement of mining to provide a good baseline for subsidence calculations.

16.3.3 Hydrogeology

Hydrogeologic data collection to date has consisted of water level observations during drilling and the completion of two rounds of packers tests. The first round of packer testing included five tests in the red bed units, and focused primarily on the coarser grained sandstones and conglomerates. A subsequent four tests were completed in hole D-1 across the three different lithologies that comprise the red beds. A summary of the test results is presented in Table 16-17.

Table 16-17: Packer Test Summary

Test No.	Drill Hole	Interval Depth	Interval Length (m)	Lithology	Conductivity (m/s)
PT-3	CC-6	99.3 – 103.8 m	4.5 m	Conglomerate	1.36×10^{-7}
PT-2	CC-6	111.3 – 168.5 m	57.2 m	Sandstone/ Conglomerate	4.98×10^{-8}
PT-1	CC-6	261.3 to 296.0 m	34.7 m	Sandstone w/ Mud Interbeds	1.96×10^{-8}
PT-1	CC-7	87.3 to 90.8 m	3.5 m	Sandstone/ Conglomerate	7.47×10^{-7}
PT-2	CC-7	141.3 to 144.8 m	3.5 m	Sandstone	2.1×10^{-6}
PT-1	D-1	143.0 to 144.5 m	1.5 m	Mudstone	7.74×10^{-8}
PT-3	D-1	63.5 to 65.0 m	1.5 m	Conglomerate	1.71×10^{-8}
PT-5	D-1	117.5 to 119.2 m	1.7 m	Conglomerate	1.39×10^{-7}
PT-3	D-1	120.5 to 122.2 m	1.7 m	Sandstone	4.06×10^{-7}

Available hydrogeological data was reviewed to determine the appropriate complexity of the numerical groundwater modelling efforts. The two primary hydrogeological reports reviewed were the *Exploratory Well Drilling Program for the Town of St. George's, NL* (Fracflow, 2003) and the *Factual Summary Report, Salt Drilling Program, Great Atlantic Salt Deposit, St. George's, NL* (GEMTEC, 2023).

Groundwater modelling work was completed with the following objectives:

- Predict the phreatic surface, groundwater flow direction, and hydraulic gradient under baseline and operational conditions.
- Provide groundwater inflows to the box cut and decline.
- Predict the radius of influence of Project dewatering on the surrounding groundwater environment.

The calibrated groundwater flow model was used to simulate groundwater levels and flow under baseline conditions. The baseline model results were then used to compare to model predictions during the operation phases of the Project.

16.3.3.1 Red Bed Hydrogeology

While the red bed unit is comprised of a number of lithologically distinct sedimentary beds these are relative thin when compared to the drill hole spacing. Thus, interpreting between drill hole intervals is not geologically defensible and a conceptualized hydrostratigraphic model was created to represent the red bed unit in the model.

The groundwater model was used to predict groundwater inflows to the box cut/decline constructed in the soil overburden and red bed units. Model outputs included groundwater elevations, interpreted groundwater flow directions, and estimation of seepage rates into the box cut/decline. The model was run under steady-state conditions during the maximum box cut/decline development footprint. The modelling scope of work did not include the calculation of flows during the closure and post-closure stages, nor during early mine years, when groundwater released from storage could result in larger inflows than presented.

Predicted long-term inflows to the fully built-out box cut/decline were simulated to be approximately 500 m^3/day, or 250 m^3/day per decline. The entire flow is attributed to the decline as the box cut is fully dewatered in the steady-state solution. A maximum drawdown of approximately 100 m was observed in the Project area, located above the intersection of the decline with the salt. It is important to note that because the model was run in steady-state, the drawdown extent is larger than what would be observed over a shorter mining timeframe. The modelled inflow rates may be underestimated, especially early in the Project due to the steady-state nature of the simulation.

16.3.3.2 Ore Deposit Hydrogeology

The halite unit underlying the red beds is lithologically consistent enough that it can be considered one hydrostratigraphic sequence. Since no permeability testing has been completed on the halite in the Project area, literature values for evaporite units have been considered. These permeabilities are sufficiently low that any groundwater movement through this unit would be expected to be associated with secondary porosity along bedding plane fractures. Drilling was completed using a saturated brine solution to prevent salt dissolution into the drill water. Water head was not measured while drilling through the salt unit. No structures were identified that connect the overlying red beds to the halite so permeabilities are expected to be very low. For the groundwater model the salt contact was assigned as a no flow boundary condition.

16.3.3.3 Hydrology Recommendations

The QP recommends the following actions to improve the hydrogeology understanding on site and increase confidence in the groundwater modelling results:

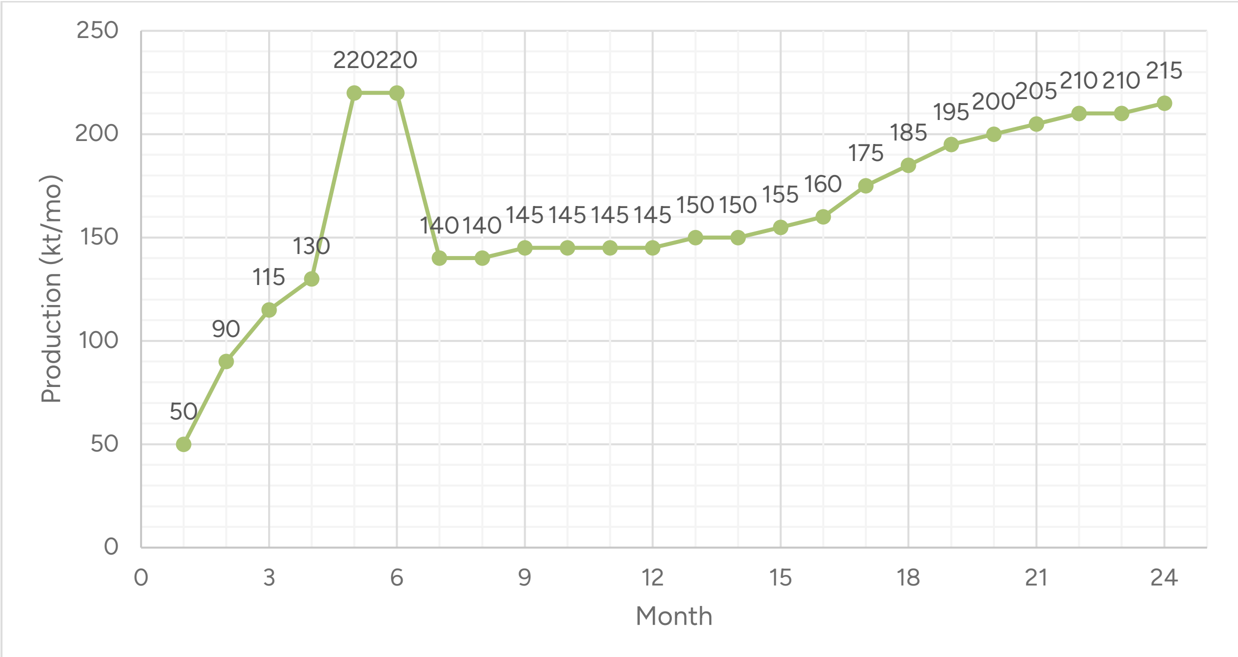
- Collection of static groundwater levels measurements during future drill programs.
- Installation of wells for continuous, long-term monitoring of groundwater levels.
- In-situ testing of overburden conductivities. To date, all of the conductivity testing on overburden materials has been laboratory based, which can give different results than field testing.
- More packer testing of various lithologies to aid in refining inflow predictions. These should be performed over short intervals of consistent lithology.
- Transient modelling of the Project to help determine peak inflow values for early mining years and the extent of drawdown during the intermediate mine years.
- Modelling of saltwater intrusion. Given the shape and extent of the drawdown cone, saltwater may be induced to flow towards the Project area during mining.

16.4 Life of Mine Plan

Mine production will commence after a three year capital period during which surface infrastructure, surface declines, the underground plant, and the underground infrastructure to support the first production level will be completed.

Production will begin on 320 Level with two CMs and the road header available for production efforts. Target annual production is 2.5 Mtpa of salt product. Fines losses of 5% by weight, between the mining face and process plant output, have been included in the LOM plan meaning the target mining rate per years is 2.63 Mtpa. A two year production ramp-up has been scheduled, increasing from 1.7 Mtpa in Year One, to 2.2 Mtpa in Year Two, and achieving the full capacity of 2.63 Mtpa in Year Three. A two month period at the full production rate (a completion test) has been scheduled during Year One to demonstrate the capacity of the production systems and fully commission the operation. A chart presenting the monthly ramp-up over the first two years is provided in Figure 16-15.

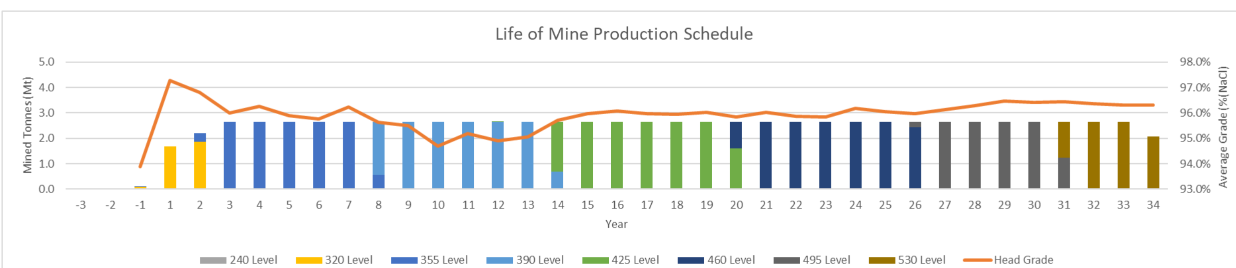
Figure 16-15: Production Ramp-up



Source: SLR, 2023

The full production rate will be maintained from Year Three through to the end of the 34 year mine life. Salt grades are the highest in the first two years of production, exceeding 97.0% NaCl, before dropping to a consistent grade of between 94.7% NaCl to 96.5% NaCl after the first level is mined out. Except for Years 10 and 12 average yearly grades meet or exceed the minimum product grade target of 95.0% NaCl. The QP is of the opinion that more detailed mine scheduling in the next phase of engineering or as part of the ongoing operational mine planning will resolve the production grade matters. A chart presenting the LOM production plan is provided in Figure 16-16.

Figure 16-16: LOM Production Plan



Source: SLR, 2023

The LOM production plan will need to be continually monitored and revised to ensure that minimum product grades can be maintained. It is expected that more detailed mine planning on a shorter term basis will prevent the occurrence of the low grade production periods present in the current LOM plan. This will be achieved through grade blending where higher-grade tonnes can be deferred or brought forward in the LOM plan as required to meet short to medium term grade targets. From an operational perspective this is not expected to be problematic given the large size of the mine levels and high number of available faces at any given time.

Over the LOM, 21,000 m of development is required, of which approximately 50% is salt by mass. Of this total 33% of the metres are scheduled to be completed during the capital period. Development requirements through the production period are intermittent because the development required to bring a new level online is small enough that it can be completed in a single calendar year. During the production period, development will be completed by the production mining crews with a CM and support mining equipment re-assigned to support these activities. There is sufficient capacity within the specified equipment fleet to support this re-assignment while maintaining full production rates. The development requirements for each level are similar owing to the centrally located declines and material handling infrastructure and repeating design by level. A summary of LOM development requirements is presented in Table 16-18. The LOM total is presented on the left, with major development years (those with more than 300 m of development per year) shown for clarity.

Table 16-18: Summary of Development Requirements

Parameter	Unit	Total	Pre-Production	Year 2	Year 8	Year 14	Year 20	Year 26	Year 30
Development	m	21,030	6,950	1,669	2,261	1,606	2,081	2,116	1,137
NaCl Mined	000 t	1,241	80	144	146	136	190	111	0
Waste Mined	000 t	1,247	726	26	98	12	38	123	105
Total Mined	000 t	2,488	806	170	244	148	228	234	105
NaCl Grade	%	95.7%	93.9%	96.1%	95.5%	96.1%	95.8%	95.8%	-

The QP recommends:

- More detailed planning of levels, development, and grade schedules.
- Development of more detailed interburden mining plans, development methods, and ground support.

16.5 Mine Infrastructure

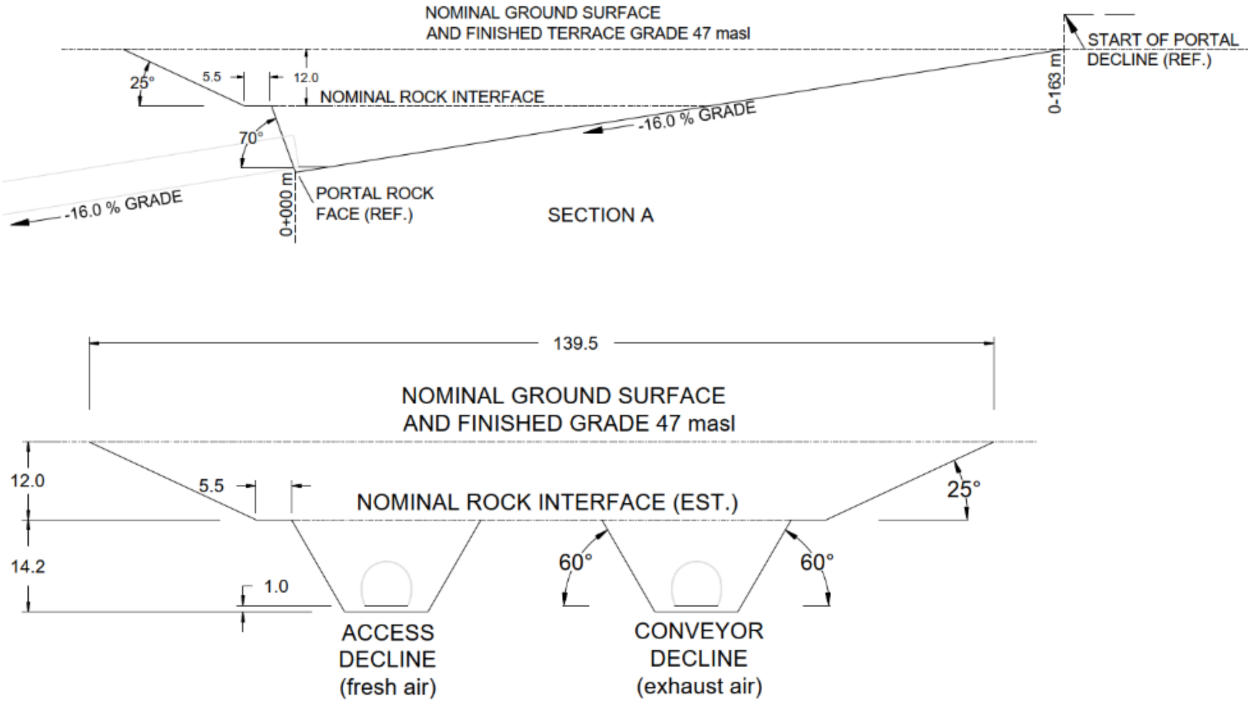
16.5.1 Mine Access

A trade-off study was completed to assess the applicability of different mine access scenarios for the GAS deposit including twin declines, one shaft and one decline, and two shafts. The study determined that the twin decline option was preferable because it had a lower capital cost, resulted in lower operational costs, and had considerable upside with respect to operational flexibility. Access to the underground mine will be gained through a box cut and twin declines driven to the plant level at 250 m below surface.

16.5.1.1 Box Cut

The box cut serves only to collar the two declines. It is designed to be a temporary excavation that will be backfilled as soon as the decline portals are established. Two corrugated steel portal covers will be installed from the start of each decline at the bottom of the box cut up to the original surface elevation. Once the steel covers are installed the entire box cut will be backfilled. Sections of the box cut design are presented in Figure 16-17.

Figure 16-17: Box Cut Design Sections

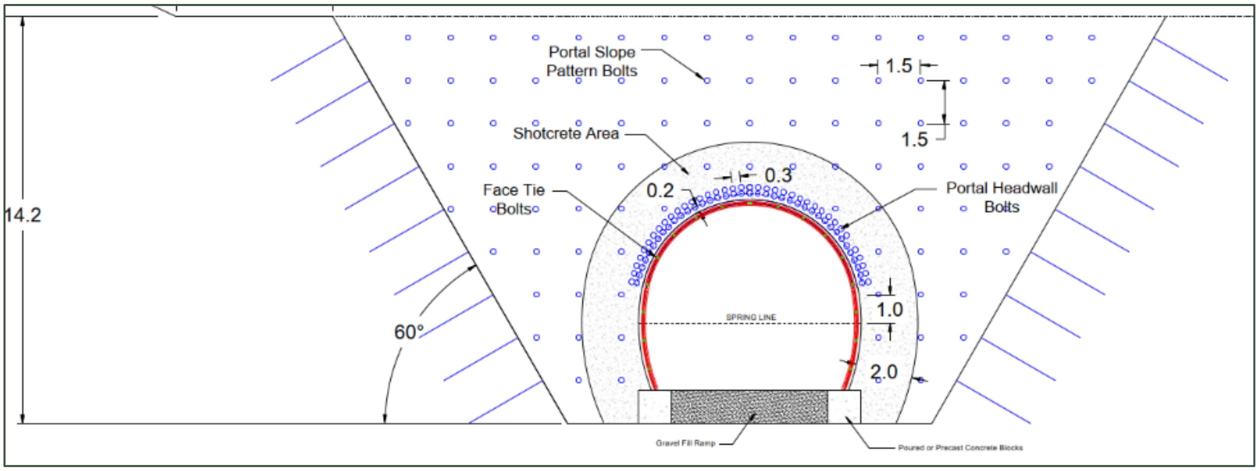


Source: SLR, 2023.

The box cut design was guided by three test holes drilled in the mine terrace area that identified bedrock in the area at a depth of approximately 12 m. Above this a mixture of glacial tills was encountered underlying a thin organic layer. Standard penetration tests completed on the till rated the material as compact to very dense. Through the till material the box cut slopes are designed at 25° slopes with a 5.5 m catch berm designed at the bedrock interface. Once in bedrock the box cut slopes will steepen to 60° in the sidewalls, and 70° in the portal headwall. The QP recommends that further surface investigation works be completed, such as test pitting and the drilling of additional drill holes, to confirm the upper box cut slope designs and ascertain the depth to bedrock.

The full box cut excavation will only be open for approximately one to two months while the first declines starter tunnels are excavated and supported. Thus, the majority of the box cut does not require ground support. The portals, however, will be a high traffic area and subject to blast induced vibrations during decline advance and for this reason ground support will be installed in the immediate vicinity of the decline portals. The rock portion of the box cut will be pattern bolted using three metre long #7 Rebar on a 1.5 m by 1.5 m spacing. This bolt pattern will cover the entire portal face and extend in the sidewalls approximately ten metres back from the portals. In addition, shotcrete and portal headwall bolts will be installed around the decline design perimeter to provide high rock mass confinement and aid in establishing a clean tunnel profile with the first blasts. A schematic showing the portal support is presented in Figure 16-18.

Figure 16-18: Ground Support in Box Cut at Decline Portals



Source: SLR, 2023.

The box cut was designed such that a seven metre high rock crown pillar will exist above the tunnel back and soil/rock interface. A special ground support class was developed for use in the decline starter tunnels. The design and application of this support class was guided by a scaled span crown pillar analysis completed according to Carter (2014).

The scaled span method provides a means of empirically sizing a rock crown pillar for near surface excavations. This assesses the likelihood of an unsupported underground span failing fully to surface. It is evaluated using span geometry and rock mass quality information.

16.5.1.2 Declines

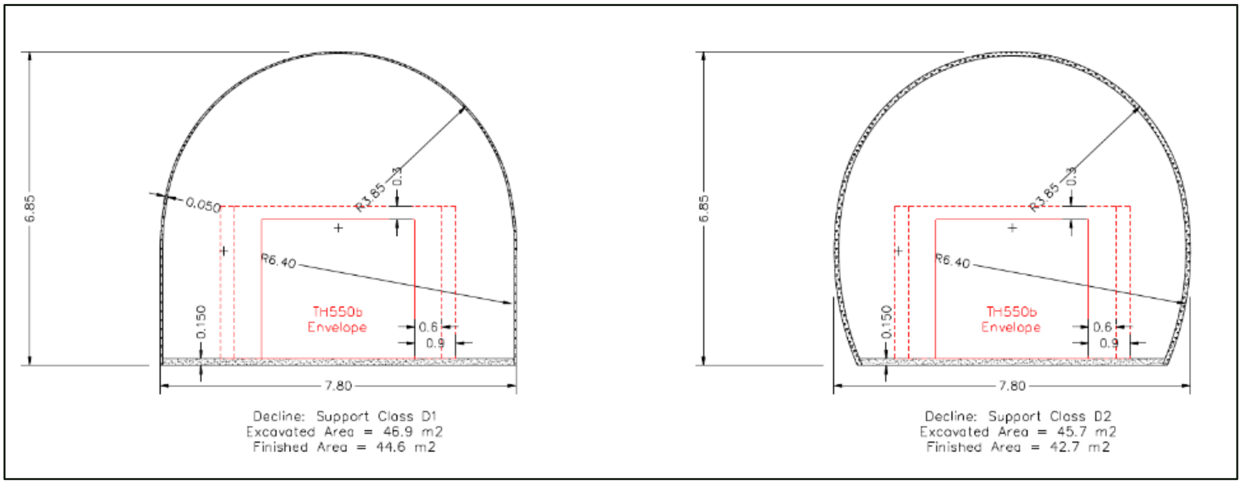
The decline alignment was selected to meet mine design and schedule requirements and minimize decline length. The first determining factor in decline alignment selection was the location for the bottom of the declines which is governed by the location of the underground plant such that underground conveyor length can be minimized. The plant will be located at the top of 1-Salt with a sill elevation of -190 masl or nominally 240 m below surface. A nominal gradient of 16% was selected which, given the drive depth results in a nominal decline plan distance of 1,340 m after accounting for the box cut depth.

The decline cross section was designed to meet health and safety, stability, operational, and constructability requirements. Minimum clearances are required ensure the safe transit of any mobile equipment that will be used to construct and subsequently utilize the decline during production. Section 598(1a) of the *Newfoundland Occupational Health and Safety Regulations* states that a total clearance of 1.5 m is required between the sides of the workplace and mobile equipment.

The cross-sectional area of the declines is governed by the desire to limit air speed in the declines to acceptable levels from an operational, and health and safety standpoint. The LOM plan requires up to 210 m^3/s or airflow depending on the production scenario. Using industry guidelines for acceptable airspeed in conveyor galleries of 5 m/s, results in a minimum cross-sectional area of 42 m^2 required for each decline.

The decline profile with the envelope of a TH550b haul truck, the largest equipment that would be expected to transit through it is presented in Figure 16-19.

Figure 16-19: Decline Cross Section



Source: SLR, 2023.

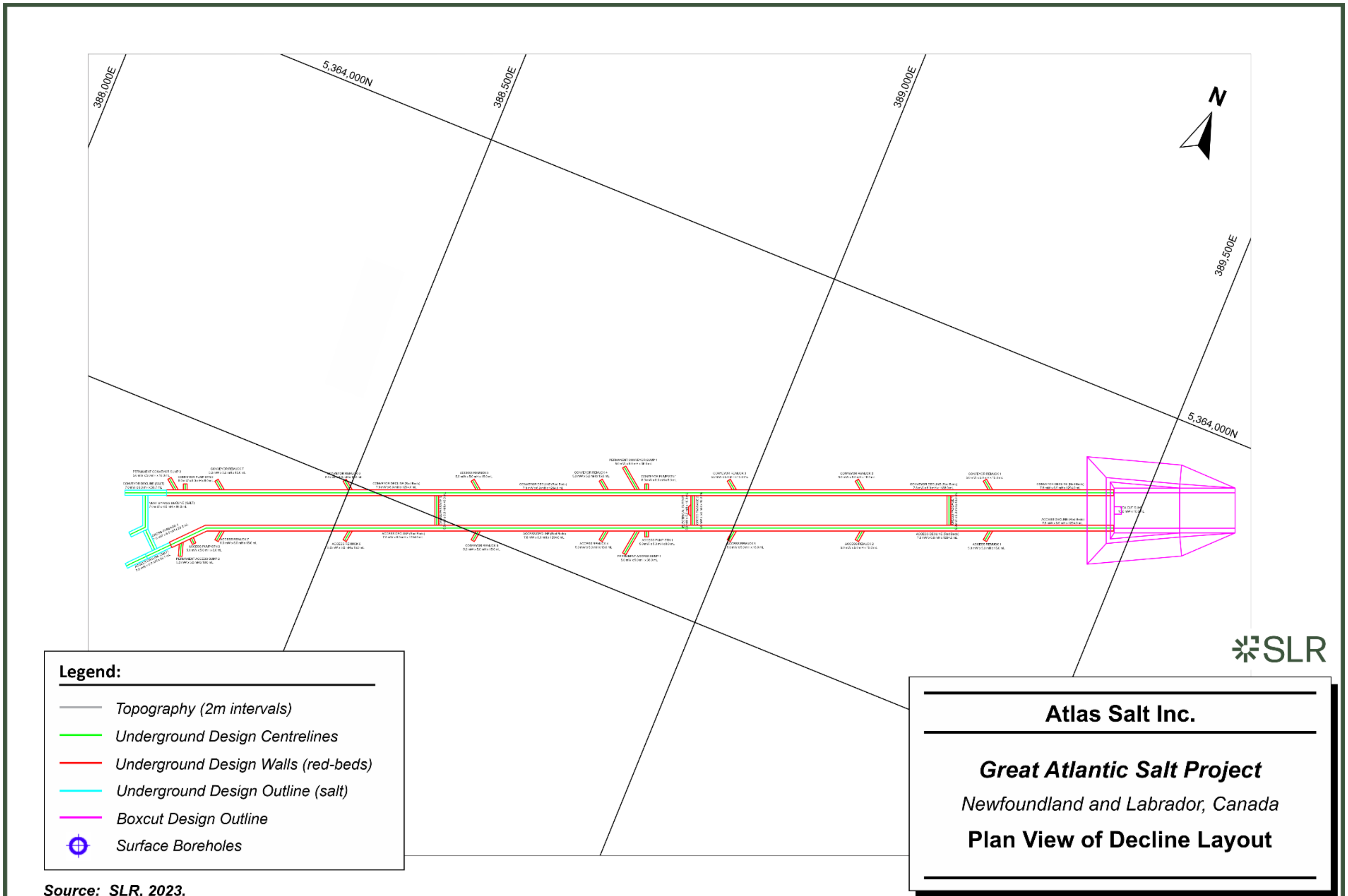
The two main declines will be driven in parallel using the same equipment and personnel. In order to use resources more efficiently, four cross passages have been included in the decline design. These will permit much faster movement between the active headings as well as create a second means of egress prior to decline completion. The two declines have been designed at a centreline-to-centreline spacing of 47.8 m, leaving a 40.0 m pillar between. The four cross passages will be spaced at 350 m intervals and driven perpendicular to the main declines.

Seven remucks spaced 175 m apart, each 15 m in length, are included in the design to permit high face utilization during construction. The remucks are sized to be able to hold a single round of muck from the advancing main face and are short enough so as to not require auxiliary ventilation. Remucks will be driven at 60° angles to the main declines.

Two sumps will be excavated in each decline, one at the approximate mid-way point, and one just above the first salt intersection. All groundwater that enters the declines, in addition to water used by mining equipment will report to one of these sumps. Ditches will be maintained along one side of the decline roadway which will collect and allow water to flow down the decline and into the sumps. A crossing ditch will be maintained at each of the sumps to permit any water from flowing below the corresponding sump.

A plan view of the decline layout is presented in Figure 16-20.

Figure 16-20: Plan View of Decline Layout



Source: SLR, 2023.

The declines will be developed using drill and blast. A summary of the expected round lengths and temporary support is provided in Table 16-19. Sealing shotcrete will be applied in all classes except D1, D2, and S1. For the D4 support class the face is planned to advance in two halves to limit the unsupported span size prior to installing shotcrete support.

Table 16-19: Construction Parameters by Support Class

Support Class	Use	Round Length	Pre-Support
D1	Main Declines	4.5 m, full face	None
D2		4.5 m, full face	None
D3		2.4 m, full face	Sealing shotcrete, 4 m spiling
D4		2.0 m, half face	Sealing shotcrete, 4 m spiling
A1	Ancillary Stubs (shallow)	3.75 m, full face	Sealing shotcrete
A2	Ancillary Stubs (deep)	2.0 m, full face	Sealing shotcrete, 4 m spiling
P1	First 20 m of Main Declines	2.0 m, full face	Sealing shotcrete, 4 m spiling
S1	All Salt Excavations	4.5 m, full face	None

16.5.2 Ventilation

16.5.2.1 Main Ventilation

A ventilation plan for the GAS Project has been developed. Though the ventilation design is based on diesel equipment use, the plan for the mine is to use BEV. The mine ventilation was designed based on diesel emissions as there are no set regulations for ventilation for BEV mines.

The mine has been designed based upon minimizing the use of diesel-powered equipment. While there are set standards for ventilation air requirements for diesel powered equipment, ventilation requirements for mines that use BEV equipment are still being developed. For this study, SLR used a factor of 50% of the regulatory diesel ventilation requirement for ventilation requirements.

Public reports for the Borden Mine (a Canadian all electric mine) noted that the owner expected to reduce ventilation needs to 50% of that of an equivalent diesel powered mine. Tahmasebi (2018) equated the power consideration for BEV as 0.39 times that of diesel based on thermal efficiency. The study suggested derating the ventilation requirement by that factor considering heat only and ignoring exhaust gases and diesel particulate matter. The same source noted that one Australian regulation related to electric equipment was a minimum air speed in the area of 0.25 m/s. For a full production opening of 16 m by 20 m this equates to airflow of 80 m^3/s (170,000 cfm).

Airflow at the face will be achieved with directed flows from ducting to ventilate the area where the CM is working therefore the full face air speed recommendations is not relevant to this case.

As the Project progresses, the QP recommends the following:

- Additional review of BEV ventilation needs at operating mines be conducted.
- Evaluation of the ventilation requirements based upon a waste heat analysis.
- Consideration of “ventilation on demand” to supply fresh air when and where required to suit the mining activities.

- Ventilation monitoring and control systems to demonstrate that the air quality is suitable and to reduce fan operation.

The fresh air requirement for the 2.5 Mtpa case is estimated to be 113 m^3/s (239,000 cfm) as outlined in Table 16-20. BEV units have been assigned air requirements equal to 50% of equivalent diesel-powered equipment and in all cases a machine utilization factor has been applied. A 25% loss factor was applied to the estimated requirement.

Table 16-20: Ventilation Airflow for 2.5 Mtpa Case

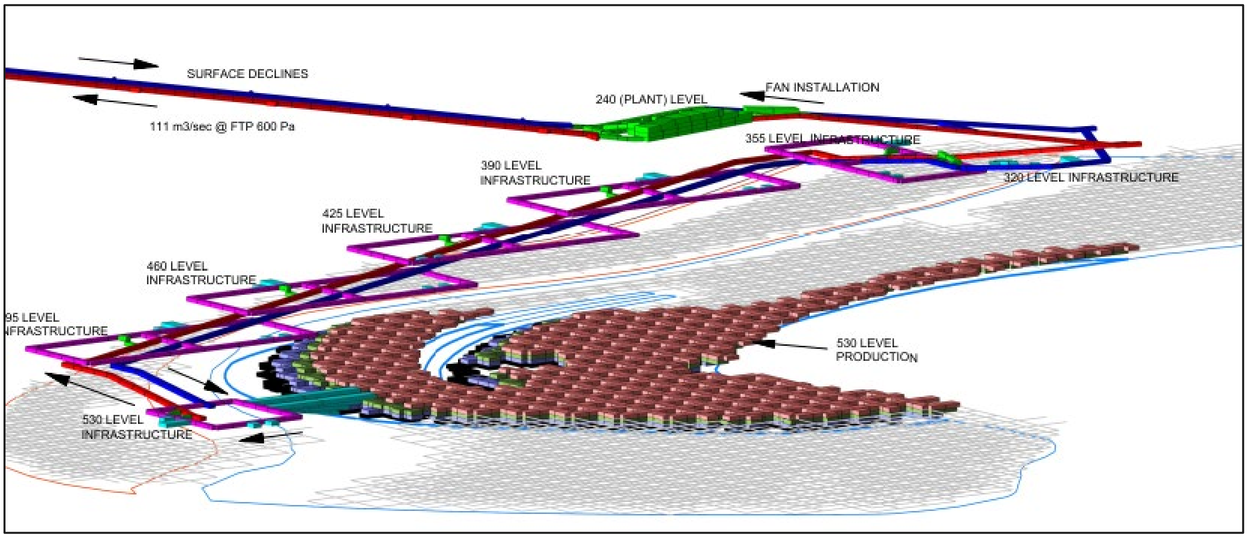
Units	N	kWe	Max vs peak	Utilization	% Diesel	BEV Installed kW	BEV kW for design
Sandvik MB770 Miner	2	-	-	-	-	-	-
Sandvik MT720 Roadheader	1	-	-	-	-	-	-
Sandvik TH550B	4	540	80%	60%	50%	2,160	518
Sandvik LH518B	2	540	80%	25%	50%	1,080	108
						-	-
MacLean Rock Scaler RB3-S-EV	1	180	60%	20%	50%	180	11
CAT992K Wheel Loader with boom	1	610	40%	5%	100%	610	12
Sandvik DS412iE	2	205	40%	30%	50%	410	25
						-	-
Scissor lift	1	180	60%	10%	50%	180	5
Personnel Carrier	1	180	60%	10%	50%	180	5
Cassette Carrier	2	180	60%	15%	50%	360	16
MacLean Series BT3-EV	2	180	60%	40%	50%	360	43
Rokion R200 Utility Truck	6	86	60%	20%	50%	516	31
Ford F150 Lightning	8	318	60%	10%	50%	2,544	76
Rokion R700 Series Vehicle	1	86	60%	10%	50%	86	3
MacLean GR3-EV	1	180	70%	20%	50%	180	13
Bobcat S7X Skid Steer	1	100	60%	10%	50%	100	3
Mobile Crane 20T	1	119	40%	5%	100%	119	2
Other	35%		80%	50%	50%	3,173	635
Power for Ventilation Design						12,238	1,507
Minimum Airflow (diesel)	m^3/sec/kW	-	-	0.06	-	-	-
Airflow Required	m^3/sec	-	-	90	-	192	kcfm
Losses		-	-	25%	-	-	-
Design Airflow	m^3/sec	-	-	113	-	239	kcfm

The mine heat load has not been considered, and the ambient surface humidity is not considered an issue for the mine.

Ventilation Circuit

The mine's primary ventilation routes will be the twin portals at surface as presented in Figure 16-21. The service portal will be the fresh air side, and the conveyor portal will be the exhaust side. The mine will be ventilated using a pull system with the main fans located near the plant on 240L. The fans will be twin 84", 1,180 rpm @ FTP = 600 Pa, providing 111 m^3/s.

Figure 16-21: Ventilation Network (Isometric View Looking South)



Phase 1 – Initial Decline Development

The ventilation system for the decline development has been included in the decline development scope. The proposed decline development design has a maximum air requirement of 162,800 cfm. This requirement is based on the selected method and subsequent equipment to be used for the development of two declines.

The decline ventilation system is summarized as follows:

- The ventilation system along with the heating system will be set up in the box cut area near the entrance to the declines.
- Two individual fans [1,900mmØ – 450kW] will be set up in series, delivering a maximum of 208,500 cfm at 27.1 in w.g.
- Each ventilation system will have its own heating system to account for the heating needs of both decline ramps. Heaters are preliminarily sized at 14 MMBtu to adequately heat the airflow needed [208,500 cfm].
- Post fan outlet, Ø1.5 m (60 in.) ABC Hardline round ducting will then be used for 3.05 m (10 ft) before transitioning into two separate lines of Ø1.4m (54 in.) Hardline Round.
- The two lines of Ø1.4 m (54 in) rigid ducting will stretch 200 m until the decline's portal where they would be connected to two lines of Ø1.4 m (54 in) Minevent.
- The twin lines of flexible ducting will then extend up to 575 m into the decline ramp.
- At the 575 m mark in the decline, three fans (Ø1,800 mm) are to be used in series, delivering 185,000 cfm at 30.9 in w.g.

- Similarly to the portal fans, Ø1.5 m (60 in.) Hardline Round ducting will then be used for 3.05 m (10 ft) before transitioning into two separate lines of Ø1.4 m (54 in.) Minevent Round.
- Prior to the booster station, the twinlines of Ø1.4 m (54 in.) Minevent would be transitioned to rigid ducting to mitigate any issues that may arise from the booster station pulling in the airflow being delivered.

The mine air heating provision within the decline development was included to ensure a high enough air temperature for rapid curing of the planned shotcrete to support the planned advance rates. Mine air heating is not proposed for the operations phase of the mine life.

Phase 2 – Development Below the 240 (plant) Level

As the Plant Area excavation is underway, exhaust fans will be installed in the conveyor drive and the cross cuts connection between the declines would be sealed (ventilation stopping but with an access door). Provision for vehicles to use one of the connections may be desired. The ventilation system is then in place. At the fan installation location provision for the conveyor installation would be provided along with suitable ventilation controls to minimize short circuiting at the fans.

Below the Plant Area the ventilation would be provided with fans and ducting using a similar set up to that of the initial decline development. The fresh air system would need to supply the fresh air for both drives, however, with exhaust fans in the decline this would not pose a problem.

The planned development below the plant level is 40 m^2 to 50 m^2 (two pass CM development) which would require at least 32,000 cfm per heading (64,000 cfm total). As development progresses to depth the equipment in service will increase which will add to the air flow requirements.

The phasing in of the BEV equipment for operations will also impact the airflow requirements if the assumed contracted decline development is undertaken with diesel powered equipment.

Phase 3 – 320 Level Development and Operation

The 320 Level does not have a ventilation loop as planned for the larger levels. When mining commences the main ventilation circuit will be in place. The stope development face will be 80 m^2 and the minimum airflow 52,000 cfm (with 20% allowance for loss), in this case the equipment will be virtually all BEV units.

Each face will be fed with a duct to blow fresh air to the operating face and an exhaust duct to take dust from the face and deliver it into the exhaust airway. As connections are developed between the mining entries the suction ducting will not be required as dust will be sent ahead in the direction of the CM advance and dust will settle in the large down stream areas or be carried into the exhaust airway.

Phase 4 Levels Below 320

Development below each level will be supported with ventilation ducting until the ventilation loop is in place. Separate ducts will be used to support the two independent development headings. After the loop is in place the ventilation will follow the method used on the 320 Level.

Ventilation Power Required

Preliminary ventilation simulations using Ventsim software indicated pressure requirements of 600 Pa and electrical power demand of 90 kW at the flow rate of 110 m^3/s and of 1,900 Pa pressure and electrical power demand of 450 kW at the flow rate of 189 m^3/s.

Auxiliary Ventilation

Auxiliary ventilation will be provided using ducting and portable fans.

16.5.2.2 Ventilation Recommendations

For the next stage of the engineering and design, the QP recommends:

- Advance the engineering designs for the main fans and bulkheads at the 240 Level.
- Advance the designs of the ventilation control in the conveyor decline adjacent to the main fan room.
- Further review of the BEV ventilation requirements.
- Detailed design of the plant ventilation.
- Review of fan controls to minimize power requirements (ventilation on demand).
- Detailed design of the auxiliary ventilation at the miners.

16.5.3 Material Handling

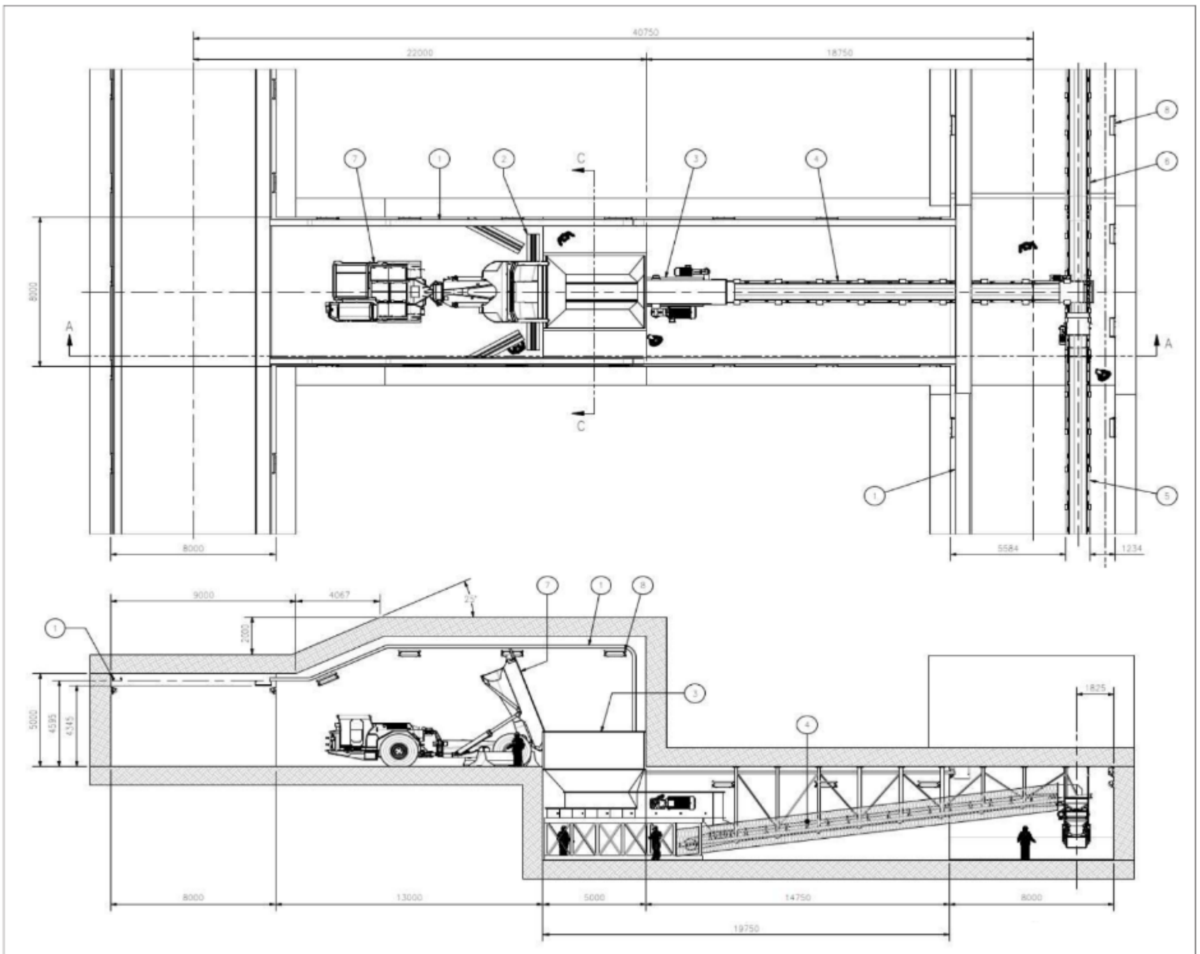
All material in the mine will be handled by load-haul-dump units LHDs or by haul trucks. Plant feed material will be hauled by LHD or truck to passes to feed a lump breaker. From the lump breaker the plant feed will be moved by conveyor to the plant. If the loading pocket at the lump breaker is full the material will be dumped into open rooms near the pass and transferred by LHD at a later time. The trucks selected for this study were Sandvik 50 t capacity BEV trucks. These were selected based upon the payload capacity and the haul speed potential. Waste materials will be hauled by truck or LHD and placed in empty rooms.

A schematic view of the material pass and feeder breaker is presented in Figure 16-22. Plant feed material will be dumped into the pass and drop approximately 15 m to the lower level, the salt falls near but not directly onto the lump breaker feed chain. The edge of the pile of dumped salt will be picked up by the feed chain and the material will pass through the feeder breaker. From the feeder breaker the material will be conveyed a short distance before being discharged onto the main plant feed conveyor.

The initial capital includes the construction of a material pass and feeder breaker on the 320 Level, and the conveyors to connect this area to the plant. When mine development of the 355 Level commences a second feeder breaker will be purchased and installed on the 355 Level. Subsequent levels will be serviced by relocating the upper most feeder breaker to the level being developed.

The conveyor system in the mine is planned to be a 36 in. wide belt with a capacity of 800 tonnes per hour (tph) to support a 4.0 Mtpa operation.

Figure 16-22: Production Level Materials Handling Schematic



Legend:

1 *Cable Tray*
2 *Jersey Style Barrier*
3 *Mclanahan FB244220, Cust. Feeder Breaker*
4 *Product Transfer Conveyor #01*
5 *Product Transfer Conveyor #02*
6 *Product Transfer Conveyor #03*
7 *Sandvik TH550B, Haul truck*
8 *Wall Pack Light*

Atlas Salt Inc.

Great Atlantic Salt Project
Newfoundland and Labrador, Canada
Production Sequence Schematic

Source: Halyard, 2023.

16.5.4 Dewatering

It is assumed that the production areas of the mine will be dry, however, dewatering of the declines and box cut is required.

16.5.4.1 Box Cut Dewatering

For the period that the box cut is open it will intercept all of the precipitation and this water will be collected in a sump, from which it will be subsequently pumped to the surface discharge water pond. The inflow from the box cut will be diminished by the installation of the metal culvert decline covers which will be encased in an engineered compacted fill.

16.5.4.2 Decline Water Inflow

The decline development through the red bed horizons is expected to produce groundwater from the development excavations as described in Section 16.2 of this Technical Report. The estimated long term groundwater inflow to the combined decline excavations is 500 m^3/day (92 USgpm) with a range of 250 m^3/day (46 USgpm) to 2,300 m^3/day (422 USgpm). The mid-range estimate was used for the decline dewatering design. The hydrology estimates were not sufficiently precise to outline high or low flow areas along the declines and for the study the flow was estimated to be linear and equal for each of the declines.

The dewatering system designed for each decline consists of two sumps and two pump stations. The sumps will be located immediately above the intersection with the salt horizon and at the mid point of the decline. Seepage will be collected in the sumps and transferred to a pump box. From the bottom pump station, the water will be pumped to the upper sump and from the upper pump station the water will be pumped to surface for delivery to the surface discharge pond.

The system has been designed to operate with one pump operating 50% of the time and the two pumps at each pump station will be connected so that both can operate simultaneously with a total capacity of four times the estimated base case flow. The average flow with one pump operating on a 50% cycle at each sump totals 500 m^3/day (92 USgpm). With both pumps operating on a 100% cycle at each sump the system has the capacity to pump 2,000 m^3/day (184 USgpm). All of the pumps will be identical to reduce the required spares.

Table 16-21: Mine Dewatering System Summary

Case	Pumps Operating	Capacity	Capacity
	N (total)	(m^3/day)	(USgpm)
One pump per sump 50% cycle	4	500	46
One pump per sump 100% cycle	4	1,000	92
Two pumps per sump 100% cycle	8	2,000	184

No groundwater control measures have been included in the decline designs. The QP recommends that the water inflow be monitored as the declines are being driven and that potential groundwater flow reduction measures be considered during development.

To keep the decline water flow out of the mine a diversion trench across the decline at each of the sumps will be used to divert any flow on the decline into the sumps.

The plan is to pump all of the water to surface, however, there is potential for some of the water to be used within the mine for road dust suppression. The expected volume of water that could be used for dust suppression will rise as workspaces are developed. At a water application rate of 4L/day/m^2 (from highway watering estimates) the disposal of 32 m^3/day/km of ramp may be possible. There is no provision in the mine equipment fleet for a water truck nor has the design of a water spray system in the declines and workings been included in the plan.

The QP recommends:

- The assessment of hydrogeological conditions in the planned decline area be further studied and reviewed as the decline development is advanced.
- Development of plans for the handling of ground water inflows in the decline.
- Consider the alternative water disposal options such as for mine road dust control.

16.5.5 Maintenance

The site equipment fleet will be maintained in a combination of shop spaces located on surface near the portal and at an underground shop located at the 300 Level. The surface shop will be used for light vehicles and minor maintenance. The underground shop will be used for all major equipment maintenance and will include a 40 m by 16 m main bay for equipment maintenance, a 20 m by 10 m welding bay/miner overhaul bay, and an electrical/instrumentation shop, small stores area, offices, and lunchroom.

16.5.6 Power Distribution

Electrical power will be supplied from a new surface substation with feeds to the underground mining, underground plant, mine ventilation, surface offices, shops, and surface surge pile. The overland conveyor, and port will be fed from the existing overhead NL Power transmission lines. Power will be fed to the mine in each decline to provide redundant supply into the mine. Power will be supplied at 13.6 kV from surface to load centers at the plant and on each mining level. At the plant the power will be transformed to 600 V to supply the plant equipment.

On the mining levels there will be a requirement for 600 V power for fans, BEV chargers, and light equipment. The CMs require 2,300 V supply which will be supplied to power centres up to 1.2 km from the decline, with further power distribution accomplished through trailing cables. Charging stations for the heavy equipment will be located at the main shops and then relocated at lower levels as the mine is deepened. A summary of the mine connected electrical load is presented in Table 16-22. The loads increase over time with the addition of the third miner, additional chargers for trucks, and with the additional load as the conveyor system is extended deeper into the mine.

Table 16-22: Mine Connected Electrical Load

	Connected Electrical Load (kW)		
Area	**Initial**	**Year 3**	**Ultimate**
Continuous Miners & support	2,062	2,832	2,832
Ground support	410	410	410
Haul truck chargers	2,700	3,375	4,050
LHD chargers	1,350	1,350	1,350
Utility vehicle chargers	784	784	784
ROM breakers and conveyors	71	272	1,317
Decline dewatering	257	257	257
Mine ventilation	1,022	1,022	1,022
Total	**8,656**	**10,303**	**12,022**

16.5.7 Mine Services

A communications system for telephone, radio, and data will be established in the mine. Potable water will be supplied together with sanitary facilities. Portable refuge stations will be installed at the Plant Area and near the production levels. Compressed air will be supplied as needed through on-board compressors on drills and through the use of portable compressors as needed. A small, compressed air system will be established for the plant.

16.6 Mine Equipment

The initial mine equipment list is presented in Table 16-23. The fleet is based upon the use of BEV equipment to the maximum extent possible. A third CM and a fifth haul truck will be added in the first year of operations to support mine production and development.

Table 16-23: Initial Equipment Fleet

Equipment Type	Make & Model	Units
Continuous Miner	Sandvik MB770 Miner	2
Roadheader	Sandvik M720 Roadheader	1
Mine Truck	Sandvik TH550B Mine Truck	4
LHD	Sandvik LH518iB	2
Scaler - Development	MacLean Rock Scaler RB3-S-EV	1
Scaler - High Back	CAT992K wheel loader with boom	1
Bolter	Sandvik DS412iE	2
Supervisor & Tech Services SUV	Ford Lightning F150 Crew Truck	8
Maintenance Truck	Rokion R200 Utility Truck	6
Boom Truck	MacLean Mine-Mate Series BT3-EV	1
Scissor Lift	MacLean SL3	1
Personnel Carrier	MacLean SL3	1
Cassette Carrier	MacLean SL3	2
Transmixer cassette	MacLean	1
Crane deck cassette	MacLean	1
Personnel carrier cassette	MacLean	1
Grader	MacLean GR3-EV	1
Forklift	Rokion R700 Series Support Vehicle	1
Skid Steer Loader	Bobcat S7X	1
Total		**38**

17.0 Recovery Methods

17.1 Introduction

Salt from the mine will be processed to produce one product only: de-icing salt conforming to the ASTM D632 specification for de-icing salt for road maintenance and construction. The standard provides specifications on delivery for salt content (minimum 95% NaCl ±0.5%) and size grading (presented in Table 17-1). Additionally, the standard specifies that de-icing salt is to be delivered in free-flowing form, requiring the addition of an anti-caking agent prior to shipping, typically expected by customers to be at a minimum concentration of 50 ppm in the case of the most commonly used anti-caking agent, yellow prussiate of soda (YPS).

Table 17-1: ASTM D632 Size Grading Specification for Road De-icing Salt

Sieve Size	Mass % Passing
12.5 mm (1⁄2 in.)	100
9.5 mm (3⁄8 in.)	95 to 100
4.75 mm (No. 4)	20 to 90
2.36 mm (No. 8)	10 to 60
600 µm (No. 30)	0 to 15

Source: ASTM D632, Standard Specification for Sodium Chloride

Note.

1. Tolerance: 5 percentage points on the maximum value for the range for each sieve size, except the 12.5 mm (1⁄2 in.) and 9.5 mm (3⁄8 in.) sieve sizes.

Processing will be carried out in the underground mine and will consist of conventional dry screening and crushing using double roll crushers and inclined vibrating screens. An excavation approximately 190 m long, 20 m wide, and 20 high, located at the bottom of a conveyor incline tunnel (one of two parallel incline mine access tunnels) will accommodate the processing plant. The plant and associated conveyors and infrastructure have been designed to process up to 4.0 Mtpa to allow for potential future expansions (requiring the addition only of a second tertiary crusher), although the initial production rate and Project economics are based on 2.5 Mtpa of finished salt.

A key constraint during processing is the minimization of fines generation, hence the use of roll crushers and multiple crushing and screening stages to minimize the reduction ratio at each stage of crushing, and where product-size material is screened out before each stage of crushing and directed to the product stockpile. Fine screens within the processing plant will remove excess minus 600 µm material from the crushed salt if necessary.

Sodium chloride content of the finished salt product will be controlled by ensuring that the blended material feeding the processing plant contains 95% or higher NaCl.

Key process design criteria are presented in Table 17-2.

Table 17-2: Key Process Design Criteria

Criteria	Unit	Design Value
Annual Production Rate - Finished Salt (max)	tpa	4,000,000

Criteria	Unit	Design Value
Operating Days per Year	d/a	365
Process Plant Availability	%	75
Equipment Capacity Design Factor	%	25
Design Throughput	tph	761
Salt Bulk Density	t/m3	1.28
Abrasivity – Bond Abrasion Index (Ai, max)	g	0.07
UCS, 75th Percentile	MPa	28.6
ROM Moisture (max)	%	2
ROM (Plant Feed) Size F100	mm	200
Fines Production (max percent of feed to plant)	%	10
Product Composition Sodium Chloride (min, dry basis) Insolubles (max, dry basis) Moisture (max) Anti-caking Agent (min)	 % % % ppm	 95 5 2 50
Product Size P_{100}	mm	12.5

17.2 Process Description

Mining will be carried out by CMs that will produce run-of-mine (ROM) material with a top size of approximately 200 mm. Material larger than 200 mm may occasionally occur due to natural breakage of the salt during mining. The ROM material will be hauled to a pass where a feeder-breaker located at the bottom of the pass will reclaim the material from a stockpile and ensure that any oversize is broken before discharging it onto a transfer conveyor. The salt will be transported to the receiving bin at the processing plant on the 205 Level by a series of transfer conveyors from the initial mining level (320 Level) and later from the second (355 Level) and subsequent mining levels. The receiving bin will have a capacity of approximately 80 t.

Salt will be withdrawn from the receiving bin by a variable speed belt feeder that will meter the salt to the crushing plant in conjunction with a belt scale on the feed conveyor. A belt magnet and metal detector will remove metal from the plant feed conveyor or stop the conveyor before metal can enter the plant.

The first step in processing will consist of a grizzly feeder that will simultaneously feed the primary crusher while removing <64 mm material, which will bypass the primary crusher and report to the primary screens. Undersize (<12 mm) from the double deck primary screens will report to the product conveyor while the oversize from the top deck (>45mm) will report to the secondary crusher and oversize from the second deck (12 mm to 45 mm) will report either to the secondary or tertiary crusher via a diverter gate. This flexibility has been allowed for so that secondary and tertiary crusher loads can be optimized during operation. The product from the secondary crusher will feed the tertiary screen where the oversize (>10 mm) will report to the tertiary crusher and the undersize (<10 mm) reports to the fines screen. The final crushing stage (tertiary crushing) will be in closed circuit with the two quaternary screens operating in parallel, from which undersize or product-size material (<12 mm) will be directed to the product conveyor and oversize material (>12 mm) will be returned to the tertiary crusher.

The tertiary crushing circuit has been designed to accommodate two tertiary crushers operating in parallel to achieve the design production rate of 4.0 Mtpa. However, initially (and until expansion to the design production rate is needed) only one tertiary crusher will be installed. In this configuration (with the single tertiary crusher) the processing plant is estimated to be capable of processing between 3 Mtpa and 3.5 Mtpa.

There is no need and no allowance for intermediate storage (i.e., storage between crushing and screening stages). Salt will be screened and crushed as it is produced by the previous stage.

A fines rejection circuit will form part of the tertiary screening circuit where fine material (<800 µm) in the secondary crusher product may be screened out if necessary and stockpiled separately and returned to the mine and used for road surfacing. This will allow for a portion of the fines in the crushed product to be rejected to ensure that the final salt product conforms to the specification for de-icing salt, i.e., is no more than 20% passing 600 µm. Oversize from the fines screen will be directed to the product conveyor. A diverter gate on the fines screen undersize chute allows for fines to be redirected to the product conveyor should the quantity of fines in the product not exceed the allowable limit.

The final salt product will be sampled by an automatic cross-cut sampler for regular testing to ensure that it conforms to the specification. The product conveyor will deposit the final salt product onto the approximately 1,700 m long incline conveyor that will carry the salt to the surface. Transfer conveyors on surface will carry the salt from the incline conveyor to an overland conveyor that will transport the salt to storage buildings at the port. A small storage facility near the mine portals will allow for storage of approximately 11,700 t of salt if downstream equipment requires maintenance, as well as for loading of trucks by front end loaders (FEL) to supply local customers. Anti-caking agent (YPS) in solution form will be added to salt that will be stored in the facility and intended for the local market.

The overland conveyor, approximately 2,020 m in length, will transport the salt along an existing haul road and causeway to the port at Turf Point where it will be stored prior to shipping. The conveyor will pass through the outskirts of the town of Saint George's and will pass under the main road (route 461) west of the town, over Station Road, and then over Court House Road, one of two access routes to the local small vessel harbour. The conveyor will be covered and fenced off for the part of the route outside of the town, and enclosed and fenced off where it passes nearby residential properties.

The existing storage and ship loading facilities at Turf Point are currently used for shipping gypsum mined at a quarry approximately 8.5 km southwest of the port and hauled to the port by truck along the haul road and through the town. The existing storage building at Turf Point, originally built and used for base metal concentrate storage prior to shipping, and subsequently for gypsum storage, will be modified to include conveyor delivery of salt.

The existing storage building and ship loading facilities at Turf Point, and a new storage building constructed for the Project will accommodate approximately 60,000 t of salt.

Salt will be shipped by bulk carriers, and shipment sizes may range from 25,000 t to 40,000 t. Salt will be reclaimed from the storage buildings by new underground vibrating feeders and existing belt feeders and conveyors for shipping via the existing 1,000 tph ship loader. YPS will be added to the salt in solution form prior to shipping and the salt will be sampled by an automatic cross-cut sampler as it is discharged onto transfer conveyors carrying the salt to the ship loader.

A block flow diagram for mining, processing, storage, and load-out is presented in Figure 17-1, and a simplified flow sheet of the process plant is shown in Figure 17-2.

Consumables will consist mainly of crusher wear parts and screen decks, as well as conveyor parts (idlers and return rollers), and lubricants. Preliminary testing has indicated that the salt is not abrasive or only mildly abrasive, and crusher roll segments are expected to last several years before requiring replacement. Annual allowances have been included in the operating cost estimate to account for these items.

Only one reagent, YPS, will be used in the process, and will be added to the salt prior to shipping to limit caking. A dosage rate of 75 g/t has been allowed for, slightly higher than needed to meet the generally required minimum 50 ppm concentration. YPS will be delivered in the form of a crystalline powder in 500 kg bags and will be mixed with water at a concentration of 2% by weight and applied to the salt as a spray. Two YPS make-up and addition stations will be installed, one at the intermediate storage facility near the mine portals and one at the Turf Point port. At a dosage of 75 g/t and a salt production rate of 2.5 Mtpa, YPS consumption will be 188 tpa.

17.3 Laboratory

A small laboratory will be located at the surface complex and will be capable of conducting simple chemical analysis for NaCl and insoluble content of salt samples, and size analysis of crushed salt. The laboratory will carry out analysis of shift samples for process plant monitoring and control, shipment samples, and analysis of mine grade control samples.

17.4 Plant Control System

The plant control system (PCS) will comprise a programmable logic controller (PLC) based architecture with a fibre optic backbone and remote input/output (RIO). Independent PCS and control rooms will be provided for the mine and port facilities and networked for monitoring purposes. The control network will comprise interfaces between the PCS controllers, RIO, motor control centres (MCCs), and third-party PLCs. High bandwidth data services, such as voice over internet protocol (VOIP), video, equipment and personnel tracking, and corporate data transfer and storage will be supported by separate networks utilizing the fibre optic backbone. All material handling and processing equipment will be monitored and controlled through the PCS. The PCS workstations will provide a user-friendly interface for operations personnel to monitor and control the facilities. The workstations will include historian, trend, alarm and event log, and report functionalities.

17.5 Electricity Consumption

Electricity will be supplied from the grid and consumption has been estimated from the mechanical equipment list, associated electrical motor sizes, and equipment utilization requirements to achieve 2.5 Mtpa of salt production. Installed power is estimated at approximately 2,800 kW (including processing, conveying, storage, and reclaim). Annual consumption is estimated to be approximately 17,500 MWh.

17.6 Fuel

Fuel will be required for a small fleet of mobile equipment including personnel transport, maintenance vehicles, FEL and compact wheel loader, forklift, and mobile crane. A fuel storage facility will be located adjacent to the surface facilities.

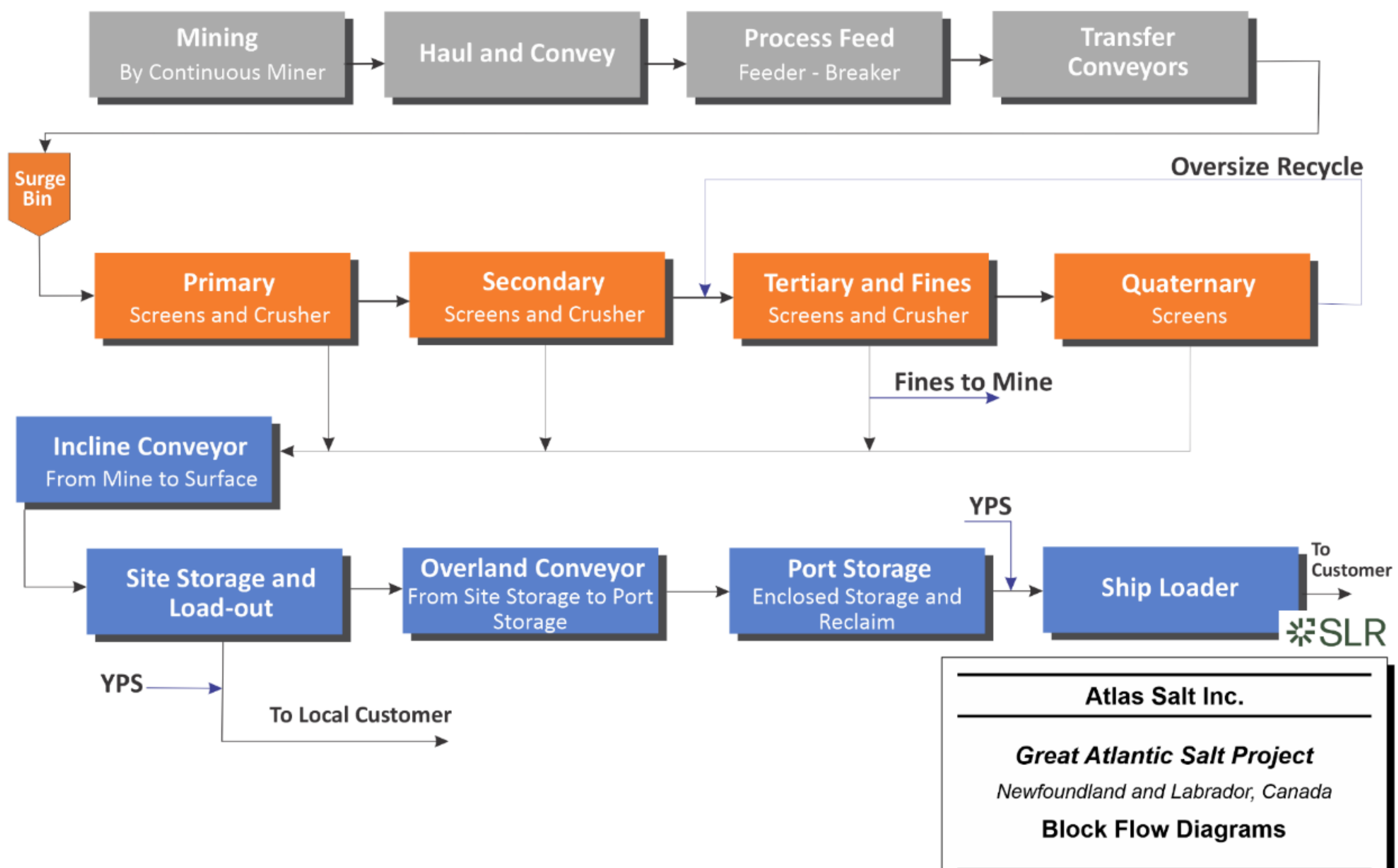
17.7 Personnel

The processing plant and conveyor transport to the port are simple operations and will be largely automated requiring minimal operator intervention. At design capacity, the plant will operate 24 hours per day, 365 days per year. Shift workers will work on a twelve-hour shift basis. The total complement (all shifts) including management and supervision, operators, maintenance personnel, and laboratory personnel has been estimated at 37. Salt storage, reclaim, and ship loading at Turf Point will be carried out by the port owner on a contract basis.

17.8 Commissioning and Ramp-up

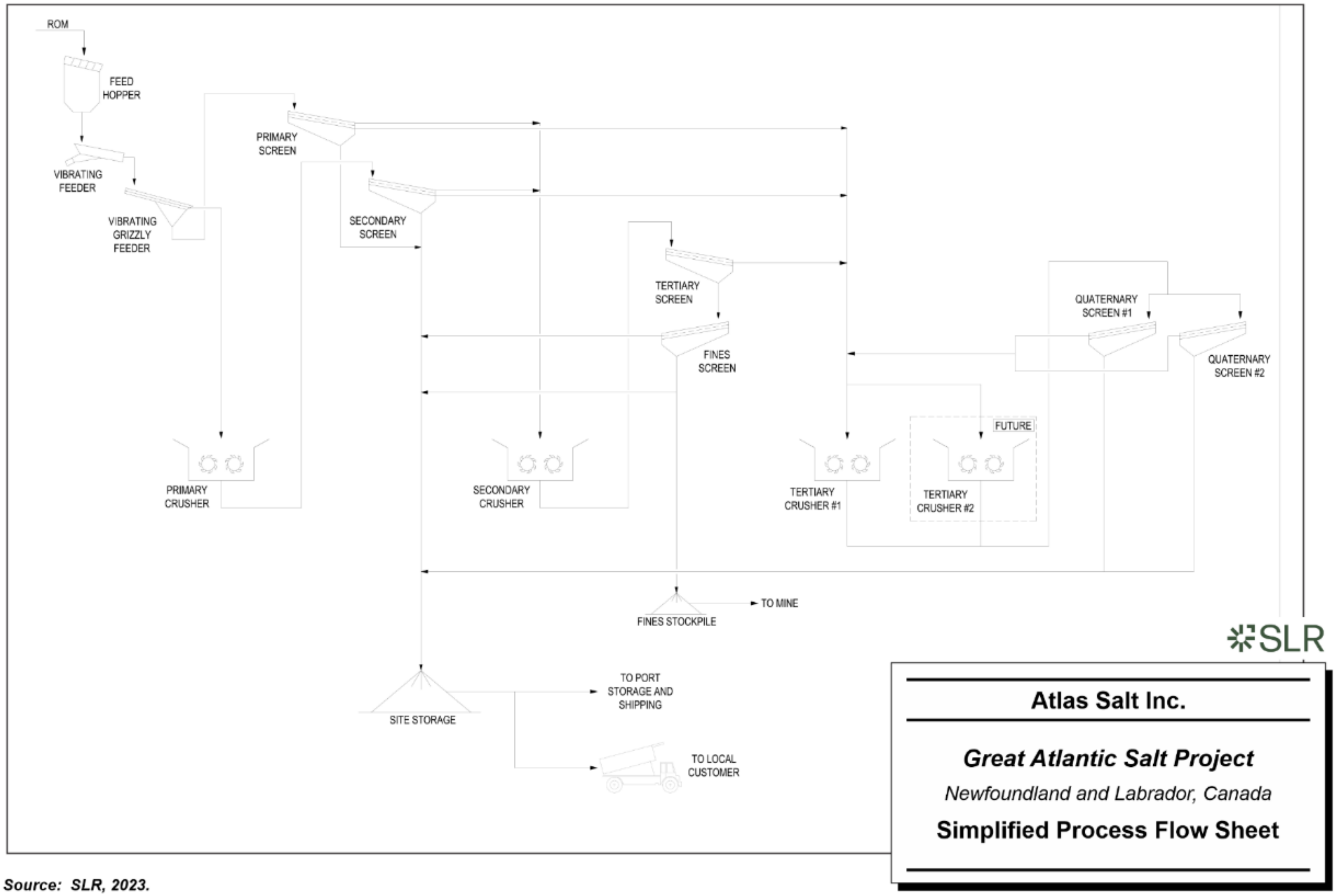
Ramp-up to an hourly throughput equivalent to 2.5 Mtpa is anticipated to be achieved within weeks of starting up due to the simplicity of the plant and the small number of different types of equipment being used. Some optimization of crusher gap settings and screen deck openings to improve efficiency and ensure that individual pieces of equipment are operating within design parameters is expected to be required and may be completed over the first year of operation. However, the actual annual production rate will be dictated by other factors, including the supply of ROM salt from the mine and market penetration rate. The mine plan allows for ramp-up to an annual production rate of 2.5 Mt over a period of two years.

Figure 17-1: Block Flow Diagram



Source: SLR, 2023.

Figure 17-2: Simplified Process Flow Sheet



Source: SLR, 2023.

18.0 Project Infrastructure

The Project is located in the vicinity of St. George's, Newfoundland. To develop the Project, significant infrastructure is required. The following section outlines some of the key infrastructure planned for the Project. The site layout is shown in Figure 18-1 and the overall Project layout including the overland conveyor and port is shown in Figure 18-2. The area around the mine declines and surface buildings demarcated by a fenced perimeter and gatehouse is referred to as "onsite infrastructure" and contained within a "site terrace", while the area outside this (including the overland conveyor, port, and transmission line) are referred to as "offsite infrastructure".

SLR has not researched property ownership in the area of the site terrace or access road. The QP recommends that a detailed survey of land ownership be undertaken to ascertain right-of-way access for the Project.

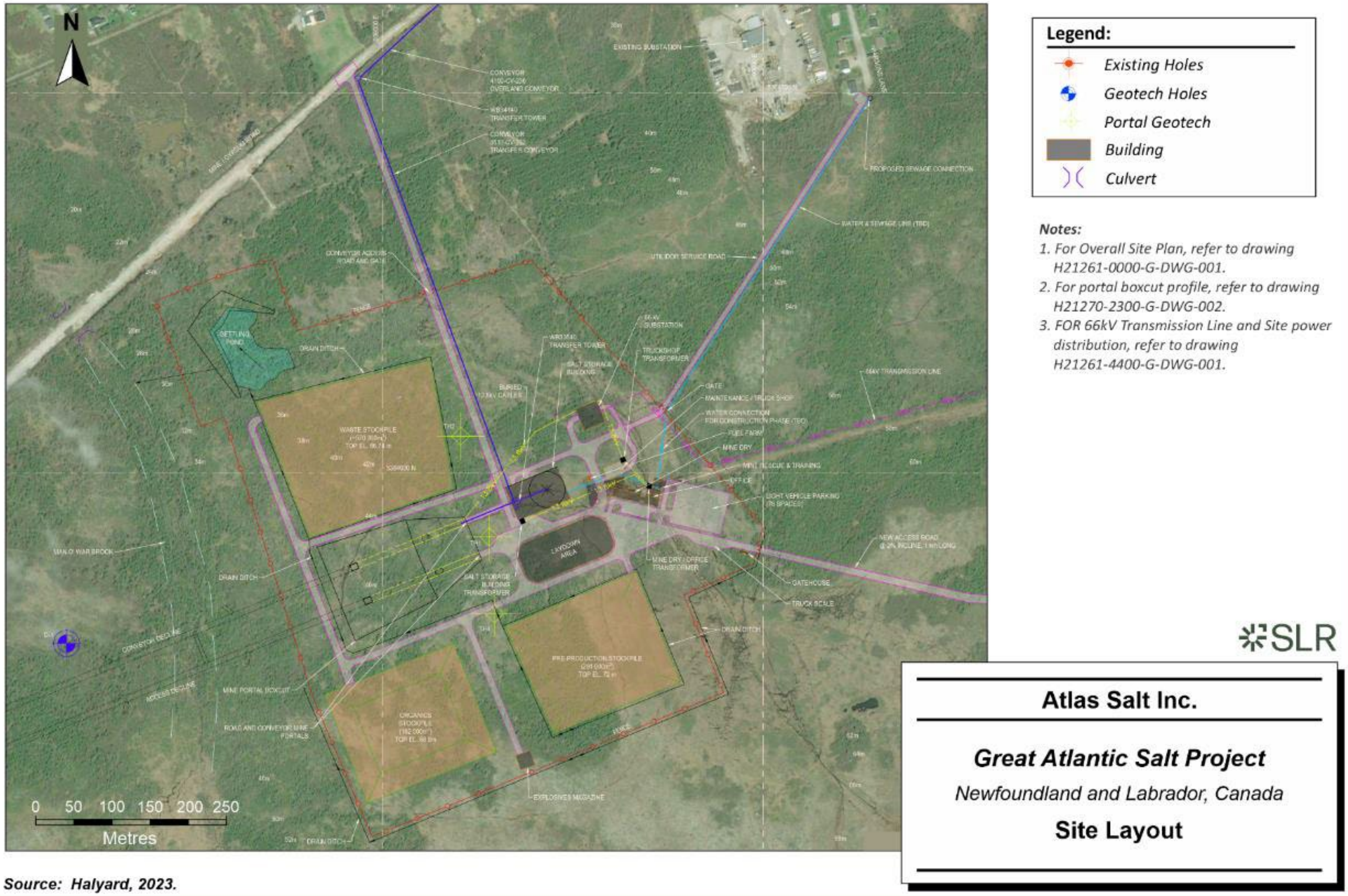
18.1 Surface Development

In order to develop the Project, a surface clearing of approximately 40 ha will be developed. Within this area, a "site terrace" will be created. The area of the site terrace is categorized as gently sloping toward the north-northwest, with an elevation of from 40 masl to 50 masl, with bogland identified to the immediate southeast. Three test holes were drilled to depths ranging from 12.2 m to 28.9 m in the area of the proposed portal box cut to evaluate geotechnical conditions.

Organics consisting of a thin layer of rootmat followed by peat and topsoil were encountered at all drill hole locations, with a total thickness ranging from 0.25 m to 1.0 m. Glacial till was encountered underlying the organic layers extending to depths ranging from 8.8 m to 12.4 m below ground surface. Standard penetration tests completed on the till rated the material as compact to very dense. Bedrock was encountered in all holes below the till. Inferred sandstone bedrock that was disintegrated, highly weathered, and very weak was encountered in one hole and extended to end of hole. This hole was drilled to a depth of 28.9 m. In the other two shorter holes a thin layer of fair quality mudstone was encountered before the rock transitioned to a good to excellent quality, and moderate to strong sandstone that continued until end of hole at 12.2 m.

It is recommended that further geotechnical investigations be undertaken to determine the suitability of this area to host the site infrastructure and mine access locations, including site-specific geotechnical investigations for the waste rock pile and surface buildings.

Figure 18-1: Site Layout



Source: Halyard, 2023.

Figure 18-2: Overall Project Layout

Drill Holes UTM ZONE 21-NAD 83			
ID	EASTING	NORTHING	GROUND ELEV.
CC-4	388120.80	5363353.00	47.41
CC-6	387914.10	5363747.80	24.86
CC-7	388525.00	5363709.50	38.09
CC-8	387770.40	5363177.00	54.67
CC-9	388374.80	5363307.70	47.55
CC-9a	388367.50	5363307.70	47.11
CC-9b	388362.00	5363314.00	46.7
TH1	389640.10	5363916.00	50.97
TH2	389602.30	5364048.50	46.73
TH4	389646.50	5363815.10	54.67
D-1	389084.10	5363776.20	47.42

Source: Halyard, 2023.

18.2 Roads

18.2.1 Access Roads

The site will be accessed by a new 1.3 km access road that will connect the site terrace to Steel Mountain Road. Steel Mountain Road connects to the Trans-Canada Highway, thereby limiting the amount of heavy vehicle traffic through the town of St. George's. The access road will be developed at a 2% gradient, with suitable widths to maneuver heavy machinery. This road will be the main access route to the site during construction as well as after construction for operational personnel, supplies, and trucked salt shipping for the local market.

An alternative access route considered was developing a single road approximately 300 m in length connecting to the historical haul road that bisects the GAS Property. This road will be constructed alongside the transfer conveyor carrying salt from the site to the overland conveyor and will be used only for conveyor maintenance.

A third access route will be constructed along a utility corridor where potable water and sewage pipelines will connect the site to the town's infrastructure. This road is not expected to be regularly used once the pipelines have been laid, buried, and become operational.

18.2.2 Site Roads

In addition to the access road, approximately 3.3 km of site roads are required for access to various components of surface infrastructure such as buildings, the mine portals, waste piles, water management areas, and substation. It is recommended that studies be undertaken to identify suitable road construction material in the vicinity of the Project.

18.3 Electrical Power

Electrical power is available from a substation owned by NL Power (a corporation that distributes power to end-users) located at the intersection of Steel Mountain Road and Muises Lane approximately 1,000 m from the proposed mine site. It is proposed that a 66 kV transmission line approximately 1,400 m long will connect the Project to the NL Power substation. Preliminary discussions between Atlas and NL Power indicate that the substation has the capacity to accommodate the addition of an industrial consumer such as what is being proposed for the Project. A site substation will receive the power from NL Power, and then step down the power to 13.8 kV and distribute it to all the key areas of the Project including the mine, process plant, surface buildings, and overland conveyor. The overland conveyor and port storage facilities (1.0 MW) will be connected to the grid through a port area E-house and local overhead line tie-in (for the overland conveyor tunnel).

The initial operation connected load is estimated at 12 MW increasing over time with the addition of the third CM, additional haul truck chargers and extensions of the conveyors in the mine to 13.7 MW at full production and ultimately to 15.4 MW. The connected loads are summarized in

Table 18-1.

Table 18-1: Site Connected Electrical Load

Connected Electrical Load (kW)			
Area	**Initial**	**Year 3**	**Ultimate**
Continuous Miners & support	2,062	2,832	2,832

Connected Electrical Load (kW)			
Area	Initial	Year 3	Ultimate
Ground support	410	410	410
Haul truck chargers	2,700	3,375	4,050
LHD chargers	1,350	1,350	1,350
Utility vehicle chargers	784	784	784
ROM breakers and conveyors	71	272	1,317
Decline dewatering	257	257	257
Mine ventilation	1,022	1,022	1,022
Plant	1,290	1,290	1,290
incline conveyor	821	821	821
Site storage, reclaim and conveying	258	258	258
Reagents	53	53	53
Subtotal Site Substation	11,077	12,725	14,443
Overland conveyor	257	257	257
Storage and ship loader	693	693	693
Subtotal Port E House	950	950	950
Total	12,027	13,674	15,393

The electrical load list will be further developed during basic and detailed engineering and will provide the basis for advancing discussions with NL Power to determine whether any substantial modifications are required for the St. George's substation.

18.4 Water

18.4.1 Fresh Water System

The Project is located within the town of St. George's and a connection to the town water supply will be established. Discussions with the St. George's town planner indicated that the town freshwater system has the capacity to accommodate a project such as what is being proposed at Great Atlantic, however, further work is required to confirm this. Potable water will be available in the administration building, maintenance facility, and mine dry, and will be distributed to other locations within the site and underground using portable systems.

18.4.2 Sewer System

Similar to the freshwater system, the Project will connect domestic sewer waste to the town infrastructure. This will include wastewater from the administration building, maintenance facility, and mine dry. Sewerage from underground facilities will use truck pump-outs to collect and carry sewerage to the town's sewerage disposal system.

18.4.3 Fire Protection Water

A fire protection system will be installed to service the surface onsite infrastructure. A central fire water storage tank fed from the town's potable water supply will store water for use in the event of a fire. A series of fire hydrants will be installed at key areas around the site and connected to the fire water storage tank.

18.4.4 Process Water

There is no requirement for process water at the site, given that the processing system consists only of dry screening and crushing. A small amount of water will be used for YPS make-up, which will be applied to salt intended for the local market as it enters the onsite salt storage building. This water will be supplied from the potable water system.

18.4.5 Surface Non-contact Water Management

A series of ditches along the upslope perimeter of the site will divert surface water away from the site. These drainage ditches will utilize the natural topography of the area so that water collected in the ditches gets redirected into streams and creeks in the area.

18.4.6 Contact Water Treatment

Water that may have come into contact with salt will be collected in an effluent water treatment system. This water will be made up of the following principal sources:

- Surface water runoff from the waste rock pile and temporary salt storage
- Water that has been pumped to surface from the underground sump at the base of the decline tunnels

A site water balance has been completed that shows the Project will have a net surplus of water throughout the year. The contact water handling system includes:

- Catchment ditches located around the property
- Effluent water pond
- Overflow spillway into a nearby watercourse

The effluent water pond allows for solids to settle out of the water using gravity prior to release into a nearby watercourse. No chemical or mechanical treatments of the discharge water are planned at this time. It is recommended that further analysis be undertaken on the quality and quantity of water that is anticipated to be handled by this system.

18.5 Waste Management

Waste management facilities will be located near the mine portals and include the following.

- A waste rock storage facility sized to accommodate approximately 570,000 m^3 of waste rock and overburden generated from the decline excavations will be located immediately to the north of the box cut and portals. Some of the excavated material will be used to backfill the box cut over steel tunnel liners that will extend the tunnels to the surface grade.
- A second pile (the organics stockpile) of approximately 162,000 m^3 is planned for the top 0.5 m of material removed from the site during initial site clearing in preparation for grading and construction. This pile will be located south of the box cut and portals and the material will be used during eventual site rehabilitation at the end of the mine life.

Salt excavated during the pre-production period (approximately 291,000 m^3 produced during the excavation of the area that will accommodate the plant and additional salt excavated during plant construction and before it is commissioned) will be temporarily stored on a lined-stockpile on the surface until it can be processed. The stockpile will be located adjacent to the organics stockpile and to the southeast of the box cut and portals. The stockpile will be lined with a high density polyethylene (HDPE) liner over a crushed rock and sand base, and the salt will be covered with tarpaulins so that rain and snowmelt will not be contaminated with salt. Regardless, water collected from this area will be collected in perimeter ditches and directed to the settling pond and can be monitored for salinity.

All processed material is either sold as product or returned to underground mined out areas and there is therefore no requirement for a tailings management facility.

18.6 Surface Buildings and Facilities

Onsite buildings and facilities will consist of the following:

- Administration building
- Light vehicle parking
- Mine dry (change house)
- Surface mobile equipment maintenance shop, with the main maintenance shop being in the underground mine
- Spares and supplies storage
- Cold storage area
- Perimeter fencing
- Gatehouse
- Truck scale
- Explosives storage

A camp is not required for the Project as it is assumed that the workforce would commute daily from the local area.

18.7 Salt Conveyor System and Overland Conveyor

The salt conveyor system includes the following principal components:

- Onsite salt transfer system
- Salt storage building
- Overland conveyor from site to the port

18.7.1 Onsite Salt Transfer System

Salt product will be conveyed up the decline from the 240 Level process plant to surface via a 1.35 km long 36 in. wide belt. On surface, the salt will be conveyed by covered 36 in. wide belts with 800 tph capacity as follows:

- Site stockpile conveyor
- Overland feed conveyor
- Overland conveyor

18.7.2 Site Salt Storage Building

The site salt storage is planned to have a capacity of nominally 11,700 t (approximately two days of production). The site salt storage serves a dual purpose:

- Providing a buffer in the event that the overland conveyor requires planned maintenance.
- A location for loading salt into trucks for selling into local markets.

The site salt storage building will include a YPS system and will have the ability for a FEL to reclaim the salt into the conveyor system for delivery to the port.

18.7.3 Overland Conveyor

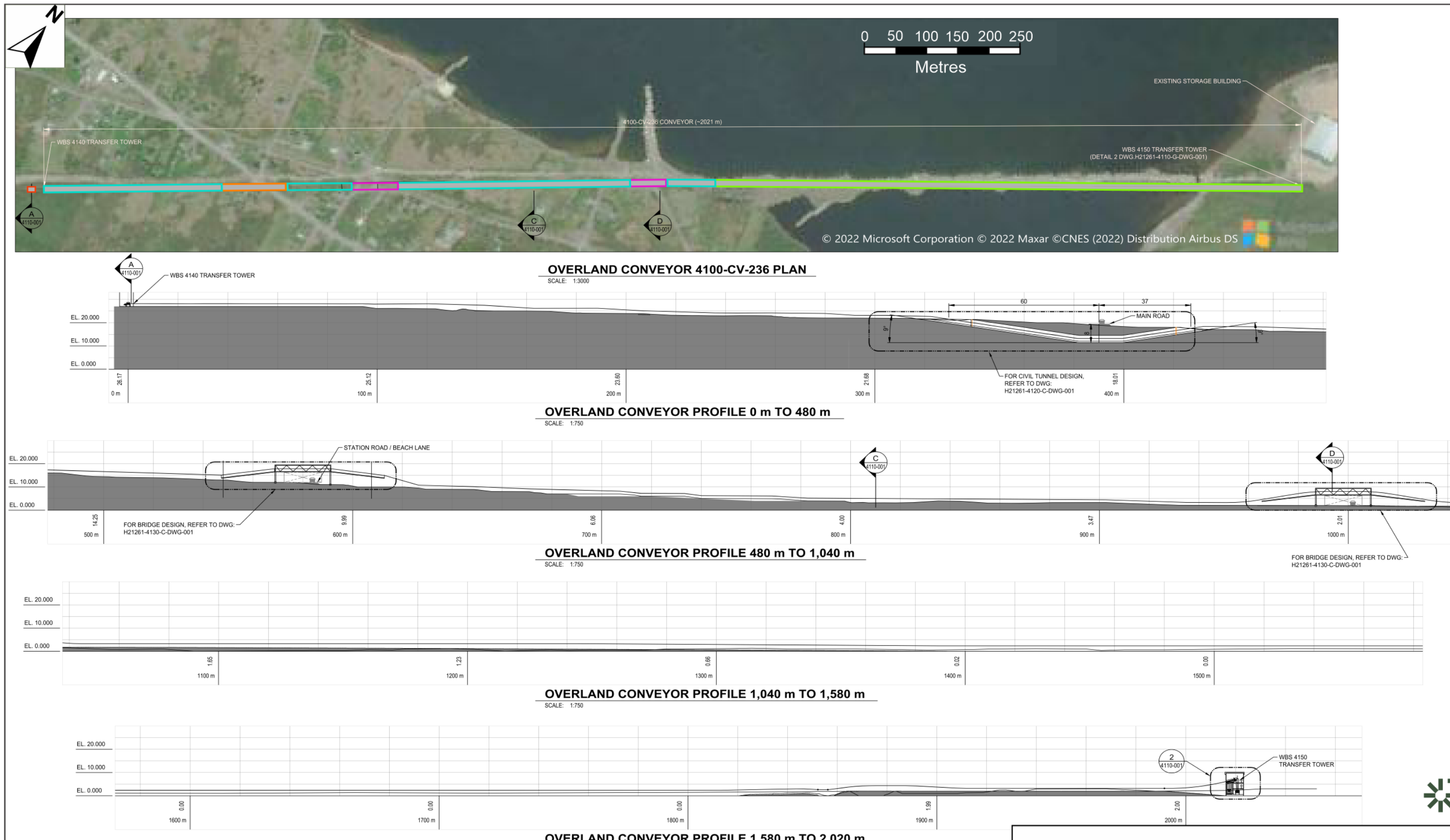
A principal component of the Project is the planned overland conveyor connecting the site with the existing Turf Point Port. The alignment of the overland conveyor will generally follow the historical haul road and causeway that was built in the 1960s to serve the gypsum quarry to the southwest of the Project. The overland conveyor will be a single continuous conveyor approximately 2 km in length. Three portions of the overland conveyor require crossings of municipal infrastructure – one in the area of Main Street, one at the intersection of Station Road and Beach Lane, and a third one near the municipal marina at Court House Road. At the crossing of Main Street, the conveyor will pass through a tunnel under the road, while the crossings at Beach Lane and the marina will use bridges over the road. The route and cross sections of the different overland conveyor sections are shown in Figure 18-3, while the cross sections of the different overland conveyor sections are shown in Figure 18-4.

The overland conveyor will be a total of 2,021 m in length from site (discharge of the overland feed conveyor) to the transfer onto the port storage feed conveyor that carries the salt into the existing and new port storage buildings. The conveyor can be divided into approximate lengths characterized as follows:

- 670 m of covered conveyor, fenced, aligned beside the haul road
- 100 m within a tunnel under Main Street at the intersection with Butt's Lane
- 100 m of covered conveyor, fenced, aligned beside the haul road between Butt's Lane and Beach Lane
- 75 m of covered conveyor in a bridge over Beach Lane
- 370 m of covered conveyor, fenced, aligned beside the haul road between Beach Lane and the marina access road
- 60 m of covered conveyor in a bridge over the marina access road
- 890 m of covered, raised conveyor across the causeway
- 130 m covered conveyor

SLR has not researched property ownership along the route of the proposed overland conveyor. It is recommended that a detailed alignment study of the overland conveyor be carried out to gain a full understanding of land ownership considerations to ascertain right-of-way access for the overland conveyor.

Figure 18-3: Overland Conveyor Route



Notes:
1. For Overall Site Plan, refer to drawing H21261-0000-G-DWG-001.
2. For Overland Conveyor Sections, refer to drawing H21261-4110-G-DWG-001.

Legend:
- *Coveyor and Gallery Sections: ~280 m + ~390 m = 670m*
- *Underground Section of Conveyor (In tunnel): ~ 300 m*
- *Conveyor and Gallery Bridge Section: ~ 30 m*
- *Elevated Conveyor Section: ~ 1120 m*
- *E-House*

Atlas Salt Inc.

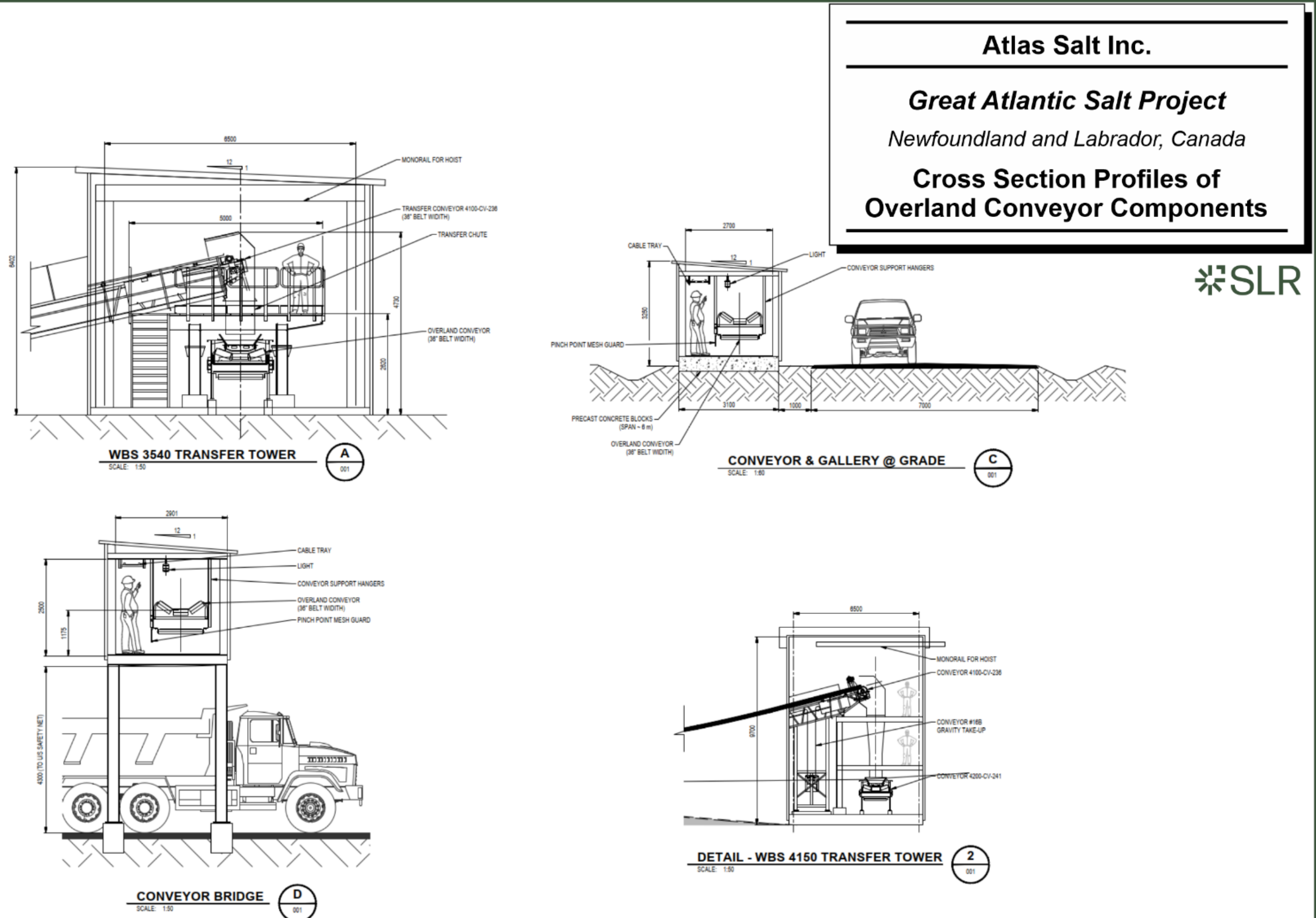
Great Atlantic Salt Project

Newfoundland and Labrador, Canada

Overland Conveyor

Source:* *Halyard, 2023.

Figure 18-4: Cross Section Profiles of Overland Conveyor Components



Notes:
1. For Overall Site Plan, refer to drawing H21261-0000-G-DWG-001.
2. For Overland Feed Conveyor 3510-CV-232 Plan and Profile, refer to drawing H21261-3510-G-DWG-002.
3. For Overland Conveyor 4100-CV-236 Plan and Profile, refer to drawing H21261-4100-G-DWG-001.

Source: Halyard, 2023.

18.8 Turf Point Port Facility

Turf Point port is an existing aggregate exporting facility currently used by Atlas to ship gypsum from its Ace gypsum quarry to markets in North America. Turf Point is owned by a third-party and exports between 150,000 dmt and 200,000 dmt per year of gypsum. It is assumed that the GAS Project will use the port for the shipment of salt contingent on establishing a commercial agreement with the third-party port owner.

The principal components of the port as it exists today include:

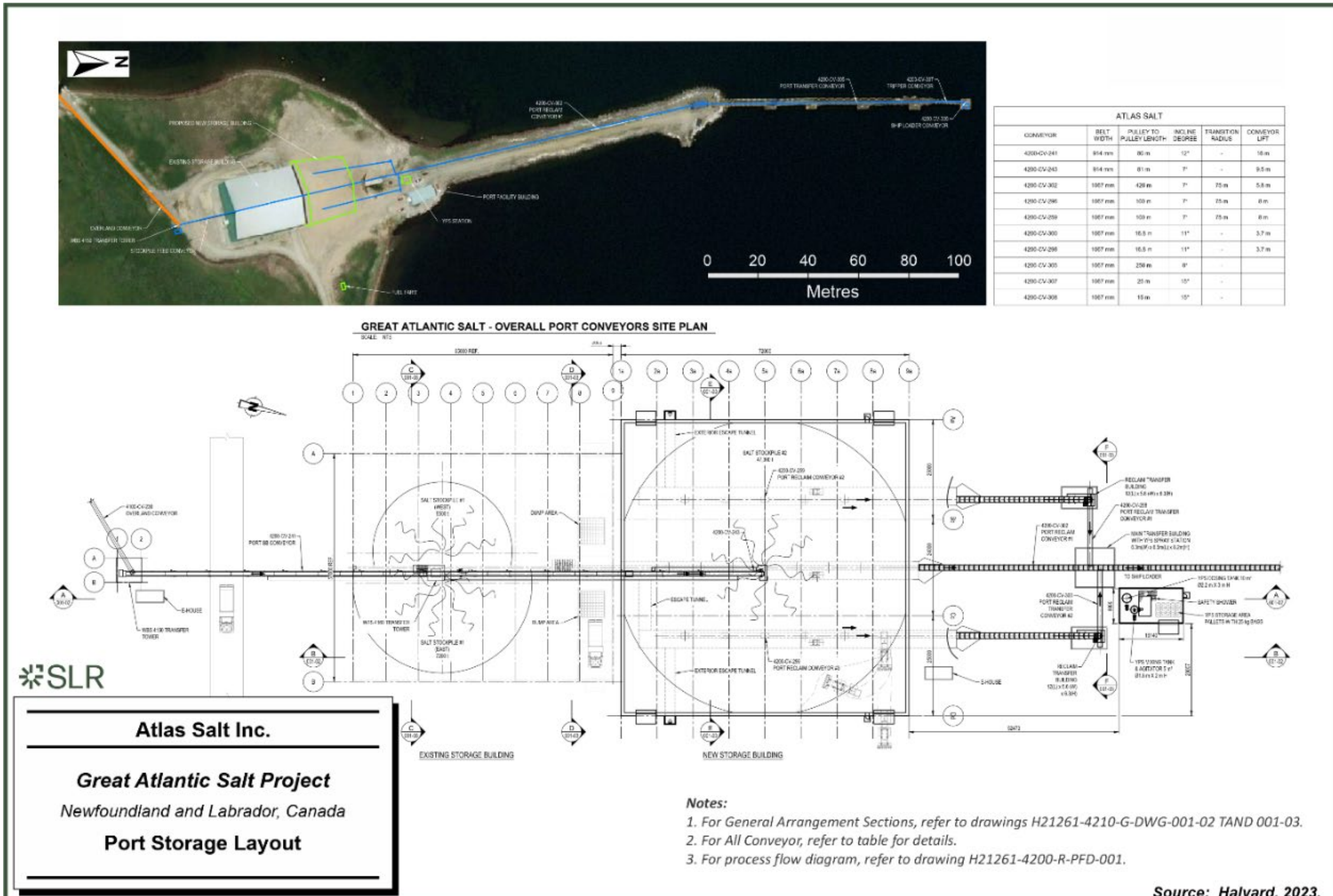
- Aggregate storage building (with an estimated capacity of approximately 12,700 t if it was to be used for salt)
- Outdoor aggregate storage
- Seven draw points (one inside the building and six under the outdoor storage) feeding onto a single reclaim conveyor feeding the ship loader
- Series of five concrete caissons extending into Bay of St. George's connected by a structural steel trestle
- Ship loader and 36 in. wide conveyor within the structural steel trestle with a loading rate of nominally 1,000 tph

Vessels up 225 m long, 32.26 m in beam and an alongside depth of 10 m can be accommodated. The existing facilities will be augmented and refurbished to enable the port to be suitable for exporting 2.5 Mtpa of salt. The following key changes are planned:

- Modify the existing storage building to accommodate the delivery of salt via conveyor.
- Construct a new storage building with a capacity of 47,300 t in the area of the current outdoor storage immediately adjacent to the existing storage building.
- Construct reclaim tunnels, feeders, and conveyors underneath the new building to feed salt to the ship loader.
- Install YPS make-up, dosing, and addition point equipment, and install salt sampling equipment.
- Refurbishment of the existing ship loader including a detailed assessment of the structural steel condition, replacement of corroded steel members, sand blasting and coating, and replacement of the existing load-out conveyors with wider conveyors (42in. vs. the existing 36 in.) to allow for the conveyors' speed to be reduced and improve equipment reliability and availability.

With the addition of the new storage building, the total storage at the port will be approximately 60,000 t, or approximately two ship loads. The ship loader would maintain its capacity to load at a rate of 1,000 tph. The proposed port modifications are shown in Figure 18-5 and Figure 18-6.

Figure 18-5: Port Modifications Overview



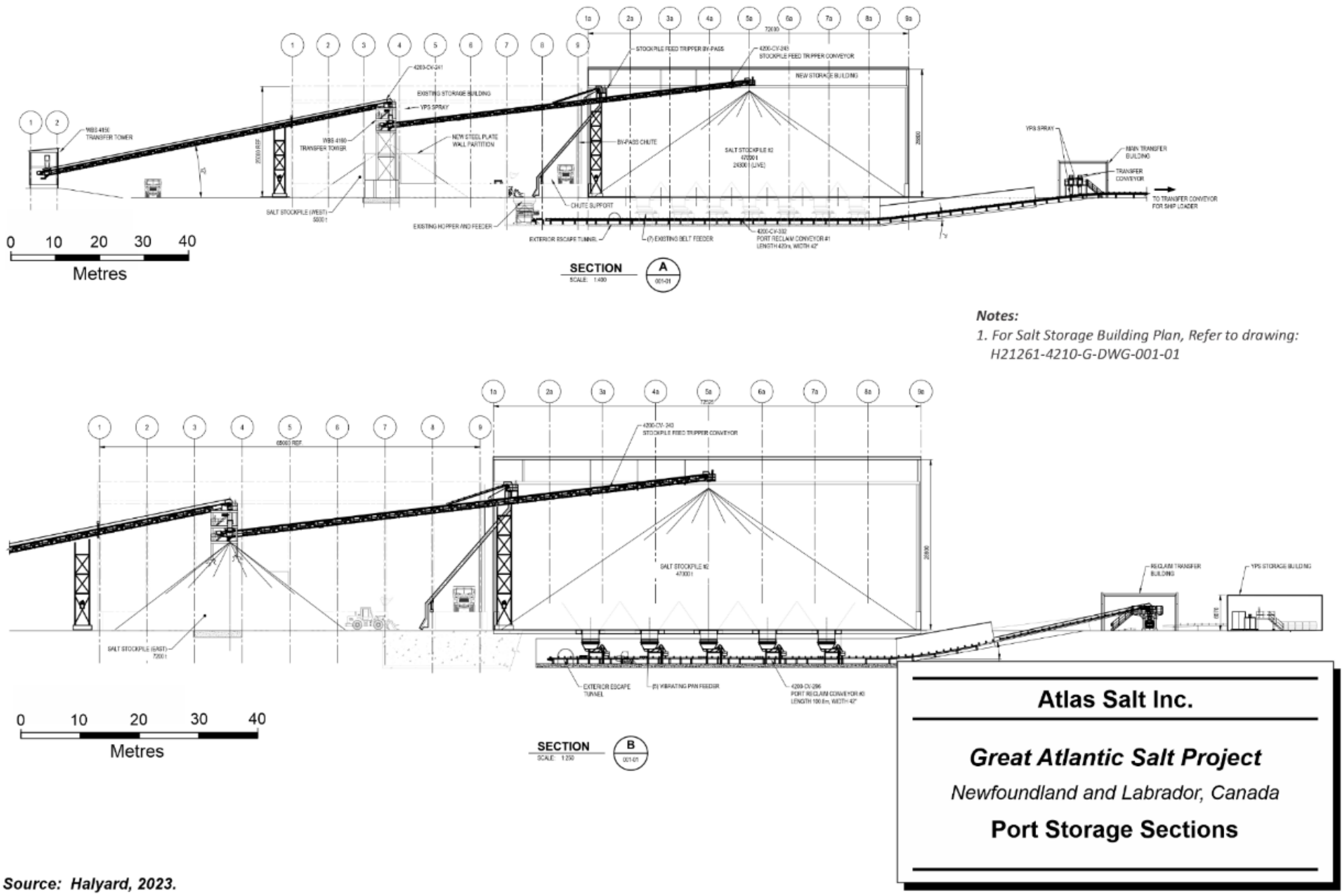
ATLAS SALT					
CONVEYOR	BELT WIDTH	PULLEY TO PULLEY LENGTH	INCLINE DEGREE	TRANSITION RADIUS	CONVEYOR LIFT
4200-CV-241	914 mm	80 m	12°	-	16 m
4200-CV-243	914 mm	81 m	7°	-	9.5 m
4200-CV-302	1067 mm	428 m	7°	75 m	5.8 m
4200-CV-296	1067 mm	100 m	7°	75 m	8 m
4200-CV-299	1067 mm	100 m	7°	75 m	8 m
4200-CV-300	1067 mm	16.5 m	11°	-	3.7 m
4200-CV-298	1067 mm	16.5 m	11°	-	3.7 m
4200-CV-305	1067 mm	250 m	8°	-	
4200-CV-307	1067 mm	25 m	15°	-	
4200-CV-308	1067 mm	15 m	15°	-	

Notes:

1. *For General Arrangement Sections, refer to drawings H21261-4210-G-DWG-001-02 TAND 001-03.*
2. *For All Conveyor, refer to table for details.*
3. *For process flow diagram, refer to drawing H21261-4200-R-PFD-001.*

Source: Halyard, 2023.

Figure 18-6: Long Section of Proposed Port Modifications



Source: Halyard, 2023.

19.0 Market Studies and Contracts

19.1 Basis of Marketing Assessment

In order to establish a reasonable marketing plan and pricing data, SLR has reviewed publicly available information and relied on information and documentation commissioned specifically for Atlas and the Project. Documents the QPs have relied on for this FS include the following:

- Salt Market Analysis, North American Deicing Markets; Independent Report, August 2022
- Atlas Salt Economic Review; Independent Report, October 2022
- North American Road Deicing Salt Price Research; Independent Report, August 2023
- Transport and Logistics Review for Atlas Salt; Independent Report, August 2023
- The Global Salt Market 2022-2032; Independent Report
- Compass Minerals Inc. Technical Reports – Cote Blanche and Goderich, 2021 (Compass 2021)
- Compass Minerals Annual Reports, Quarterlies, and public information, 2010 to 2023
- Salt Market Analysis – North American Deicing Markets, December 2018, Independent Report
- Conference proceedings from the 2018 World Salt Symposium, Park City UT, USA.
- USGS Salt Data Sheet, Mineral Commodity Summary 2020, 2022.

At this time, no other types of salable salt (i.e., chemical salt, food salt, or industrial salt) are planned to be produced from the Project.

19.2 Market Overview

The North American highway de-icing market is divided into two primary end-users: government entities and commercial operators, accounting for approximately 70% and 30% of volume, respectively.

Government entities include municipalities, Departments of Transportation (DoT), counties, and other provincial or state entities, while commercial operators may vary from distribution companies for retail purchase, or contractors who purchase rock salt for de-icing private property.

The specifications of rock salt are summarized in Table 19-1.

Table 19-1: Rock Salt Product Specifications

Specification	ASTM-D632	Typical Government Bid/Tender	Screened Mediums (Commercial Contracts)
Purity (% NaCl)	95% min	95% min	>95% min
Moisture	2% max	1%	0.5% to 1% max
Gradation	0 to > 12.5 mm	0 to > 12.5 mm	2 mm up to 6 mm
Fines	0% to 15% passing 0.5 mm (#30 mesh)	N/A	<5% below 2 mm

Specification	ASTM-D632	Typical Government Bid/Tender	Screened Mediums (Commercial Contracts)
Yellow Prussiate of Soda (YPS, anti-caking agent)	N/A	50-150 ppm	50-150 ppm

19.3 Market Size

The total annual North American market for de-icing salt is estimated to be approximately 25 Mt to 35 Mt.

The North American rock salt market is currently supplied by five main companies, as presented in Table 19-2.

Table 19-2: North American Rock Salt Producers

Company	Fully Integrated	Primary Market	Notable Mines Serving NA Market
Compass Minerals	Yes	All CA, all USA except USEC	Goderich ON, Cote Blanche LA
Kissner Group[1]	Yes	All CA, all USA	Windsor ON, Pugwash NS, Seleine QC, Detroit MI, Tarapaca Chile, Inagua, Bahamas
Cargill Salt[2]	Yes	All CA, all USA	Cleveland OH, Lansing NY
Eastern Salt	Yes	All USA	Iquique Chile
American Rock Salt	Yes	USA Northeast	Hampton Corners (Rochester) NY

Notes:

1. Kissner Group, owned by Stone Canyon Industries Holdings, acquired K+S Morton Salt in 2021.
2. Cargill owns the formerly producing Avery Island salt mine, situated in Louisiana, which closed in 2022.

“Fully integrated” salt producers refer to companies that own and operate both the mines and distribution channels. In addition to the five producers identified in Table 19-2, there are other companies that import rock salt into North America from North Africa, Egypt, Chile, the Caribbean, and Mexico. According to Compass 2021 and other sources, salt imports into the North American region were approximately 23.0 Mt in 2019. De-icing salt imports comprised approximately 8.0 Mt to 10.0 Mt from 2019 to 2021.

The international salt importers to North America contend with variable shipping rates and rely on low operating costs at the source mines to be profitable with shipping such great distances. It is anticipated that because of its location, GAS product can be competitive with salt imported from international producers.

19.3.1 Target Markets

Table 19-3 presents estimated annual road salt usage by the regions in which Atlas could potentially ship GAS product. Atlas has determined that the initial priority markets will be US East Coast (Maine to North Carolina and inland states), Newfoundland, Québec, and the other Maritime provinces. A particular target will be displacement of imported supply.

Table 19-3: Rock Salt Consumption by Region

Country	Regional Market	Annual Consumption Range (Mtpa)		GAS High Potential
		Low	High	
USA	New England	3.5	5.0	Y
USA	Mid-Atlantic East Coast	4.0	6.0	Y
USA	Great Lakes	7.0	8.5	N
USA	Mississippi River Supply	7.0	8.0	N
Canada	Ontario	3.5	3.5	N
Canada	Québec and Maritimes	3.5	5.0	Y
Total		28.5	36.0	
Total for GAS High Potential Markets		11.0	16.0	

Based on published data, the province of Newfoundland consumes approximately 300,000 t to 400,000 t of rock salt annually. Newfoundland currently does not have any rock salt production from within the province.

As demonstrated in Table 19-3, the annual consumption of markets that GAS has a high potential of penetrating is estimated to be approximately 11 Mtpa to 16 Mtpa. SLR notes that annual consumption varies, with some winters having more weather events necessitating the increased application of rock salt.

Table 19-4 presents the percentage of market share captured at the design capacity when considering only the High Potential Market.

Table 19-4: Comparison of the Great Atlantic Salt Project High Potential Market Demand with Target Throughputs

GAS Potential Throughput (Mtpa)	GAS Percentage of Market Share of High Potential North American Market Demand	
	Low (11.0 Mtpa)	High (16.0 Mtpa)
2.5	23%	16%
4.0	36%	25%

With a production rate of 2.5 Mtpa, Atlas would capture from 16% to 23% of the high potential North American market. At 4.0 Mtpa, the rate of capture would increase from 25% to 36%. Atlas would supply approximately from one quarter to one third of total rock salt in the target market, which is similar to the current scenario with two to three companies operating in each sub-region of North America. Gaining this level of market penetration will require a ramp-up period as Atlas establishes itself in the market. To achieve market share, it is envisaged that Atlas would first displace production that originates from overseas markets, given the relative shipping advantage that GAS would have. Further, Atlas could potentially displace some production from the aging rock salt mines located in the region.

19.4 Pricing

19.4.1 Target Markets

Atlas has based the FS sales plan on the following markets.

- US East Coast (USEC) – Maine to Baltimore ports
- Québec – Montreal and St Lawrence downstream
- Newfoundland – St. John's and west coast
- Spot Sales

Table 19-5 shows the Project allocation by destination or type of sale.

Table 19-5: Market Breakdown

Destination	Allocation	
	%	Tonnes
USEC	50%	1,250,000
Newfoundland	15%	375,000
Québec	25%	625,000
Spot Sales	10%	250,000
Total	100%	2,500,000

Spot sales refer to private companies that buy salt for use in de-icing operations on private property, and who typically pay a premium price due to the relatively low tonnages consumed.

All salt prices and logistics costs are based on Q3 2023 estimates.

19.4.2 Shipping and Logistics

Atlas has assessed the costs of water borne transport and logistics costs to ship product from Turf Point to the locations listed above.

Although there exists a typical salt marketing "season" from April to December of each year, it is assumed that GAS can ship salt year-round since it has access to a generally ice-free port, and the high potential market is accessible year-round.

With the exception of the west coast Newfoundland market, Atlas would sell salt as far as the point of delivering it dockside at each of the destination ports. From that point, a distribution company would manage the unloading of the salt, salt storage, and delivery of salt to the final point of sale. This is generally known as CIF (Cost, Insurance, Freight).

It has been assumed that shipping would occur mainly via using 25,000 t to 30,000 t capacity self-unloaders and up to 40,000 t capacity grab unloaders. Smaller vessels could also be utilized for smaller ports. Shipping to USEC will be by international flagged vessels.

For the west coast Newfoundland market, SLR has assumed that Atlas will use a Delivered at Place (DAP) pricing basis, in which Atlas will arrange for delivery of salt to the final point of sale determined by the customer (typically a municipality). Atlas will accomplish this either by truck for nearby municipalities, or vessels when appropriate.

Some sales could be conducted on a Free on Board (FOB) basis, where salt purchasers would arrange for a vessel to be loaded with salt at Turf Point port.

Shipping prices are based on current quotes from an independent source.

Regardless of the shipping terms (DAP, FOB, CIF), the pricing assumed by SLR in the financial model is FOB Turf Point Port.

19.4.3 Prices

SLR has developed a weighted average of the price that Atlas could reasonably expect to receive assuming FOB Turf Point of $72.24 per tonne. The weighted average is based on actual 2022/2023 pricing data for individual ports in the markets listed in Table 19-5.

19.5 Contracts

Atlas has had preliminary discussions with potential salt purchasers as well as salt brokers. Similarly, the Company has had preliminary discussions with logistics companies and port operators that would be involved in the process of delivering salt to destination markets. As of the effective date of the FS, Atlas has not entered into any commercial contracts with respect to salt marketing or logistics.

20.0 Environmental Studies, Permitting, and Social or Community Impact

This chapter describes the environmental baseline setting, potential environmental and social issues and recommended studies, how Project designs have incorporated mitigation measures where practical, environmental approvals and permits required as well as conceptual closure planning for the Project. This chapter has been informed by the Feasibility Study completed for the Project as well as environmental baseline studies completed for the Project to date.

20.1 Environmental Aspects

20.1.1 Environmental Baseline (Setting)

GEMTEC Consulting Engineers and Scientists Limited (GEMTEC) carried out the following environmental baseline studies in 2022:

- Strategic planning and photo interpretation for terrestrial field studies
- Initial fish and fish habitat assessment, and reporting
- Vegetation community and habitat mapping
- Breeding avifauna and wildlife assessments
- Wetland identification, delineation, and reporting
- Desktop hydrogeological assessments and reporting
- Desktop and preliminary field hydrological assessments, and reporting

The study area assumed by GEMTEC for the baseline studies is included in this report as Figure 20-1. Key findings of this baseline work include (GEMTEC, 2023 a to d):

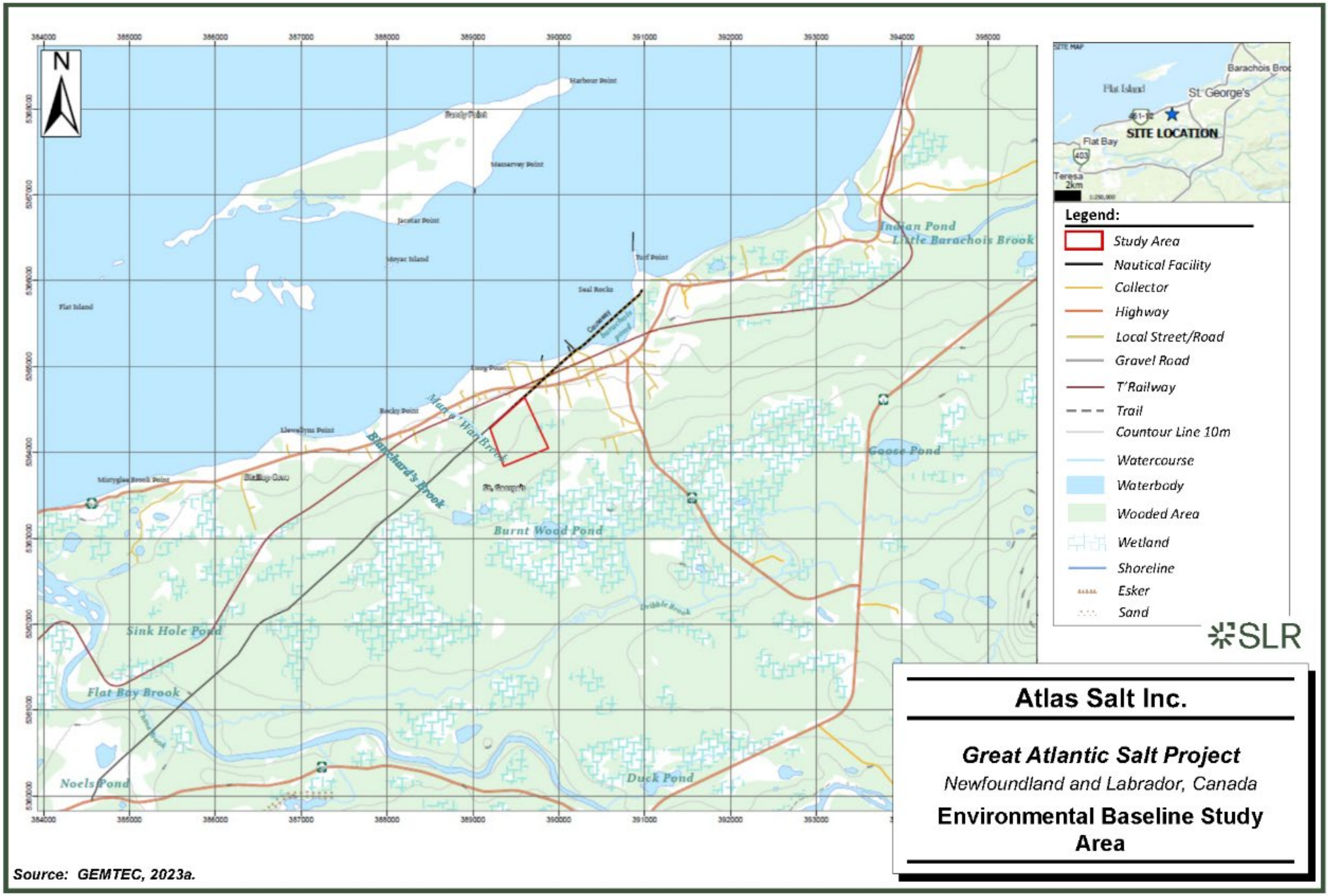
- Ecoregion: The Project lies within the St. George's Bay Subregion of the Western Newfoundland Forest Ecoregion with flat to rolling terrain and contains extensive plateau bogs. The subregion is characterized by forests of Balsam Fir with an understory dominated by wood ferns. Black spruce occurs in poorly draining areas or in areas with exposed bedrock. In heavily forested areas deep, rich soils formed from glacial deposits and runoff occur.
- Surface water: No waterbodies or watercourses were identified within the Project area, however GEMTEC indicated that the proposed Project footprint could affect adjacent tributaries and open water features. GEMTEC identified one waterbody approximately 150 m west of the Project study area, an unnamed tributary to St. George's Bay and is locally known as "Man o' War Brook" and carried out some streamflow and water quality monitoring there and in other watercourses in the general vicinity. The water quality results indicate that surface water quality is generally good.
- Groundwater: There is very limited groundwater monitoring data in the immediate vicinity of the proposed declines and surface facilities. The Town of St. George's has a wellfield Public Protected Water Supply Area (PPWSA) located approximately 1.5 km northeast of the Project area. In the Project area, groundwater recharge likely occurs in the highlands to the southeast (Long Range Mountains) and discharge likely occurs to the marine environment, in addition to various lowland regions in the Project area. Groundwater in the Project area is believed to mimic topography and flow to the northwest towards St. George's Bay.

- Wetlands: Wetland areas comprising 3.76 ha were delineated which represents 12.52% of the study area. These wetlands are characteristic of plateau bogs and have a high abundance of graminoid species.
- Protected and Sensitive areas: The Town of St. George's includes several protected/sensitive areas such as Sandy Point, Flat Bay Brook, and the Turf Point marine or barachois pond (shown in Figure 20-1). Sandy Point is an island in St. George's Bay directly across from the Town of St. George's which is reported to be culturally and environmentally significant as it supports vulnerable species and historic infrastructure. The Flat Bay peninsula and Sandy Point are considered critical habitat for the piping plover. Flat Bay brook is located to the west of the Town of St. George's and includes tidal marshes which are habitat for vulnerable species. The low area on the shore below the T'Railway between Station Road and Turf Point is a sensitive natural environment which supports vulnerable species, and which is vulnerable to sea level rise. This eastern bank and surrounding terrestrial habitat of the pond is a designated Environmental Protection area by the Town of St. George's to protect its natural environment, including rare plant and animal species which include the banded killifish and piping plover.
- Flora: 150 flora species were documented in the study area and are common species and widespread in the region.
- Fauna: 52 bird species were identified in the study area, most of which are common in the region. Four species at risk (SAR) and species of conservation concern (SOCC) were identified within the study area, namely the barn swallow (Threatened), willet (Critically Imperiled), great blue heron (Special Concern), and yellow-bellied sapsucker (Imperiled). Habitat for these species appears to be present within or proximal to the study area.

  Common animals that occur in the area include moose, mink, snowshoe hare, lynx, black bear, beaver, muskrat and otter. Wildlife encountered during field surveys include some of these species as well as frogs (non-endemic) and birds mentioned above. There are two endangered species of bats that are found within Newfoundland and Labrador: Northern Myotis and little Brown Myotis, and these were detected through acoustic monitoring during field surveys.

  No fish bearing watercourses occur within the Project footprint. However, GEMTEC conducted field investigations on Man o' War Brook, as well as the marine or barachois pond habitat southeast of the Causeway to Turf Point. Trout were found in the stream, with an estimated population of 350 brook trout. No other aquatic species were identified in the watercourse during the field surveys. eDNA assessments were completed to determine relative abundance of fish populations within the barachois pond. Twelve species were identified with American eel noted as Threatened SAR under federal law.

Figure 20-1: Environmental Baseline Study Area



Source: GEMTEC, 2023a.

20.1.2 Key Environmental and Social Issues

To support the FS, subject matter experts carried out desktop work which included reviewing the available baseline information and the Project description to identify potential environmental and social impacts as well as mitigation measures and made recommendations for further work to support Project development and environmental approval processes.

The following potential environmental and social impacts have been identified for the Project:

- Air quality: Because the mining and processing facilities are underground, air quality impacts are expected to be minor. The mine design proposes a fully electric underground operation without the use of diesel fuel as the energy source, thus significantly minimizing exhaust emissions. Dust generated in the mining area and at material transfer points as well as along the conveyor route has the potential to affect air quality and human health. The conveyor will be buried where it passes close to receptors, and the conveyor and transfer points above ground will be fully enclosed, and this should mitigate most impacts. The mineral extraction area is not located close to the communities.
- Noise: Noise will be generated in the mining area and at material transfer points as well as along the conveyor route, which could pose a nuisance to the community. As mentioned above, the conveyor will be buried where it passes close to receptors and the conveyor and transfer points above ground will be fully enclosed, which should mitigate most impacts, and the mineral extraction area is not located close to the communities.

  • Increased shipping activity at Turf Point Port has the potential to generate underwater noise that could affect sensitive marine species.
- Surface water: The discharge of excess water to watercourses has the potential to cause water quality impacts and alter the flow regime. No chemicals will be used in the production of the salt product. Surface water management measures have been incorporated into the Project design which includes a surface water runoff system to divert clean water around the Project infrastructure area and to contain runoff from infrastructure areas in water management conveyance infrastructure and a settling pond to minimize impacts on the receiving environment. The discharge location will be designed with adequate protection against erosion.

  • Dewatering has the potential to alter groundwater flows to surface waters (surface water base flow contribution).
- Groundwater: SLR developed a pre-feasibility level numerical groundwater model to simulate the effects of the Project dewatering activities during operation on the local groundwater regime and to quantify groundwater inflow into the underground excavations. Model predictions support water management planning and impact assessment. Additional groundwater monitoring data and predictive modeling are recommended to support detailed design and environmental assessment / permitting.
- Aquatic ecosystem: Water discharged from the sediment pond to the Man ‘o War Brook could affect fish and fish habitat. Natural drainage could be altered due to water being routed around Project infrastructure areas and the containment of runoff from key infrastructure. This in turn can result in increased erosion potential. Potential contamination of surface water from construction and operational activities has the potential to impact on fish. These impacts can be managed through limiting site clearing activities and infrastructure footprint areas, avoiding activities close to water bodies as

far as practically possible, implementing strict measures for handling of materials, and managing erosion.

• Increased ship traffic at the Turf Point Port may pose additional risks to marine mammals.

- Terrestrial ecosystem: Vegetation clearing, construction, and mining activities will result in habitat loss, while noise, dust, and lighting, and obstructions such as the conveyor, could interfere with wildlife. These impacts should be mitigated through minimizing site clearing activities, managing noise, dust and lighting, and documenting any wildlife movement along the conveyor route and providing opportunities for animals to cross the conveyor route in the design of this infrastructure.
- Heritage: A heritage survey has not yet been conducted for the Project and there is potential for heritage or cultural resources to occur within infrastructure footprint areas. SLR conducted a search using land use spatial data available from the province and identified no historic or paleontological sites within the Project area or surroundings.
- Socio-economic: Mining projects have the potential for both positive and negative socio-economic impacts. Potential positive impacts include employment and procurement opportunities, and a positive net economic impact on the local, provincial and national economy. The company plans to implement employment and procurement procedures aimed at maximizing the benefits to local communities and social upliftment initiatives aimed at addressing community needs and social impacts.

  • Potential negative impacts can be caused by the influx of job seekers to an area, which in turn, increases pressure on basic service delivery and raises concerns around safety and security, particularly in the early stages of Project development. These impacts will require collaboration and communication with local communities and government to plan and develop management plans.
- Visual: Surface infrastructure has the potential to alter the landscape character of the site and surrounding area through the establishment of both temporary and permanent infrastructure. Mitigation measures include minimizing disturbance areas, lighting, and rehabilitation of final landforms.

At this stage, in the QP's opinion, there are no potential impacts identified which could not be mitigated to an acceptable level. In some cases, the mitigation measures are built into the design, while other mitigation measures and monitoring plans will need to be developed and implemented during construction, operations and closure to manage and mitigate potential impacts.

20.1.3 Recommended Further Studies and Work

In the QP's opinion, further work is required to supplement baseline data, assess the potential impacts and develop management plans to support the Project environmental approval processes as identified by the subject matter experts. Table 20-1 outlines this recommended further work.

Table 20-1: Recommended Studies or Further Work

Environmental Resource	Recommended Studies/work
Air Quality	Assess potential air quality impacts and determine what management measures and monitoring is warranted.
Noise and vibration	Conduct baseline airborne noise measurements Assess potential noise and vibration impacts and develop a management plan for the mining operations. Engage with relevant regulators to determine if any assessment work is warranted regarding underwater noise.
Aquatic Ecology	Conduct additional baseline monitoring to supplement the GEMTEC baseline data. Engage the relevant regulators to determine if assessment work is needed on marine fish or mammals from the planned discharge of excess and from increased shipping activities at the marine terminal.
Terrestrial ecology	Conduct additional baseline monitoring to supplement the GEMTEC baseline data. Assess potential impacts on terrestrial ecology and develop a management plan for the mining operations.
Surface water	Collect additional baseline surface water quality data to supplement the GEMTEC data. Assess potential water quality and flow impacts on surface water resources, including the discharge of excess water from the mine site, and develop a management plan for the mining operations.
Groundwater	Collect additional groundwater data and update the groundwater model to refine impact assessment and water management planning.
Heritage and cultural resources	Conduct a Stage 1 heritage resource assessment (HRA) if required by the regulator (NL government Historic Resources Division).
Socio-economic	Conduct a socio-economic assessment to assess potential positive and negative impacts and develop mitigation measures and include community engagement.

20.2 Water and Mine Waste Management

20.2.1 Environmental Geochemistry

Acid rock drainage / metals leaching (ARD/ML) is a common environmental issue that develops in underground and open pit mining operations where rock containing sulphide minerals like pyrite (FeS_2) is excavated and exposed to atmospheric oxygen in the presence of water. Based on geological information available, ARD / ML is not expected to arise as a material issue during Project development, operation and closure.

To confirm this, geochemical characterization of the overburden/till, sedimentary rocks and conglomerates in the "red beds" and inter-burden material in the halite deposit should be performed. The testing program would include collecting a sufficient number of samples of each material type to characterize the spatial (lateral and vertical) variability of geochemical properties throughout the area of mine development.

The results of the geochemical characterization testing would be used to establish monitoring plans for leachate and surface and groundwater, and to determine the need for and types of controls necessary to protect the environment.

20.2.2 Water Management

The project has incorporated mitigation measures into the design and have considered best practice as per the Transportation Association of Canada's Synthesis of Best Practices for Road Salt Management (TAC, 2013). Mitigation measures included in the design are as follows:

- The water management plan proposes one point of discharge of contact water to the receiving environment. Surface runoff from the Project facilities (waste rock stockpile, pre-production (temporary) salt stockpile and site terrace) will be collected via perimeter ditches then directed to a sediment settling pond. Underground mine dewatering will be pumped to the same settling pond. The pond will be the only facility releasing water to the receiving environment.
- The water management plan includes the construction of a settling pond to promote settling of solid particles from surface runoff and mine water. The discharge location will be designed with suitable outflow rates and adequate protection against erosion.
- If necessary, the flow conveyance capacity of the existing culvert crossing on Man o' War Brook under the historical haul road will be expanded to maintain unrestricted flow along the brook.
- Surface runoff from the undisturbed catchment area upstream of the Project area will be diverted with ditches to reduce the volume of water from precipitation to be collected in the settling pond. Diverted water will remain within the same natural watershed from pre-development conditions.
- The temporary pre-development salt stockpile will have an impermeable foundation and will be covered with a tarp to manage seepage and runoff.

20.3 Environmental Permitting and Schedule

This section addresses federal and provincial environmental approval and permit requirements.

20.3.1 Current Status

The Project holds Mineral Claims Licence 0227183M. Atlas obtains the permits to conduct exploration activities on an as-needed basis.

The QP is unaware of any other permits or licences currently held by Atlas related to the development of the Project. The Project has not filed a Project Registration and has therefore not yet initiated any environmental assessment processes at the provincial level.

20.3.2 Federal Approval

The *Impact Assessment Act* (IAA) implemented by the Impact Assessment Agency of Canada requires the formal assessment of proposed projects that are on federal lands, involve federal funds, or are defined projects pursuant to the Physical Activities Regulations (2019). Mines and Metal Mills are defined in sections 18 to 25 of these regulations and includes mining of coal, diamonds, metals, rare earth, or quarry materials (stone, sand, or gravel), but salt is not included. The regulations also designate quarries or sand and gravel pits with a production capacity of 3,500,000 tonnes/year or more. Salt is not listed, and the proposed production rate for the Project development is ~2,5 Mt/year which falls below this threshold.

The Physical Activities Regulations section 52 and 53 address new marine terminals and the expansion of existing marine terminals, respectively. New marine terminals designed to handle ships larger than 25,000 deadweight tonnage (DWT) will require federal assessment as well as the expansion of existing terminals and berths to handle ships larger than 25,000 DWT. The existing port terminal will be used and will not require expansion therefore this does not apply to the Project.

The QP notes that under subsection 9(1) of the IAA, the Environment and Climate Change Minister (ECCC) may designate any project not described in regulations if, in their opinion, either the carrying out of that physical activity may cause adverse effects within federal jurisdiction or adverse direct or incidental effects, or public concerns related to those effects warrant the designation.

The Project is not expected to require approval under IAAC, however the Project must still comply with other federal legislation, including:

- *Canadian Environmental Protection Act* (CEPA): CEPA provides for environmental management of any hazardous substances and pollutants to protect human health and the environment.
- *Species At Risk Act* (SARA): Both the NL and federal governments manage and protect species at risk including critical habitat of species at risk. As part of the environmental provincial application process the Proponent will be required to document any proposed project and species at risk interactions and develop mitigative measures to reduce and/or eliminate any impacts to species at risk within the project zone of influence.
- *Migratory Birds Convention Act* (MBCA): The MBCA protects avifauna in Canada and prohibits the destruction of birds, eggs and nests of migratory birds. As part of the EA process the proponent will be required to document any adverse effects to migratory bird, and bird habitat including any proposed mitigations designed to reduce and/or eliminate the effects.

- *Fisheries Act*: The federal *Fisheries Act* regulates the protection of fish habitat and the deposition of deleterious substances that may affect fish and fish habitat. Section 36 of the Fisheries Act prohibits the deposit of deleterious substances into water frequented by fish.
- *Canadian Navigable Waters Act* (CNWA): regulates activities that may impede vessel movement and travel of Canada's navigable waterways. For this Project, of concern would be increased shipping at the existing terminal.

20.3.3 Provincial Approval

The NL *Environmental Protection Act*, 2002 (NL EPA) outlines the environmental planning process and steps required by the NL Minister of Environment and Climate Change (ECC) for assessment and approval of proposed undertakings. Part III of the Environmental Assessment Regulations (2003) pursuant to the NL EPA include a list of designated undertakings requiring registration. It is important to note that the NL Minister of ECC has the authority to require registration of any proposed undertaking irrespective of the designated undertaking list.

Environmental Assessment Regulations (2003) pursuant to NL EPA indicates that an undertaking engaged in the mining of a material defined in the Mineral Act shall be registered. Under the Newfoundland and Labrador Mineral Act, 1990, a "mineral" is defined as a naturally occurring inorganic substance including coal and minerals contained in mine tailings, but does not include water, quarry materials stratified other than coal from which oil can be extracted by destructive distillation, or petroleum. Section 43 of the NL Environmental Assessment Regulations addresses Non-Metallic Mineral Products and includes other non-mineral products including gypsum, but not salt specifically.

Section 34 on Utilities of the same regulations indicates that any new transmission line development greater than 500 m from an existing right of way requires registration.

Given the definition of Mineral under the Mineral Act and Section 33 of the EA Regulations (2003) the Project requires registration pursuant to the NL Environmental Protection Act (NL EPA). The Project Registration must describe the proposed Project and how it will affect the bio-physical and socio-economic environment. The regulator will review the registration and respond in one of the following ways:

- The project may be released from the assessment process and may proceed as indicated in the registration, subject to any terms and conditions that the Minister may set, other Acts or regulations (federal, provincial, or municipal). It should be noted that permits, approvals, or authorizations will not be issued until the project is released from the assessment process.
- An Environmental Preview Report (EPR) may be required if additional information is needed.
- An Environmental Impact Statement (EIS) may be required in instances where significant potential negative environmental effects are indicated or where there is significant public concern about a proposal. An EIS must include a project description including alternatives, original research on the existing environment, identification and evaluation of potentially significant environmental effects, an evaluation of proposed mitigation measures to minimize harmful effects and monitoring programs.
- The project may be rejected if an unacceptable environmental effect is indicated, the project is not in the public interest, and/or if the project is inconsistent with an existing law or government policy. A decision to reject would be made by Cabinet.

A review of recent environmental approvals for several proposed mining and related projects indicate that most projects have required at least an EPR level of assessment following a Project Registration document complete with select baseline data collection.

20.3.4 Permit and Approval Register

Table 20-2 lists the federal and provincial approvals and permits identified for the Project based on current information. This includes the estimated timeframes for approval.

A detailed execution schedule has been developed for the Project which includes environmental studies and application processes. This schedule allows a year for the following key tasks:

- Environmental study work focussed on assessing potential impacts on water, fish and fish habitat, SAR, air quality and socio-economic environment as well as developing management plans
- Engagement with stakeholders, the public and Indigenous Communities
- Development and submission of the comprehensive Project Registration document
- Develop and submit an EPR (if requested by the regulator) and decision making by the regulator.

The strategy of ensuring a comprehensive EPR (if requested by the regulator) is submitted and supported by environmental studies to address potential impacts and meaningful engagement is aimed at limiting the main provincial application and approval process to one year.

This will be followed by approximately six months of permitting required prior to construction of Project infrastructure components.

It should be noted that the permit list does not include any requirements in terms of the Metal and Diamond Mining Effluent Regulations (MDMER) as this is not deemed to be applicable to salt mining.

Table 20-2: Permit and Approval Register

Environmental Permit, Approval or Authorization Activity	Issuing/Approval Agency	Project Activities/Trigger	Permit Information Requirements	Regulator Review time/ Process time	Comment
Provincial (NL)					
Release from EA Process	NL Department of Environment and Climate Change - Minister	Mining of a mineral	Comprehensive Project Registration and EPR (if requested by the regulator)	8 – 12 Months	Needed before any permits or construction can occur
Approval of Environmental Protection Plan (EPP)		Mining activity	Develop EPP and select management plans for submission with Registration or EPR.		Drafted as part of Project Registration or EPR but finalized prior to construction. Separate EPP required for Operation.
Monitoring plan for Certificate of Approval	NL Department of Environment and Climate Change - Pollution Prevention Division	Water Discharge	Drafted during environmental application review	3 Months	Finalized immediately after Project EA Release
Certificate of Approval for Construction and Operation (Industrial Processing Works)		Construction Plan	Initial Development Plan including Engineering Drawings Drafted during environmental application review	3-6 Months	Following Project EA Release and prior to construction
Approval of Environmental Contingency Plan / Emergency Spill Response		Use of Fuels and chemicals	Part of EPP	2 Months	Prior to construction
Certificate Of Environmental Approval to Alter a Body of Water-		Water Abstraction and discharge	Water Management Plan including engineering design drawings	3-6 Months	Prior to construction
Culvert Installation		Road Access	Stream flow and engineering design drawings	3 Months	Prior to specific road construction
Fording / Bridge		If fording a stream	Protection measures	3 Months	Prior to activity
Pipe Crossing / Water Intake		Water Extraction	Engineering information and design drawings	3 Months	Prior to construction
Stream Modification or Diversion		If diverting a stream	Engineering and hydrology information design drawings	3 Months	Prior to activity

Environmental Permit, Approval or Authorization Activity	Issuing/Approval Agency	Project Activities/Trigger	Permit Information Requirements	Regulator Review time/ Process time	Comment
Other Works close to a body of water		If installing discharge pipe	Water Management Plan including engineering design drawings	1-6 Months	Prior to construction
Water Use License		Process Water	Water Management Plan including engineering design drawings	1-6 Months	Prior to construction
Permit to occupy Crown Land	NL Department of Fisheries, Forestry and Agriculture - Crown Lands Division	Use of Crown Lands	Survey data and Initial Development Plan	3-6 Months	Prior to construction
Operating Permit to Carry out an Industrial Operation During Forest Fire Season on Crown Land	NL Department of Fisheries, Forestry and Agriculture - Forestry and Agrifoods Agency	Site Preparation/Clearing	Initial Development Plan information	1 Month	Prior to construction
Permit to Cut Crown Timber and Burn		Site Clearing	Initial Development Plan information	1 Month	Prior to construction
Surface and Mining Leases	NL Department of Industry, Energy and Technology Mineral Development and Mineral Lands Division	Mining	Development Plan		Prior to operation
Development Plan		Mining	Development Plan	3-6 Months	Prior to operation
Rehabilitation and Closure Plan including Financial Assurance		Mining	Rehabilitation and Closure Plan		Prior to operation
Mill License		Mining	Development Plan		Prior to operation
Blasters Safety Certificate	Department Of Digital Government and Service NL Government Service Centre	Blasting	Initial Development Plan Data	3 Months	Prior to activity during construction
Approval for Storage and Handling of Gasoline and Associated		Fuel storage	Engineering design drawings and EPP	2 Months	Prior to activity
Fuel Storage Tank Registration		Fuel storage	Engineering design drawings and EPP	2 Months	Prior to activity
Approval for Used Oil Storage Tank System (Oil / Water Separator)		If oil/water separation is needed for equipment maintenance area	Engineering design drawings and EPP	3 Months	Prior to activity

Environmental Permit, Approval or Authorization Activity	Issuing/Approval Agency	Project Activities/Trigger	Permit Information Requirements	Regulator Review time/ Process time	Comment
Certificate Of Approval or a Waste Management System		Waste disposal	Engineering design drawings	3 Months	Prior to activity
Certificate Of Approval or a Sewage / Septic System		Septic system	Engineering design drawings and soil drainage tests	3 Months	Prior to activity
Highway Access		Access from provincial road	Preliminary application to develop land	1 Month	Prior to activity
Protected Road Regulations		Development within Protected Road Regulation	Preliminary application to develop land	1 Month	Prior to activity
Federal					
Avifauna Management Plan	Migratory Bird Conventions Act	Site clearing and timber cutting during nesting season May to July (these months should be avoided where possible) No permit just consultation	Field surveys and protection plan	3 Months	Prior to site clearing - May to July avifauna nesting season.
Fisheries Act Authorization permitting serious harm to fish	Fisheries and Oceans Canada	Not likely required but dependant on discharge quality and effects	-	Potentially obtain a Letter of Advice	Prior to construction
Permit required for activities affecting listed wildlife species or critical habitat	Species at Risk Act	Not likely required	-	-	-
Approval to interfere with navigation	Transport Canada	Existing marine terminal will be used therefore not likely required	-	-	-
License to Store, Manufacture, or Handle Explosives (Magazine License)	Natural Resources Canada	Use of blasting	Initial Development Plan data	3 Months	Prior to Activity

20.4 Social and Community Aspects

20.4.1 Social Baseline (Setting)

The Project is located within the Town of St George's. St. George's offers a developed balance of industrial, commercial, and recreational features, with its contemporary community infrastructure, marina. A haulage road leads to the Atlas gypsum deposit (approximately 12 km to the south), connecting to the loading infrastructure for vessels collecting gypsum. Stephenville lies 17 km north of the Project area (Figure 20-1) and the population of the region is centered in Stephenville. Stephenville is a regional base of commerce, government, recreational, and healthcare services. In 2021 Stephenville's population was 7,344, compared with the Town of St. George's population of 1,139 in 2021, which had declined 5% since 2016.

The nearest Indigenous community is the Qalipu Mi'kmaq First Nation, established in 2011, with a central administrative office in Corner Brook, approximately 70 km to the north of the Project area, however there are Indigenous people living in the general area. Indigenous ancestry for the population in private households in the region was measured in Statistics Canada's Census 2021. The statistics are based on 25% sample data. In St. George's, from the 25% sample of the 1,140 population in private households, 375 reported Indigenous ancestry, all of which were First Nations only. In Stephenville, based on a sample of 7,045 people, 1,720 reported single Indigenous ancestry: 1,625 were First Nations, 50 Metis, and 40 Inuit. There were a few others with multiple Indigenous ancestry.

The Community Plan states that as Mi'kmaq Nation of Newfoundland (called Ktaqmkuk in the Community Plan) is not entitled to any treaty rights, but the Nation is working with the government to obtain hunting and fishing rights.

20.4.2 Community Engagement

Atlas's engagement and community interactions has been based on building relationships and understanding the region. Butland Communications, a company that Atlas has hired to assist with stakeholder engagement, reports that for close to twenty years, the company's principals have connected with residents of the area, regularly engaged with the St. George's Town Council, provided some support for youth recreation, and have actively provided industry and public updates of the Project's advancement through exploration and economic evaluation phases.

Atlas Salt has indicated that the company is fully committed to a comprehensive program of planned and organized community and stakeholder engagement as the Project advances through all stages and phases from concept through to decommissioning.

20.4.3 Stakeholders and Indigenous Communities

Atlas maintains a preliminary list of stakeholders and Indigenous communities, that will be updated as the company proceeds with Project development. The list includes residents of the area, including Indigenous Mi'kmaq, community groups, government agencies, hunters, fishers, berry pickers, outfitters, recreational groups, cabin owners, and others.

Indigenous community engagement will be a priority for the company according to Butland Communications.

20.4.3.1 Feedback from Engagement Conducted

St. George's Band Council is closest to the Project area and marine infrastructure. Chief Rhonda Sheppard engages directly with Atlas Salt. Key community needs relate to employment and procurement opportunities and social services.

The Three Rivers First Nation Band is not within the immediate Project area. There are expectations for regional benefits and positive impacts, as well as meeting best practise standards of community engagement.

Flat Bay Band Council is in the nearby community of Flat Bay and is expected to have similar in needs and interest as St. George Band Council.

Qalipu First Nation interests relate to economic development, procurement of supplies, goods, and services. There will be an expectation for a community engagement to address employment, procurements, education and training, environmental and cultural and social interests.

On a provincial scale, other related interest groups include Newfoundland Aboriginal Women's Network and People of the Dawn Indigenous Friendship Centre; Miawpukek First Nation; Newfoundland Native Women's Association; and Mi'kmaq Assembly of Newfoundland.

The Town of St. George's has been actively engaging with Atlas. Access to Town facilities and infrastructure, including efficient permitting and development infrastructure are town concerns regarding the Project.

20.4.3.2 Engagement Plans

Butland Communications has provided information on planned engagement as the Project moves forward. Key tools that will be used include a website and newsletters to provide information, community open-houses, meetings, site tours, job fairs, working groups or committees and direct liaison with community leaders. The table below provides more detailed information.

Table 20-3: Engagement Plans

Stakeholder Group or Indigenous Community	Engagement Plan	Interests and Concerns
Towns of St. Georges and Local Service Districts in Bay St. George area. Municipal committees and advisory boards Local Band Councils / First Nations Groups	Project office in St. George's Regular project update meetings Communications through newsletters, social media, website Open houses Site tours Community events Liaison officers Working committees and advisory groups	Municipal and regional plans – services, land use, recreation, business areas, taxation, waste management, emergency services, housing, roads and highway use, grants and other interests and social concerns. Municipal support and services e.g., accessibility to land Community supports for employees and contractors Local employment, training and business opportunities
Land user groups Trail societies and committees Hunters, trouters, berry pickers, hikers, ATV users Cabin owners – individuals and associations	Meetings Community events Communications through newsletters, social media, website Working committees and advisory groups	Land use, mapping and infrastructure planning Mitigating impacts Cooperation and assistance

Stakeholder Group or Indigenous Community	Engagement Plan	Interests and Concerns
Agriculture associations		
Community groups Youth and elder groups Social and health committees Heritage societies	Meetings Community events Open houses	Community supports
General Public	Job fairs Open houses Presentations News media – releases, interviews, site tours Communications through newsletters, website and social media	Employment Training and education requirements, plans and opportunities Community impact and supports Environmental impacts and mitigations Socio-economic impact, opportunities and supports
Business Community Companies Contractors Industry associations Chambers of Commerce	Conferences and Trade shows – regional, provincial Association activities, events and membership Procurement officers / coordinators Information sessions Site tours	Supplier opportunities and gaps Information and introduction of supply chain and contractors Procurement systems Project updates, budgets and schedules Partnership and joint venture opportunities Economic impact
Provincial Members of House of Assembly Members of Parliament Government committees	Meetings Site tours Briefing papers Inclusion in public events	Opportunities and impact on constituents Awareness of regulatory approvals
Economic Development organizations Regional committees and boards	Meetings Site tours Conferences Corporate Communications	Economic impact and opportunities Strategic and development planning Regional surveys and impact monitoring
Marine sector Fishers and fish harvesters Harbour and port authorities Marine Traffic Control and Harbour Pilotage	Meetings Corporate and community communications Working committees and advisory groups	Infrastructure Service requirements Traffic impact Impact mitigation Monitoring
Employment organizations Unions Trades organizations Groups for diversity, inclusion, equity and underrepresented employment	Meetings Corporate and community consultation Conferences and events Working committees and advisory groups	Opportunities for employment Training Diversity, Inclusion and Equity planning Workforce and standards planning

Stakeholder Group or Indigenous Community	Engagement Plan	Interests and Concerns
Educators High schools Colleges – public and private University	Meetings Corporate and community communications Conferences and events Job fairs	Planning to address gaps and opportunities for skills and expertise Employment and on-the-job training opportunities Research and development Innovation

20.4.4 Social Upliftment Initiatives

As the Project plans become more substantial, Atlas will be prepared to determine the frameworks for deeper community engagement. These will be aimed at responding to the community needs and concerns related to the Project.

Atlas has indicated that the company is committed to Indigenous engagement. Key provisions are expected to include preferential hiring of qualified personnel, engaging with Indigenous enterprises for economic development and supplier development; capacity building for improved social, cultural, educational, and community wellbeing.

20.5 Mine Closure Requirements

A Rehabilitation and Closure Plan (RCP) is required prior to commencement of a mining operation under the Mining Act (1999). This plan must include progressive rehabilitation work plans for each year of the mining lease term. Financial assurance for rehabilitation and closure must also be provided to the satisfaction of the Minister of Natural Resources.

The Company will develop an RCP as part of the mine development approval process. To support the feasibility study, the Project team developed a conceptual mine closure plan and a high-level estimate of rehabilitation and closure costs.

Table 20-4 provides the conceptual closure planning for Project infrastructure. The high-level rehabilitation and closure cost has been estimated to be $14 million.

Table 20-4: Conceptual Closure Plan for Infrastructure

Project Area	Component	Conceptual Closure Plan
Mining and processing	Access to underground - portal area	The area will be covered. The surface area will be sloped to prevent ponding, maintain natural drainage pathways, and to re-establish pre-mining topography as is practical. The surface will be scarified as necessary, topsoil will be replaced, and the disturbed areas will be re-vegetated with an appropriate endemic seed mix.
	Twin portals	Portals will be hydraulically sealed to prevent the possibility of groundwater daylighting, and to prevent access by people or animals.
	Underground void Includes maintenance shop Crushing and screening plant	Some mining and processing equipment may be salvaged. The remainder will be left underground in an environmentally benign condition. Any hazardous waste will be disposed of at a permitted facility. Dewatering will cease and the void will flood.

Project Area	Component	Conceptual Closure Plan
Surface infrastructure	Waste rock stockpile	The stockpile will be contoured to reduce topographic relief and the sides will be contoured to an angle not steeper than 1:3 to allow re-vegetation. Topsoil will be placed on the top and slide slopes, and these will be re-vegetated. Once the waste rock stockpile is adequately re-vegetated to the point where runoff no longer needs to be contained, the runoff containment infrastructure will be removed, and natural runoff will occur to the catchment.
	Water and sediment settling ponds	The ponds will be required for a period after closure to manage runoff during active rehabilitation and until the waste stockpile is adequately re-vegetated. The water will be tested to ensure compliance with relevant quality limits before being released into the environment. Sludge will be removed and disposed of off-site or onto the waste stockpile. Any hazardous waste will be disposed of at a permitted facility. The retaining walls will be removed. The surface area will be sloped to prevent ponding, maintain natural drainage pathways, and to re-establish pre-mining topography as is practical. The surface will be scarified as necessary, topsoil will be replaced, and the disturbed areas will be re-vegetated with an appropriate endemic seed mix.
	Surface water diversion infrastructure	Diversion ditches will be filled. The surface area will be sloped to prevent ponding, maintain natural drainage pathways, and to re-establish pre-mining topography as is practical. The surface will be scarified as necessary, topsoil will be replaced, and the disturbed areas will be re-vegetated with an appropriate endemic seed mix.
	Conveyor	The conveyor and supporting infrastructure will be removed. The tunnel section will be filled in. The surface area will be sloped to prevent ponding, maintain natural drainage pathways, and to re-establish pre-mining topography as is practical. The surface will be scarified as necessary, topsoil will be replaced, and the disturbed areas will be re-vegetated with an appropriate endemic seed mix.
	Access road and site roads	The roads will be removed. The surface area will be sloped to prevent ponding, maintain natural drainage pathways, and to re-establish pre-mining topography as is practical. The surface will be scarified as necessary, topsoil will be replaced, and the disturbed areas will be re-vegetated with an appropriate endemic seed mix.
	Transmission lines	Transmission lines and supporting infrastructure will be removed. The surface area will be sloped to prevent ponding, maintain natural drainage pathways, and to re-establish pre-mining topography as is practical. The surface will be scarified as necessary, topsoil will be replaced, and the disturbed areas will be re-vegetated with an appropriate endemic seed mix.
	Fire protection water tank	The water will be tested and if it complies with relevant quality limits it will be released into the environment. The tank will be removed.

Project Area	Component	Conceptual Closure Plan
		The surface area will be sloped to prevent ponding, maintain natural drainage pathways, and to re-establish pre-mining topography as is practical. The surface will be scarified as necessary, topsoil will be replaced, and the disturbed areas will be re-vegetated with an appropriate endemic seed mix.
	Administration building Laydown areas Light vehicle parking Mine dry (change house) Minor maintenance shop Warehouse Salt storage building Cold storage area Perimeter fencing Gatehouse	All structures and foundations will be removed. Any hazardous waste will be disposed of at a permitted facility. Inert waste may be disposed of onto the waste rock stockpile. The surface area will be sloped to prevent ponding, maintain natural drainage pathways, and to re-establish pre-mining topography as is practical. The surface will be scarified as necessary, topsoil will be replaced, and the disturbed areas will be re-vegetated with an appropriate endemic seed mix. All utility connections will be sealed.

21.0 Capital and Operating Costs

21.1 Capital Costs

21.1.1 Pre-production Capital

The pre-production capital costs for the Project are based on Q3 2023 estimates. The capital cost estimate corresponds with an AACE Class 3 level of detail. The estimate was developed by SLR with input from Halyard Inc. Capital costs have been escalated at a rate of 2% annually starting in 2024. The project estimate is based upon a four year construction period. The un-escalated and escalated capital costs are shown in Table 21-1.

Table 21-1: Capital Cost Estimate

Cost Area	Amount (C$ '000)	
	Q3 2023 Basis	With Escalation
Mining	142,319	151,646
Processing	36,642	39,352
On-Site Infrastructure	43,324	46,437
Off-Site Infrastructure	60,433	64,522
Total Direct Cost	282,719	301,958
Other Costs		
EPCM / Indirect Cost	66,747	71,121
Owner's Costs	32,176	34,154
Subtotal Costs	381,641	407,232
Contingency	68,414	72,898
Initial Capital Cost	450,056	480,130
Sustaining	403,363	599,930
Reclamation and closure	13,972	30,246
Total Capital Cost	**867,391**	**1,110,306**

Notes:

1. The Owner's Costs, Subtotal Costs, and Initial Capital Costs reported in this table include C$500k spent in "YR -5"

The mine costs cover the two declines from surface to the 320 Level as well as the pre-production development to establish the first production level, the mobile equipment fleet, mine services, and mine infrastructure. The decline capital cost was developed from first principles. Mine mobile equipment (including CMs) is assumed to be acquired on a lease to purchase basis. Batteries for the major BEV units are leased or included as a service in operating costs.

Processing capital costs cover the crushing and screening plant on the 250 Level, mobile equipment servicing the plant and surface on-site operations, product conveying, and process infrastructure.

On-site infrastructure includes the site development and site access roads, site buildings, site services, power supply and distribution, and salt material handling system. Offsite infrastructure includes the overland conveyor, and the port upgrades.

Indirect costs are approximately 26% of direct costs and cover freight, engineering, procurement, construction management (EPCM), owner's costs, first fills, capital spares. Contingency was applied to each area and equals 18% of the direct and indirect totals. Costs shown to a Work Breakdown Structure (WBS) Level Two are shown in Table 21-2.

Table 21-2: Summary of Unescalated Capital Costs by WBS

Level One Area	Level Two Code	Level Two WBS Description	Amount (C$ '000)
Mining	1100	Mine Access	68,090
	1200	Mine Excavations	28,163
	1300	Mine Mobile Equipment	21,130
	1400	Material Handling System	7,145
	1500	Mine Services	16,817
	1600	Mining Infrastructure	974
Mining Total			142,319
Process	2100	ROM and Crushing Plant Feed	894
	2200	Crushing and Screening	14,963
	2300	Product Conveying and Storage	15,448
	2600	Process Plant Infrastructure	4,545
	2700	Process Plant Offices & Refuge Station	763
Process Total			36,642
Infrastructure	3000	Site Infrastructure	2,116
	3100	Site Development	6,321
	3200	Site Buildings	4,065
	3300	Site Services	722
	3400	Power Supply and Distribution	5,082
	3500	Material Handling Systems	21,280
	3600	Site Mobile Equipment	3,738
Infrastructure Total			43,324
Off Site Infrastructure	4100	Product Haulage and Conveying	14,022
	4200	Port Storage	44,198
	4400	Reclaim and Ship Loading	1,938
	4500	Utilities	276
Off Site Infrastructure Total			60,433
Indirect Project Total	5000	Indirects	66,747

Level One Area	Level Two Code	Level Two WBS Description	Amount (C$ '000)
Owners Project[1]	6000	Owner's Costs	31,676
Contingency	7000	Project Contingency	68,414
Grand Total[1]			**449,556**

Notes:

1. The Owner's Costs, and Grand Total reported in this table exclude an additional C$500k spent in "YR -5"

With escalation applied, the pre-production capital totals $480.1 million and is spent over four years as shown in Table 21-3.

Table 21-3: Escalated Pre-production Capital Cost Estimate

Cost Area	Units	Total	YR-4	YR -3	YR -2	YR -1
Mining	C$ '000	151,646	-	29,614	60,412	61,620
Processing	C$ '000	39,352	-	-	15,554	23,798
On-Site Infrastructure	C$ '000	46,437	-	4,507	13,793	28,137
Off-Site Infrastructure	C$ '000	64,522	-	12,575	19,240	32,708
Total Direct Cost	C$ '000	301,958	-	46,696	108,999	146,263
		-				
Other Costs		-				
Indirect Costs	C$ '000	71,121	-	13,889	28,333	28,899
Owners Costs[1]	C$ '000	34,154	2,585	5,932	11,765	13,372
Subtotal Costs[1]	C$ '000	407,232	2,585	66,517	149,096	188,534
		-				
Contingency	C$ '000	72,898	-	14,236	29,041	29,622
Initial Capital Cost[1]	C$ '000	480,130	2,585	80,752	178,137	218,156

Notes:

1. Owner's Costs, Subtotal Costs, and Initial Capital Costs include an additional C$500k spent in "YR -5"

21.1.2 Sustaining Capital

The sustaining capital for the Project is $599.9 million from Year 1 of operations onwards. The sustaining capital consists of:

- Mine fleet expansion
- Surface and underground equipment replacement
- Underground development to establish new mining production levels
- Material handling system installations for each new mining level
- Plant sustaining capital
- Offsite infrastructure refurbishment.

The sustaining capital items listed are required to sustain the 2.5 Mtpa production over the 34 year mine life. The cost basis is Q3 2023 with 2% annual inflation beginning in 2023.

21.1.3 Contingency

Contingency was assessed on a line by line basis considering the work element and the level of engineering. Certain elements related to mine development and major surface earthworks such as the box cut were assigned a 25% contingency. The average contingency is 17.9%.

21.1.4 Exclusions

Exclusions from the capital cost estimate include, but are not limited to, the following:

- Project financing and interest charges
- Working capital
- Environmental and permitting costs ongoing and future field programs related to data collection that will be used as inputs to subsequent studies
- Lease rights of way and water rights
- Any additional civil, concrete testing work due to adverse soil conditions or location
- Sunk costs
- Pilot Plant and other test work
- Exploration drilling
- Costs of fluctuations in currency exchanges
- Project application and approval expenses
- Future expansion
- Relocation of any facilities, if required
- Purchase of existing facilities and buildings

21.2 Operating Costs

Operating cost estimates were built up from first principles. Personnel requirements were estimated for each of the areas and wage rates and benefits were based on a comparison to hard rock and salt mines in the Maritime region. Personnel levels were estimated for each area of the operation. Mine operations personnel levels considered the mining productivity and equipment requirements.

Materials costs were from vendor quotes and escalated vendor quotations. Hourly equipment operating costs were generated based on public and manufacturers' references and the costs of supplies for maintenance. Equipment operating hours for the mining fleet were estimated from the mining productivity calculations.

The operating cost basis is Q3 2023 and operating costs are escalated at a rate of 2% per year from 2023. The LOM escalated operating costs are summarized in Table 21-4.

The port is independently owned and an operating cost estimate for the storage and ship loading was generated from first principles on the assumption that the port would be operated by an independent third party. The port costs are included within the processing line item and include port operations, overhead, profit, and an allowance for ongoing repairs.

Table 21-4: LOM Operating Costs

Area	LOM (C$ '000)	Steady State Annual Average (C$ '000)	Unit Costs with Q3 2023 Basis (C$/t shipped)	LOM Unit Costs (C$/t shipped)
Mining	1,532,637	43,790	11.71	18.32
Processing and Material Handling	1,087,987	32,000	8.34	13.01
General and Administration	345,763	10,169	2.65	4.13
Total	**2,966,386**	**85,959**	**22.70**	**35.46**

Notes:

1. The columns LOM, Steady State Annual Average, and LOM Unit Costs include escalation.

21.2.1 Personnel

The mine will operate 24 hours per day on a full 365 day year basis. The Project will be operated by company employees. The total personnel roll is estimated to be 169 persons as summarized by department in Table 21-5. This total excludes personnel working at the port, who would be employed by a third-party.

Table 21-5: Project Personnel

Department	Number of Personnel
Mine	64
Underground Maintenance	33
Technical Services	10
Plant & Surface	37
Management & Administration	25
Total	**169**

21.2.2 Basis of Operating Costs

Operating costs have been estimated as follows:

- Labour: requirements for management, supervision, operating, laboratory, and maintenance personnel for a 24-hour, 365-day-per-year operation, based on twelve-hour shifts for production crews, and including overtime allowance and burden. Management and administration labour is assumed to be a Monday to Friday arrangement. Labour rates were sourced from comparable projects. A project-specific labour study has not been undertaken to date.
- Electricity: equipment list, motor power, utilization requirements for a 2.5 Mtpa production rate, as well as consumption allowances for smaller infrastructure such as offices and warehousing, and an electricity cost of $0.062 kWh, based on assuming that the Project would qualify for an industrial rate for power consumption.
- Reagents and Consumables: consumption based on production rate and vendor pricing.
- Mobile Equipment: list of mobile equipment and estimates of power consumption and utilization, as well as maintenance factors. Battery costs included as a service in operating costs.
- Maintenance: factored from direct capital costs.

22.0 Economic Analysis

The economic analysis contained in this Technical Report is based on information available to SLR as of Q3 2023. For the purposes of the cash flow model, SLR has assumed that the Project would commence construction in 2025 and be operational in 2028. There is no certainty that these dates are achievable.

An after-tax Cash Flow Projection has been generated from the LOM production schedule and capital and operating cost estimates. A summary of the key criteria is provided below.

22.1 Economic Criteria

22.1.1 Revenue

- Two-year ramp-up to achieve steady state production, with Year 1 production of 1.6 Mtpa, Year 2 production of 2.1 Mtpa, followed by 2.5 Mtpa from Year 3 onward to Year 33, and 2.0 Mtpa in Year 34.
- Product grade maintained greater than 95% NaCl for the entirety of operations, with no premium applied for higher grade material.
- Average price per tonne FOB Turf Point - C$72.24 (Q3 2023 basis).
- Price escalated at 4% from 2023 to 2028 and 2% per year thereafter, which is a consistent approach to other publicly available technical reports on major North American rock salt mines.
- Price adjustment factor of a 2% premium applied every fifth year to account for variable meteorological conditions.
- 3% net production royalty (gross revenue less port charges) payable to Vulcan Minerals.
- Revenue is recognized at the time of production.

22.1.2 Costs

- Pre-production period: 48 months based on the commencement of some early works engineering, and procurement of long-lead items, with 36 months assumed for construction.
- Mine life: 34 years.
- LOM production plan as summarized in Section 16.
- Capital and operating costs that have a Q3 2023 basis.
- Capital and operating costs escalated at 2% per year from 2023.
- Pre-production capital cost of C$480.1 million (including escalation).
- LOM sustaining capital of C$599.9 million (including escalation).
- Reclamation and closure cost of C$30.2 million (including escalation).
- Average operating cost over the mine life is C$35.46 per tonne shipped FOB Turf Point (including escalation).

22.1.3 Taxation and Royalties

The cash flow includes a 3% royalty to Vulcan Minerals calculated as 3% of the gross revenue less port charges. Taxes include the NL Mining Tax plus federal and provincial income taxes. The QP has relied on Atlas and its advisors for the calculation of taxes.

22.2 Cash Flow Analysis

Considering the Project on a stand-alone basis, the undiscounted pre-tax cash flow totals $6,075 million over the initial 34-year mine life. A summary of economic results such as net present value (NPV) and internal rate of return (IRR), both pre-tax and post-tax, is presented in Table 22-1. The annual cash flow is shown in Table 22-2. The annual pre-tax cash flow is shown in Figure 22-1.

Table 22-1: Summary of Economic Results

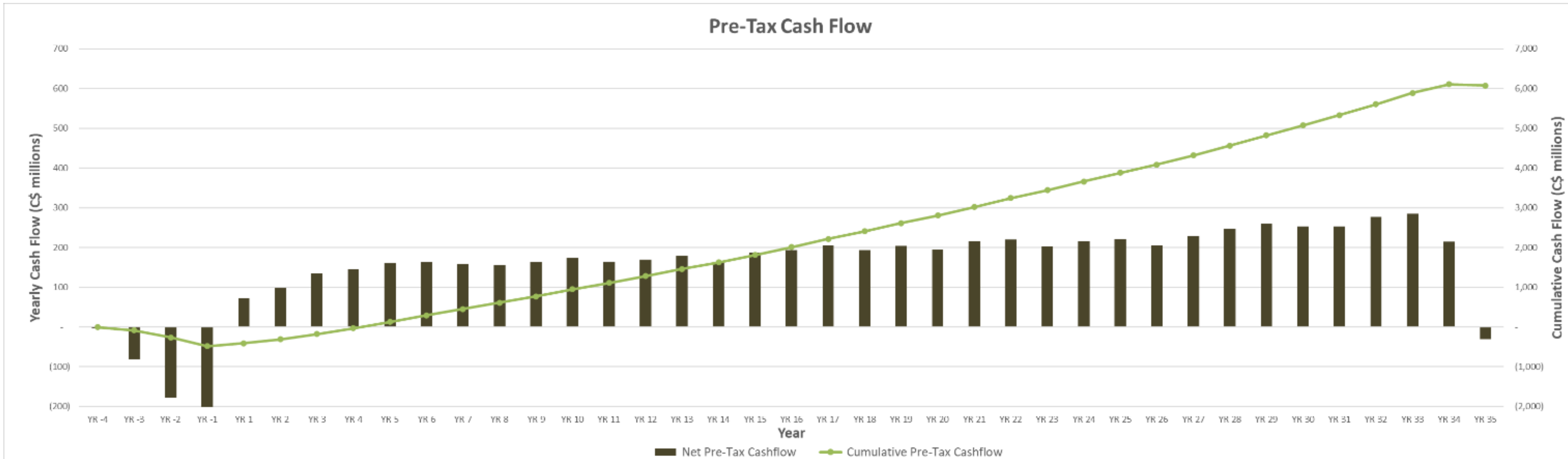
Metric	Units	Value
Pre-Tax Payback Period	yrs	4.2
Pre-Tax IRR	%	23.4%
Pre-tax NPV at 5% discounting	C$ ‘000	1,900,081
Pre-tax NPV at 8% discounting	C$ ‘000	1,017,038
Pre-tax NPV at 10% discounting	C$ ‘000	681,292
After-Tax Payback Period	yrs	4.8
After-tax IRR	%	18.5%
After-tax NPV at 5% discounting	C$ ‘000	1,088,743
After-tax NPV at 8% discounting	**C$ ‘000**	**553,094**
After-tax NPV at 10% discounting	C$ ‘000	349,180

Table 22-2: After-Tax Cash Flow Summary

SLR - Cash Flow Summary
Atlas Salt - Great Atlantic Salt

Date: Aug 2023	UNITS	TOTAL	YR -4	YR -3	YR -2	YR -1	YR 1	YR 2	YR 3	YR 4	YR 5	YR 6	YR 7	YR 8	YR 9	YR 10	Total YR 11-15	Total YR 16-20	Total YR 21-25	Total YR 26-30	Total YR 31-34
MINING																					
Years of Production	yrs	34					1	1	1	1	1	1	1	1	1	1	5	5	5	5	4
Underground																					
Mine Operating Days	days	11,900					350	350	350	350	350	350	350	350	350	350	1,750	1750	1750	1750	1400
Tonnes mined per day	tonnes / day	7,400					4,831	6,317	7,559	7,570	7,553	7,553	7,549	7,542	7,540	7,545	7,562	7,560	7,560	7,560	7,146
Production	Mtpa	88.06				0.09	1.69	2.21	2.65	2.65	2.64	2.64	2.64	2.64	2.64	2.64	13.23	13.23	13.23	13.23	10.00
Minimum Grade	% NaCl	96.0%				93.9%	97.3%	96.8%	96.0%	96.3%	95.9%	95.8%	96.2%	95.6%	95.5%	94.7%	95.4%	96.0%	96.0%	96.3%	96.4%
Waste	Mtpa	1.47		0.08	0.27	0.38	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.05	0.06	0.10	0.30	0.10
Total Moved	Mtpa	89.53		0.08	0.27	0.46	1.69	2.24	2.65	2.65	2.64	2.64	2.64	2.74	2.64	2.64	13.29	13.29	13.33	13.53	10.10
Cumulative Salt	Mt					0.09	1.78	3.99	6.63	9.28	11.93	14.57	17.21	19.85	22.49	25.13	38.36	51.59	64.82	78.05	88.06
PROCESSING																					
Material Processed	Mtpa	88.06				0.09	1.69	2.21	2.65	2.65	2.64	2.64	2.64	2.64	2.64	2.64	13.23	13.23	13.23	13.23	10.00
Head Grade	% NaCl	96.0%				93.9%	97.3%	96.8%	96.0%	96.3%	95.9%	95.8%	96.2%	95.6%	95.5%	94.7%	95.4%	96.0%	96.0%	96.3%	96.4%
Contained NaCl	Mtpa	84.50				0.08	1.64	2.14	2.54	2.55	2.54	2.53	2.54	2.52	2.52	2.50	12.62	12.70	12.70	12.74	9.64
Losses from Mine Face to Ship	%	5%				5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Payable Rock Salt	Mtpa	83.66				0.08	1.61	2.10	2.51	2.52	2.51	2.51	2.51	2.51	2.51	2.51	12.57	12.57	12.57	12.57	9.50
REVENUE																					
Market Price																					
Weighted Average Market Price (FOB Turf Point)	C$ / t shipped	124.86	75.13	78.14	81.26	84.52	87.90	89.65	91.45	93.28	97.04	97.04	98.99	100.96	102.98	107.14	111.98	123.64	139.23	150.71	163.76
Total Gross Revenue	**C$ '000**	**10,445,286**					**148,288**	**188,316**	**229,834**	**234,771**	**243,705**	**243,722**	**248,454**	**253,185**	**258,198**	**268,804**	**1,407,767**	**1,553,936**	**1,715,680**	**1,894,274**	**1,556,351**
Total Charges	**C$ '000**	**667,044**					**11,977**	**13,340**	**14,563**	**14,863**	**15,147**	**15,450**	**15,756**	**16,065**	**16,385**	**16,717**	**88,812**	**98,047**	**108,252**	**119,520**	**102,150**
Royalties - Vulcan Minerals	C$ '000	293,347					4,089	5,249	6,458	6,597	6,857	6,848	6,981	7,114	7,254	7,563	39,569	43,677	48,223	53,243	43,626
Net Revenue	**C$ '000**	**9,484,895**					**132,222**	**169,727**	**208,812**	**213,311**	**221,702**	**221,424**	**225,717**	**230,006**	**234,559**	**244,525**	**1,279,386**	**1,412,212**	**1,559,205**	**1,721,512**	**1,410,575**
Unit NR	**C$ / t milled**	**107.71**					**78.20**	**76.76**	**78.93**	**80.51**	**83.87**	**83.76**	**85.43**	**87.14**	**88.88**	**92.59**	**96.68**	**106.74**	**117.85**	**130.12**	**141.00**
OPERATING COST																					
Mining	C$ '000	1,532,637					26,804	30,342	32,403	32,671	33,145	33,674	34,152	36,897	37,731	38,405	202,915	221,860	249,823	286,535	235,280
Processing and Material Handling	C$ '000	1,087,987					19,481	21,726	23,722	24,205	24,675	25,169	25,669	26,176	26,699	27,237	144,655	159,702	176,324	194,676	167,870
G&A	C$ '000	345,763					7,198	7,342	7,489	7,639	7,792	7,948	8,106	8,269	8,434	8,603	45,664	50,417	55,664	61,458	53,741
Total Operating Cost (with escalation)	**C$ '000**	**2,966,386**					**53,484**	**59,410**	**63,614**	**64,515**	**65,612**	**66,791**	**67,928**	**71,342**	**72,864**	**74,245**	**393,233**	**431,978**	**481,811**	**542,669**	**456,890**
Calculated Unit Costs																					
Mining	C$/t shipped	18.32					16.69	14.45	12.89	12.98	13.20	13.41	13.61	14.71	15.05	15.31	16.14	17.65	19.88	22.80	24.76
Processing and Material Handling	C$/t shipped	13.01					12.13	10.34	9.44	9.62	9.83	10.02	10.23	10.44	10.65	10.86	11.51	12.71	14.03	15.49	17.66
G&A	C$/t shipped	4.13					4.48	3.50	2.98	3.03	3.10	3.16	3.23	3.30	3.36	3.43	3.63	4.01	4.43	4.89	5.65
Total Onsite	**C$/t shipped**	**35.46**					**33.30**	**28.28**	**25.31**	**25.63**	**26.13**	**26.59**	**27.06**	**28.45**	**29.06**	**29.59**	**31.28**	**34.37**	**38.33**	**43.18**	**48.08**
Operating Cashflow	**C$ '000**	**7,185,553**					**90,716**	**123,656**	**159,762**	**163,659**	**171,236**	**170,083**	**173,545**	**174,729**	**178,080**	**186,996**	**886,153**	**980,234**	**1,077,394**	**1,178,843**	**953,685**
CAPITAL COST																					
Direct Cost																					
Mining	C$ '000	151,646		29,614	60,412	61,620															
Processing	C$ '000	39,352		-	15,554	23,798															
On-Site Infrastructure	C$ '000	46,437		4,507	13,793	28,137															
Off-Site Infrastructure	C$ '000	64,522		12,575	19,240	32,708															
Total Direct Cost	**C$ '000**	**301,958**		**46,696**	**108,999**	**146,263**															
Other Costs																					
Indirect Costs	C$ '000	71,121		13,889	28,333	28,899															
Owner's Costs	C$ '000	34,154	2,585	5,932	11,765	13,372															
Subtotal Costs	**C$ '000**	**407,232**	**2,585**	**66,517**	**149,096**	**188,534**															
Contingency	C$ '000	72,898		14,236	29,041	29,622															
Initial Capital Cost	**C$ '000**	**480,130**	**2,585**	**80,752**	**178,137**	**218,156**															
Sustaining (with escalation)	C$ '000	599,930					17,623	26,212	24,625	17,268	11,120	7,068	14,435	17,988	15,635	12,762	108,703	86,454	109,220	104,391	26,425
Reclamation and Closure	C$ '000	30,246		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30,246
Total Capital Cost	**C$ '000**	**1,110,306**	**2,585**	**80,752**	**178,137**	**218,156**	**17,623**	**26,212**	**24,625**	**17,268**	**11,120**	**7,068**	**14,435**	**17,988**	**15,635**	**12,762**	**108,703**	**86,454**	**109,220**	**104,391**	**56,671**
CASH FLOW																					
Net Pre-Tax Cashflow	**C$ '000**	**6,075,246**	**(2,585)**	**(80,752)**	**(178,137)**	**(218,156)**	**73,093**	**97,444**	**135,137**	**146,391**	**160,117**	**163,015**	**159,110**	**156,741**	**162,445**	**174,234**	**866,262**	**991,827**	**1,076,426**	**1,193,972**	**999,164**
Cumulative Pre-Tax Cashflow	C$ '000		(3,085)	(83,837)	(261,974)	(480,130)	(407,038)	(309,594)	(174,457)	(28,066)	132,051	295,066	454,175	610,917	773,362	947,596	1,813,858	2,805,685	3,882,111	5,076,082	6,075,246
Taxes																					
NL Mining Tax	C$ '000	892,540		-	-	-	-	4,504	17,225	16,279	18,052	18,533	19,492	19,761	20,324	21,834	123,820	140,551	155,112	168,697	148,356
Income Tax (Federal, Provincial)	C$ '000	1,571,930		-	-	-	-	-	0	14,811	35,969	37,414	39,456	40,264	41,438	44,096	226,612	255,103	279,837	303,132	253,798
Total Taxes		**2,464,470**		-	-	-	-	**4,504**	**17,225**	**31,089**	**54,021**	**55,948**	**58,949**	**60,025**	**61,761**	**65,930**	**350,432**	**395,654**	**434,949**	**471,829**	**402,154**
After-Tax Cash Flow	**C$ '000**	**3,610,776**	**(2,585)**	**(80,752)**	**(178,137)**	**(218,156)**	**73,093**	**92,940**	**117,911**	**115,302**	**106,095**	**107,067**	**100,161**	**96,716**	**100,684**	**108,304**	**515,830**	**596,173**	**641,477**	**722,143**	**597,010**
Cumulative	C$ '000		(3,085)	(83,837)	(261,974)	(480,130)	(407,038)	(314,097)	(196,186)	(80,884)	25,212	132,279	232,440	329,156	429,840	538,144	1,053,973	1,650,147	2,291,624	3,013,766	3,610,776
PROJECT ECONOMICS																					
Pre-Tax																					
Payback Period	**yrs**	**4.2**																			
Pre-Tax IRR	**%**	**23.4%**																			
Pre-tax NPV at 5% discounting	C$ '000	1,900,081																			
Pre-tax NPV at 8% discounting	**C$ '000**	**1,017,038**																			
Pre-tax NPV at 10% discounting	C$ '000	681,292																			
After-Tax																					
Payback Period	**yrs**	**4.8**																			
After-tax IRR	**%**	**18.5%**																			
After-tax NPV at 5% discounting	C$ '000	1,088,743																			
After-tax NPV at 8% discounting	**C$ '000**	**553,094**																			
After-tax NPV at 10% discounting	C$ '000	349,180																			
Cashflows are discounted to 1-Jan-24																					

Figure 22-1: Annual Pre-Tax Cash Flow



22.3 Sensitivity Analysis

Project risks can be identified in both economic and non-economic terms. Key economic risks were examined by running cash flow sensitivities:

- Salt price
- Production losses
- Operating costs
- Pre-production capital costs

Pre-tax 8% NPV and IRR sensitivity over the base case has been calculated for -20% to +35% variations. The sensitivities are shown in Figure 22-2, Figure 22-3, and Table 22-3.

Figure 22-2: Pre-Tax 8% NPV Sensitivity Analysis

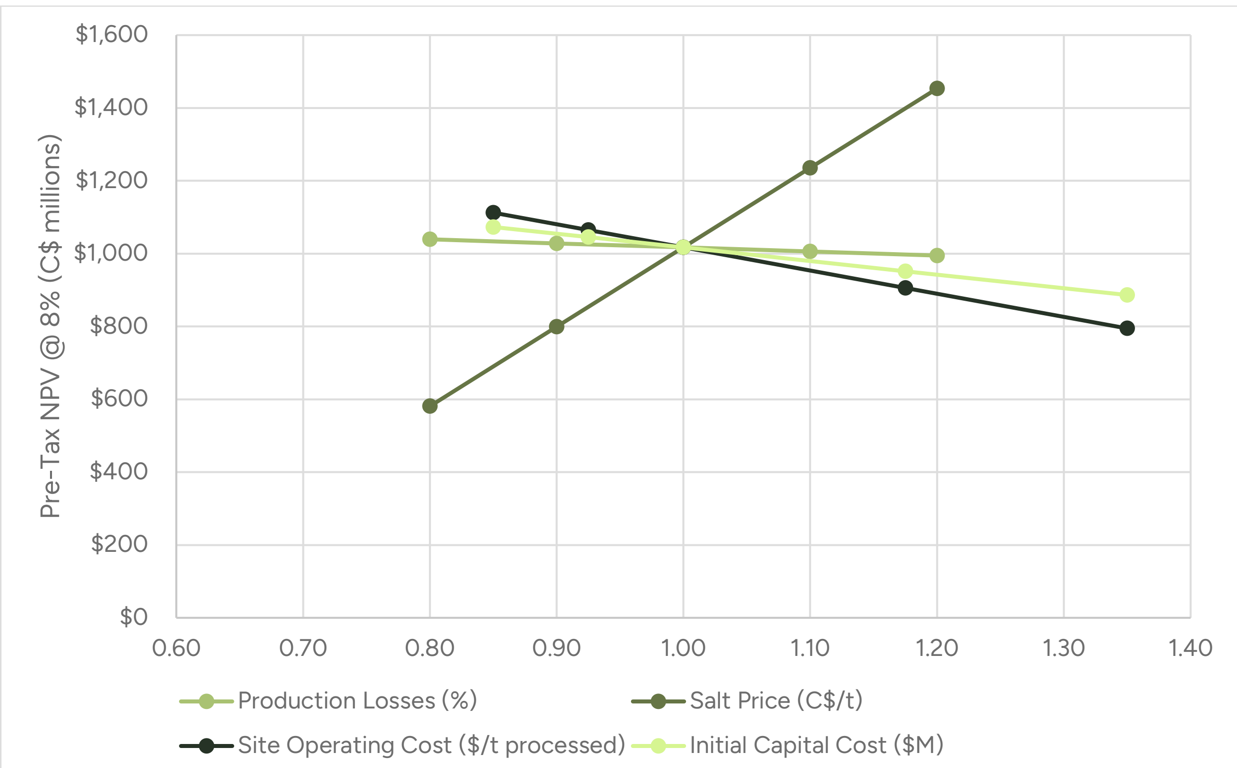


Figure 22-3: Pre-Tax IRR Sensitivity Analysis

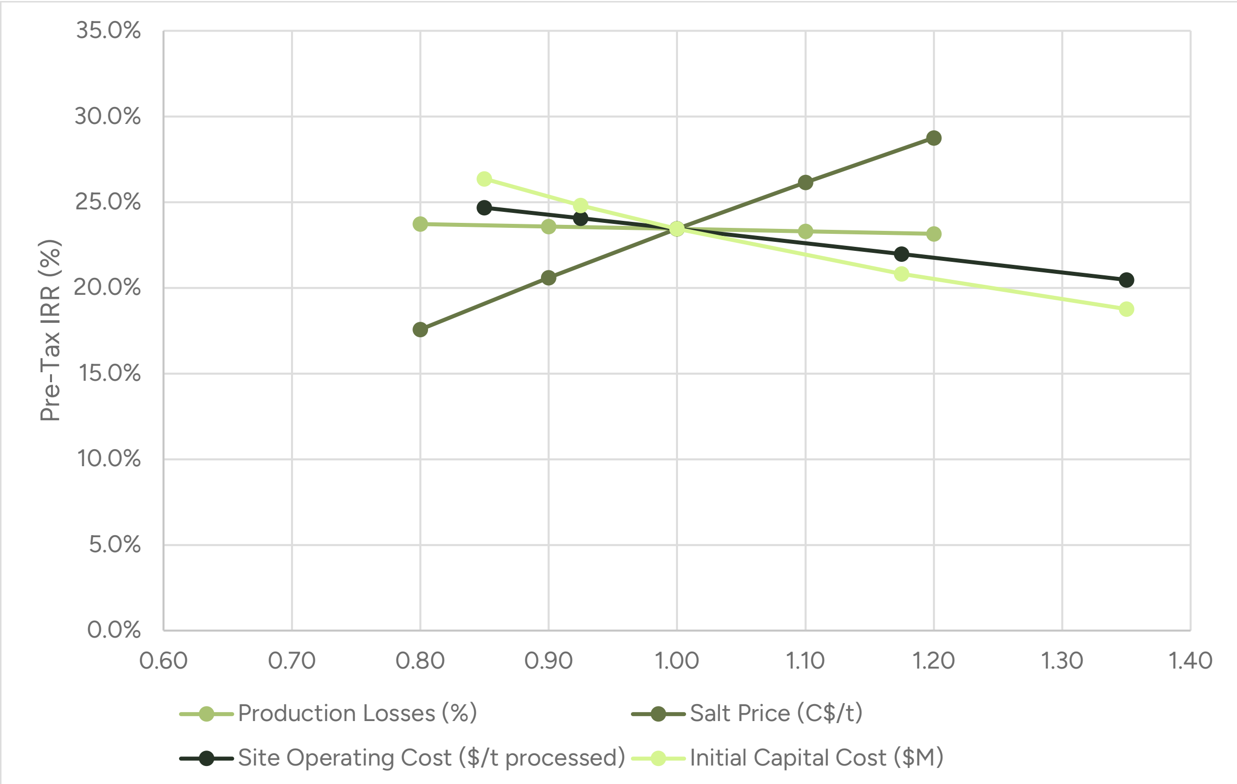


Table 22-3: Pre-Tax Sensitivity Analyses

Production Losses (%)	NPV at 8% ($M)	IRR
4.0%	$1,039	23.7%
4.5%	$1,028	23.6%
5.0%	**$1,017**	**23.4%**
5.5%	$1,006	23.3%
6.0%	$995	23.2%
LOM Salt Price (C$/t)	**NPV at 8% ($M)**	**IRR**
99.89	$581	17.6%
112.37	$799	20.6%
124.86	**$1,017**	**23.4%**
137.34	$1,235	26.2%
149.83	$1,453	28.8%
Operating Cost ($/t processed)	**NPV at 8% ($M)**	**IRR**
$30.14	$1,112	24.7%
$32.80	$1,065	24.1%
$35.46	**$1,017**	**23.4%**
$41.66	$906	22.0%
$47.87	$795	20.5%
Initial Capital Cost ($M)	**NPV at 8% ($M)**	**IRR**
$408.1	$1,073	26.4%
$444.1	$1,045	24.8%
$480.1	**$1,017**	**23.4%**
$564.2	$952	20.8%
$648.2	$886	18.8%

23.0 Adjacent Properties

Table 23-1 provides a summary of key property owners conducting exploration across the Bay St. George region, the majority of which are focussed on gold exploration. The most advanced of these properties is considered to be the Cape Ray Gold Project (Matador Mining Limited) with a Scoping Study completed in 2020. With regard to industrial minerals, Atlantic Minerals Limited is currently operating a limestone and dolomite quarry at the Lower Cove Quarry on the Port au Port Peninsula, approximately 40 km northwest of the GAS Project. Atlas also operates the Flat Bay Gypsum Quarry (Ace Gypsum) located approximately 3 km southwest of the GAS Project.

In 2022, Atlas spun-off other regional licence holdings as Triple Point Resources. The Stephenville, Fischell's Brook, and St. Fintan's licence areas are all prospective for massive halite deposits along with having salt cavern potential as a renewable energy storage solution.

Figure 23-1 presents the location of the aforementioned adjacent properties in relation to the GAS Project.

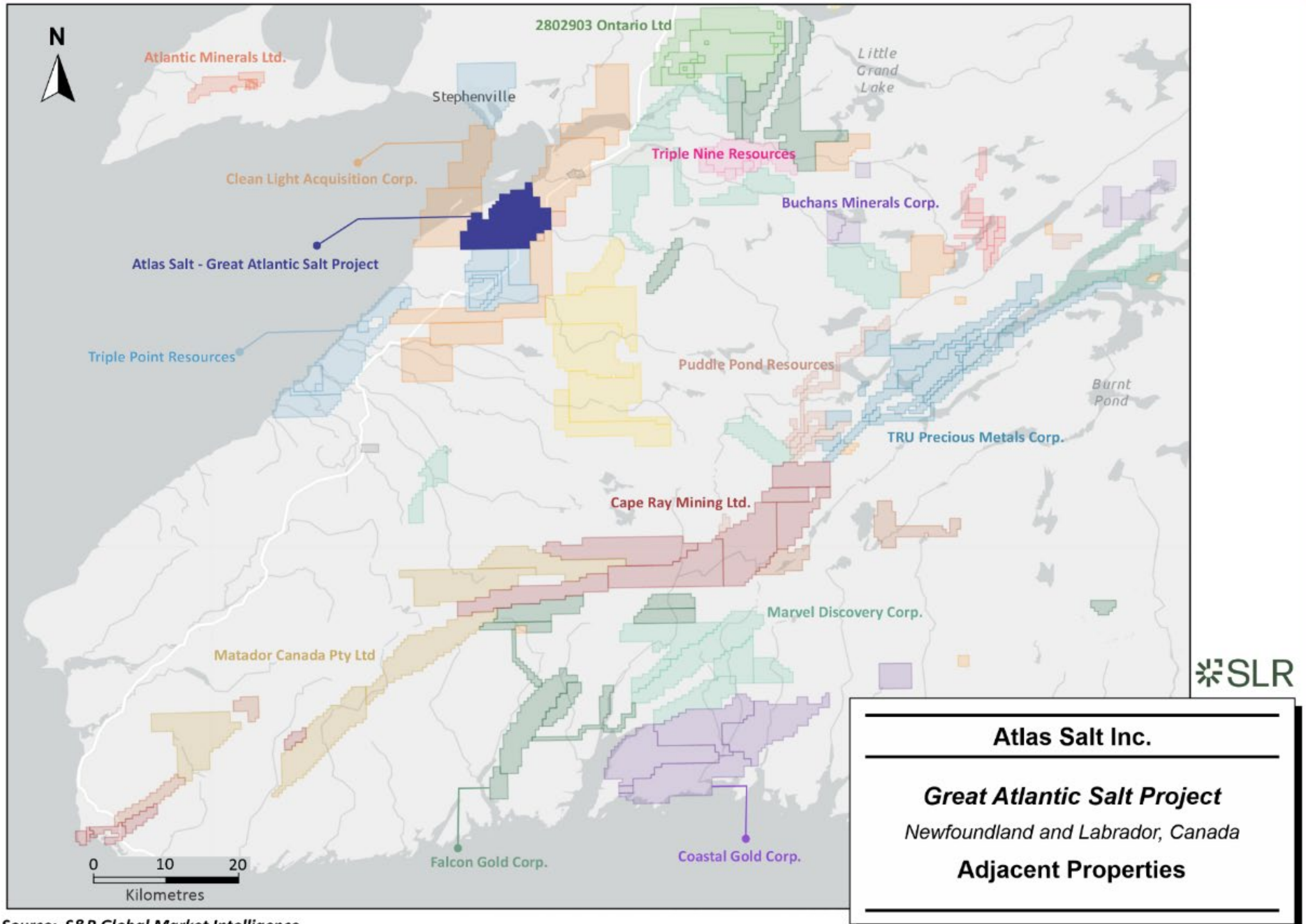
Table 23-1: Summary of Adjacent Properties

Owner	Property	Commodity	Status
Atlantic Minerals Ltd.	Lower Cove Quarry	Limestone	Operating
Triple Point Resources	Stephenville, Fischell's Brook, St. Fintan's	Halite	Exploration
Matador Canada Pty Ltd. (Matador Mining Ltd.)	Cape Ray	Gold	Exploration to Feasibility
Falcon Gold Corp.	Golden Brook JV, Valentine Gold South, Victoria West	Gold	Exploration
Coastal Gold Corp.	Hope Brook	Gold	Feasibility
Marvel Discovery Corp.	Golden Brook JV	Gold	Exploration
Cape Ray Mining Ltd. (Matador Mining Ltd.)	Cape Ray	Gold	Exploration to Feasibility
Puddle Pond Resources	Princess Lake, Lloyd's Lake	Gold	Exploration
Rocky Island Gold Corp.	-	Gold	Exploration
Buchans Minerals Corp.	Long Range	Gold	Exploration
Triple Nine Resources	Four Corners	Iron Ore, Titanium, Vanadium	Exploration
2802903 Ontario Ltd.	-	Rare Earth Elements	Exploration
Fair Haven Resources	Fair Haven	Gold, Copper	Exploration
TRU Precious Metals Corp.	Golden Rose	Gold	Exploration

Source: S&P Capital IQ Pro, 2023.

The QP has not independently verified this information and this information is not necessarily indicative of the mineralization at the GAS Project.

Figure 23-1: Adjacent Properties



Source: S&P Global Market Intelligence.

24.0 Other Relevant Data and Information

24.1 Project Risks and Opportunities

There are inherent risks in any greenfield mining project such as the GAS Project. As part of the FS, SLR and its sub-consultants undertook a risk and opportunities assessment for the Project. The risks were assessed at the asset level and categorised under the following categories/areas:

1 Mineral Resources and Mineral Reserves
2 Mine Design and LOM Plan
3 Engineering and Construction
4 Project Execution
5 Capital Cost Estimate
6 Environment and Social
7 Operations and Costs
8 Health and Safety
9 Financial
10 Strategic and Corporate

24.1.1 Project Risks

SLR used a semi-quantitative approach to analyse the risks for the GAS Project. The SLR FS team generated a register of the anticipated Project risks and then used a risk matrix to generate risk ratings.

In the Risk Register, the likelihoods (probability of occurrence) and consequences (impact of occurrence) of each individual risk were assigned numbered levels that were multiplied to generate a numerical description of the risk rating.

Given the complex nature of the Project, it was decided that the risk assessment would be conducted for each of the following consequence areas:

- Health and Safety
- Mineral Resources and Mineral Reserves
- Capital Costs
- Operating Costs
- Revenue Loss
- Total Cashflow
- Execution Schedule
- Production Schedule
- Environmental
- Social
- Business Impact

The values assigned to the likelihoods and consequences were not related to their actual magnitude, but to the numerical value derived for the risk.

The risk ratings were categorised as Low, Medium, High and Very High (Figure 24-1).

Figure 24-1: Risk Matrix

Likelihood			Consequence: Negligible	Minor	Moderate	Major	Severe
		Score	1	2	3	4	5
Rare	0% to 10%	1	1	2	3	4	5
Unlikely	10% to 30%	2	2	4	6	8	10
Possible	30% to 60%	3	3	6	9	12	15
Likely	60% to 90%	4	4	8	12	16	20
Almost Certain	>90%	5	5	10	15	20	25

Low	**Low: manage by routine procedures**
Medium	**Medium: monitoring or response procedures, management responsability specifie**
High	**High: senior attention, action plan and management responsability specified**
Very High	**Very high: senior attention, action plan and management responsability specified**

SLR's risk analysis identified 58 notable project risks along with their associated potential mitigation strategies. The distribution before considering mitigation measures is presented in Figure 24-2.

Figure 24-2: Risk Matrix – Pre-mitigation

Likelihood			Consequence: Negligible	Minor	Moderate	Major	Severe
		Score	1	2	3	4	5
Rare	0% to 10%	1	0	2	1	2	1
Unlikely	10% to 30%	2	1	7	10	4	1
Possible	30% to 60%	3	1	10	11	6	1
Likely	60% to 90%	4	0	0	0	0	0
Almost Certain	>90%	5	0	0	0	0	0

count of risks Prior to Mitigation	
Low	14
Medium	36
High	7
Very High	1

Prior to any mitigation, most of the risks identified for the Project fall into the Medium or Low severity rating categories, however, eight risks were given a Very High or High rating as follows:

1. Very High – The encountered geotechnical and hydrogeological conditions are much worse than anticipated, requiring altered construction methodology, advance cover grouting and additional support measures, severely reducing advance rates and resulting in a material delay to mine construction – mitigated by undertaking more geotechnical and hydrogeological investigation on the line of the declines and engaging the contractor on robust contractual terms including risk sharing.
2. High – Material changes to the project definition have to be made during the permitting process, resulting in delayed provincial and federal approvals and permits, and delayed

start to construction on the site – mitigated by early engagement with the relevant authorities and ensuring engineering is aligned with the EIS and project Registration Document.

3 High – The decision to proceed with the Project is delayed and the orders for the long lead mine production equipment (CMs) are not placed early enough to ensure timely delivery of the equipment – mitigated by a timely decision to proceed and placing orders for long lead items as soon as possible after the decision to proceed.

4 High - Capital cost increases due to underestimated costs, inflation, and design changes during detailed engineering and execution - mitigated by appointing an experienced and strong Owner's team, completing detailed engineering before start of construction, and competitive tendering and placing of packages with fixed prices wherever possible.

5 High – insufficient ships are available to meet product delivery requirements – mitigated by establishing long term shipping contracts and procurement of dedicated ship(s).

6 High - Ship loader is not capable of assumed loading rate resulting in ship loading bottleneck at the port – mitigated by upgrading the ship loader and conducting routine preventative maintenance and a condition monitoring program.

7 High - Penetration into selected markets takes longer than anticipated – mitigated by reducing product price and building alliances with existing distributors.

8 High –A major water pathway is intersected during the decline development. If uncontrolled, strata water inflows into decline could exceed estimated inflows and installed pumping capacity leading to flooding or even loss of the decline – mitigated by further hydrogeological investigation and modelling, and ensuring contractor installs pumping capacity that exceeds the maximum estimated water inflow.

Following the recommended mitigation measures, the severity of the above risks would be reduced with only one risk remaining in the High category, this being Risk 1 above.

The distribution after considering mitigation measures is presented in Figure 24-3.

Figure 24-3: Residual Risk Matrix – Post-mitigation

Likelihood			Consequence				
			Negligible	Minor	Moderate	Major	Severe
		Score	1	2	3	4	5
Rare	0% to 10%	1	1	4	8	2	1
Unlikely	10% to 30%	2	4	19	8	2	0
Possible	30% to 60%	3	0	7	1	1	0
Likely	60% to 90%	4	0	0	0	0	0
Almost Certain	>90%	5	0	0	0	0	0

count of risks Post Mitigation		
	Low	38
	Medium	19
	High	1
	Very High	0

24.1.2 Opportunities

During the course of the FS, the Project engineering was optimized to introduce efficiencies and reduce costs and risks wherever possible. As such, most technical opportunities that have the potential to bring long-term benefit were identified, considered, and implemented throughout the development of the FS.

A number of further opportunities were, however, identified during the FS and are as follows:

1 The GAS deposit is laterally continuous and open at depth – undertake further exploration to expand the currently defined Mineral Resources, increase Mineral Reserves, and extend the mine life.

2 There are Inferred Mineral Resources currently defined for the GAS deposit that would expand and increase the tonnage of salt available on each mining level increasing the life of each level – undertake exploration drilling and development from underground to allow conversion of additional Mineral Resources to Mineral Reserves.

3 The conversion of Inferred Mineral Resources offers the opportunity to increase the production rate beyond the Base Case rate and fully utilize the installed capacity of the Project infrastructure – undertake exploration drilling and development from underground to allow conversion of additional Mineral Resources to Mineral Reserves and advance the case for potential future expansion.

4 Extract barrier pillars on retreat from a level to increase the extraction ratio – consider pillar mining once underground geomechanical conditions are well understood.

5 Optimise and reduce pillar sizes to increase the mining extraction ration on all levels – undertake in-situ and pillar stress measurements in the salt horizon and optimise pillar sizes based on actual geotechnical and in-situ conditions.

6 Optimise ground support in the salt mining levels – monitor ground conditions and support performance during development and production. Trial different types of ground support types.

24.2 Project Execution Plan

24.2.1 Summary

It is assumed that Atlas will establish an Owner's Project Team responsible for managing all of the Project's business, management, and operations activities.

The Project execution strategy is for the Owner's Project Team to establish an Engineering Procurement and Construction Management (EPCM) Contract to complete the engineering, procurement and construction management associated with the on and off-site infrastructure and all process and material handling facilities. In addition, the Project Execution Plan (PEP) assumes the appointment of a mining contractor for the design and construction of the box cut and decline development.

To ensure a timely and cohesive implementation of the Project, the Atlas' Operational and Project staff will be required to be mobilised as soon as approval is given to proceed with the Project. The up-front work by the dedicated Owner's Project Team will potentially be supported by project staff from internal and external sources to assist with the calling of tenders for the Execution Phase Services Contracts, specifically the EPCM and Mining Contract.

It is proposed that the Owner's Project Team, will be supported by a Project Steering Committee, which will report to the Vice President of Engineering and Construction and Mine Project Manager.

The EPCM will carry overall responsibility for the execution of activities under the EPCM mandate, including detailed engineering, procurement, logistics, construction, commissioning, and Project Controls.

A portion of Atlas' Operations Team will be required to be mobilized during the development phase of the Project to provide common services that will be required over the LOM (i.e., not limited to construction support). Atlas' Operations Team will provide staffing and be responsible for mining operations, including maintenance, health and safety, environmental management & monitoring, permitting, security (assumed to be contracted service), project accounting, warehouse management (EPCM in execution and hand over to Owner in operations) and community relations.

It is recommended that the core Atlas Salt Project team be resourced and established as soon as possible to advance the project execution planning following the completion of the FS. The key activities of the project team will be the following:

1 Establish a detailed short term 100 day and 300 day plan

2 Continue developing the environmental permitting documents

3 Complete an external peer review of the feasibility study

4 Establish a safety plan and associated systems for safe and successful project execution

5 Establish a Procurement, Logistics, and Warehousing Plan

6 Advance and develop more detail to the FS schedule and cost estimates

7 Execute applicable recommendations from the FS in advance of the next phase of engineering.

8 Establish a detailed contracting strategy by work package level.

9 Identify early work package engineering and execution in advance of the box cut construction and electrical substation installations.

10 Complete value engineering studies on:

  a) EPCM vs integrated project team execution models.

  b) Mining development rates and methodologies.

  c) Conveyor advancement with decline drives.

11 Detail the Atlas Salt QA/QC strategy.

12 Detail the Operational Readiness planning.

13 Order key long lead equipment based on advanced engineering designs.

24.2.2 Development and Construction Schedule Critical Path

The Project is scheduled to take 55 months to permit, engineer, procure, construct, and commission, commencing in September 2023 and reaching practical completion in March 2028, with ramp-up and performance testing occurring from April to October 2028.

The Critical Path (CP) for the Project, assuming a start date of September 1, 2023, primarily involves navigating through the regulatory procedures necessary for obtaining environmental approval and construction permitting. To expedite this process, it will be essential to appoint a specialized Environmental and Permitting Consultant.

The current working assumption is that the Project will require approval of an Environmental Preview Report (EPR), which will then be followed by the permitting phase. Once the Project receives the Certificate of Approval for Construction, bids for the bulk earthworks, including the access road and terracing, will be evaluated and awarded. Construction activities will commence after the thaw of the spring season.

Subsequently, the construction CP will encompass various mining activities required to establish the box cut and develop the conveyor access declines, which will be completed by the appointed mining contractor. This phase will be followed by the excavation of the process plant chamber on 240 Level and the completion of the declines down to the 320 Level.

The CP will then transition to underground construction works, involving the installation of conveyors (including foundations, structural steel, and mechanical components). In parallel to this, the Project will proceed with the construction of the Plant Area, specifically focusing on the installation of mechanical equipment, platework, electrical systems, and instrumentation.

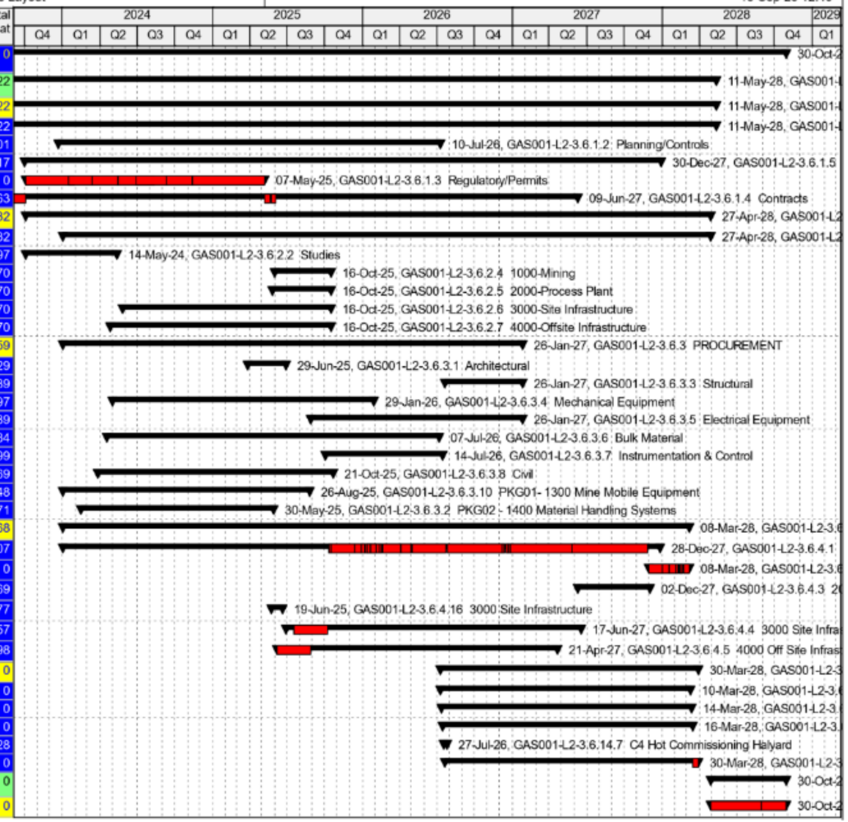
Once the plant is fully constructed and feed from mining is established, the commissioning phase will begin, leading into a six month production ramp-up and performance testing period.

Figure 24-4 presents the Project summary schedule.

Figure 24-4: Project Summary Schedule

Great Atlantic Salt Project - Execution Level II Schedule DRAFT for Review | Classic Schedule Layout | 13-Sep-23 12:40

Activity ID	Activity Name	Original Duration	Start	Finish	Total Float
GAS001-L2-3	Great Atlantic Salt Project - Execution Level II Schedule DRAF	1349	30-Aug-23	30-Oct-28	0
GAS001-L2-3.6	PROJECT EXECUTION	1227	30-Aug-23	11-May-28	122
GAS001-L2-3.6.1	MANAGEMENT	1227	30-Aug-23	11-May-28	122
GAS001-L2-3.6.1.1	Milestones	1227	30-Aug-23	11-May-28	122
GAS001-L2-3.6.1.2	Planning/Controls	644	21-Dec-23	10-Jul-26	601
GAS001-L2-3.6.1.5	Marine Logistics	1109	02-Oct-23	30-Dec-27	217
GAS001-L2-3.6.1.3	Regulatory/Permits	400	04-Oct-23	07-May-25	0
GAS001-L2-3.6.1.4	Contracts	959	01-Sep-23	09-Jun-27	363
GAS001-L2-3.6.2	ENGINEERING	1192	04-Oct-23	27-Apr-28	132
GAS001-L2-3.6.2.3	0000-General	1107	03-Jan-24	27-Apr-28	132
GAS001-L2-3.6.2.2	Studies	160	04-Oct-23	14-May-24	297
GAS001-L2-3.6.2.4	1000-Mining	95	02-Jun-25	16-Oct-25	470
GAS001-L2-3.6.2.5	2000-Process Plant	100	26-May-25	16-Oct-25	470
GAS001-L2-3.6.2.6	3000-Site Infrastructure	350	27-May-24	16-Oct-25	470
GAS001-L2-3.6.2.7	4000-Offsite Infrastructure	370	26-Apr-24	16-Oct-25	470
GAS001-L2-3.6.3	PROCUREMENT	800	03-Jan-24	26-Jan-27	459
GAS001-L2-3.6.3.1	Architectural	67	27-Mar-25	29-Jun-25	829
GAS001-L2-3.6.3.3	Structural	135	22-Jul-26	26-Jan-27	339
GAS001-L2-3.6.3.4	Mechanical Equipment	455	03-May-24	29-Jan-26	597
GAS001-L2-3.6.3.5	Electrical Equipment	370	27-Aug-25	26-Jan-27	339
GAS001-L2-3.6.3.6	Bulk Material	578	19-Apr-24	07-Jul-26	484
GAS001-L2-3.6.3.7	Instrumentation & Control	204	02-Oct-25	14-Jul-26	599
GAS001-L2-3.6.3.8	Civil	409	28-Mar-24	21-Oct-25	669
GAS001-L2-3.6.3.10	PKG01- 1300 Mine Mobile Equipment	430	03-Jan-24	26-Aug-25	348
GAS001-L2-3.6.3.2	PKG02 - 1400 Material Handling Systems	338	14-Feb-24	30-May-25	771
GAS001-L2-3.6.4	CONSTRUCTION	1091	03-Jan-24	08-Mar-28	168
GAS001-L2-3.6.4.1	1000 Mining	1456	03-Jan-24	28-Dec-27	307
GAS001-L2-3.6.4.2	1000 Mining Halyard	73	29-Nov-27	08-Mar-28	0
GAS001-L2-3.6.4.3	2000 Process Plant Halyard	126	09-Jun-27	02-Dec-27	69
GAS001-L2-3.6.4.16	3000 Site Infrastructure	20	23-May-25	19-Jun-25	877
GAS001-L2-3.6.4.4	3000 Site Infrastructure Halyard	514	30-Jun-25	17-Jun-27	357
GAS001-L2-3.6.4.5	4000 Off Site Infrastructure Halyard	489	06-Jun-25	21-Apr-27	398
GAS001-L2-3.6.14	COMMISSIONING	451	09-Jul-26	30-Mar-28	0
GAS001-L2-3.6.14.4	C1 Power Off Checks Halyard	437	09-Jul-26	10-Mar-28	0
GAS001-L2-3.6.14.5	C2 Pre-Commissioning Halyard	437	13-Jul-26	14-Mar-28	0
GAS001-L2-3.6.14.6	C3 Cold Commissioning Halyard	437	15-Jul-26	16-Mar-28	0
GAS001-L2-3.6.14.7	C4 Hot Commissioning Halyard	7	17-Jul-26	27-Jul-26	428
GAS001-L2-3.6.14.8	C5 Production Ramp-Up Halyard	444	20-Jul-26	30-Mar-28	0
GAS001-L2-3.7	OPERATIONS	132	28-Apr-28	30-Oct-28	0
GAS001-L2-3.7.5	RAMP-UP & PERFORMANCE TESTING	132	28-Apr-28	30-Oct-28	0



Source: SLR, 2023

25.0 Interpretation and Conclusions

The QPs have the following conclusions by area.

25.1 Geology and Mineral Resources

- The geological setting of the deposit is well understood, with the GAS halite being constrained by a combination of exploration drilling, downhole and ground geophysical surveying. The GAS Project is hosted within Carboniferous strata of the Bay St George Sub-Basin of the regional Maritimes Basin of southwest Newfoundland; an extensive geological basin underlying the Gulf of St Lawrence and surrounding areas.
- The GAS halite deposit is a basin-wide, sedimentary salt deposit with wide lateral extent. The deposit is part of a stratigraphy including sedimentary strata from a range of depositional environments including marine, shallow marine and salina, to fluvial and deltaic. Salt formation within sedimentary environments occurs through the evaporation of seawater within shallow enclosed or isolated basins. The Codroy Formation of the Codroy Group represents the dominant stratigraphic unit within the GAS Project area.
- The deposit has been intersected in a total of seven drill holes between depths of approximately 180 m and 395 m and the thickness of the deposit has been observed to vary between 68 m in the southwest and 340 m in the northeast. Geophysical information suggests that the deposit extends further laterally than what is currently classified as Mineral Resources.
- The halite is overlain by a thick succession of sandstones, siltstones, mudstones, and conglomerates, referred to as Red Beds, and is immediately underlain by a basal anhydrite, both of which form relatively sharp boundaries with the major halite horizons. There are two interburden layers in the deposit and the salt horizons have been named as follows:
  - 1-Salt is below the red beds and overlies the first interburden layer
  - 2-Salt is between the two interburden layers
  - 3-Salt is below the second interburden layer and overlies the basal anhydrite.
- Mineral Resources at the GAS Project conform to CIM (2014) definitions.
- As at January 6, 2023, Indicated Mineral Resources are estimated to total 187 million tonnes (Mt) averaging 96.4% NaCl containing 180 Mt of NaCl. Inferred Mineral Resources are estimated to total 999 Mt averaging 95.6% NaCl containing 956 Mt of NaCl.
- The sample preparation, analysis, and security procedures at the GAS Project are adequate, and the quality assurance/quality control (QA/QC) results are adequate to support Mineral Resource estimation.
- The drill hole database is of sufficient quality and is suitable for use in a Mineral Resource estimate.
- The QP is not aware of any material limitations on data verification and is of the opinion that database verification procedures for the GAS Project are adequate for the purposes of Mineral Resource estimation. Verification by SLR has included a review of spatial, geological, and geochemical data in relation to the GAS deposit, and updated geological

interpretations informed by new drill hole data and reprocessed seismic survey data obtained by Atlas during 2022.

- The QP is of the opinion that the block modelling methodologies and the selected block sizes are suitable for the style of mineralization and proposed mining method.
- The deposit remains open to additional exploration and further technical study, which are warranted.

25.2 Mining and Mineral Reserves

- The Probable Mineral Reserves are estimated to be 88.1 Mt grading 96.0% NaCl. There are 37.7 Mt grading 95.9% NaCl of Probable Mineral Reserves in the 2-Salt horizon and 50.3 Mt grading 96.0% NaCl of Probable Mineral Reserves in the 3-Salt horizon.
- The Probable Mineral Reserves are based on Indicated Mineral Resources only, after the application of mining plans and designs. No Inferred Mineral Resources were included in the estimate of Mineral Reserves. Inferred Mineral Resources included within the mine plan were treated as waste.
- A mining plan has been developed based upon the Probable Mineral Reserves for an initial mine life of 34 years at a rate of 2.5 Mtpa of road salt product. There are additional Indicated Mineral Resources at depth that have not been converted to Mineral Reserves.
- The deposit is planned to be accessed by two declines from surface to the plant elevation at the 240 Level (nominally 240 m below surface) and to the first production level at the 320 Level.
- Over the initial 34-year life of the Project, the declines will be extended to a further six production levels down to the 530 Level.
- Salt will be mined using CMs and truck haulage in a room and pillar mining operation. Rooms will be 16 m wide; pillars will be 25 m square.
- Mining levels will be up to 20 m high consisting of four vertical cuts each five metres high. Mining levels will be separated by 15 m sill pillars.
- Mining is planned for the 2-Salt and 3-Salt horizons.
- At a block model mining cut-off grade of 90% NaCl the total production for the initial 34-year mine plan is estimated to be 88.1 Mt grading 96.0% NaCl. Mining faces will be blended to maintain the production grade higher than the minimum 95% NaCl road salt specification.
- The mine equipment will primarily comprise electric and battery electric units.
- Mine design and planning are supported by geotechnical studies and geomechanical testing.

25.3 Mineral Processing

- Processing to produce de-icing salt will take place in a processing plant that will be located underground within the mine.
- A multi-stage crushing and screening plant using roll crushers and inclined vibrating screens has been designed to minimize the generation of fines. The flow sheet comprises three crushing and four screening stages, including screening-out of product-

size material before and after each crushing stage to further reduce the potential for fines generation. Regardless, a fine screening circuit has been included to allow for the removal of excessive fines if necessary.

- The process design has been based on UCS tests on thirty samples from drill holes CC-8 and CC-9b completed in 2022 and 2023. The results range from 14.7 MPa to 38.8 MPa with a 75th percentile value of 28.6 MPa.
- Abrasiveness of six samples from drill holes CC-7 completed in 2022 has been assessed by CM manufacturers as “not abrasive” to “slightly abrasive”, while Bond abrasion index results from six samples from CC-7, CC-8, and CC-9b indicate that the salt’s abrasivity is very mild to mild. Additionally, Cerchar abrasivity testing on six samples from CC-8 characterized the samples’ abrasivity as very low.
- These results indicate that the salt may be successfully processed to produce de-icing salt conforming to ASTM-D632 by conventional dry crushing and screening methods.

25.4 Infrastructure

- Electricity will come from a NL Power (a provincial crown corporation that distributes power to end-users) substation located approximately 1,400 m from the proposed mine site. It is proposed that a 66 kV transmission line will connect from the Project to the NL Power substation.
- The Project is located within the town of St. George’s, and it is envisaged that a connection to the town water and sewer systems would be established.
- There are limited requirements for process water at the site, given that the processing system is based on mechanical screening and separation.
- It is proposed that water that has come in contact with the site will be collected in an effluent water pond, and then discharged into a local creek nearby to the Project. It is anticipated that water will require treatment only for total suspended solids. No chemical treatments are planned for the effluent water.
- A variety of surface buildings and facilities are required for the Project, including administration building, light vehicle parking, mine dry (change house), minor maintenance shop, warehouse, cold storage area, perimeter fencing, truck scale, and gatehouse.
- A camp is not required for the Project, as it is assumed that the workforce would commute daily from the local area.
- A series of conveyors is required to transfer the salt from the mine to the port, including an intermediate salt storage building, and a two kilometre overland conveyor.
- The overland conveyor requires three crossings – a 100 m length buried conveyor under Main Street, a bridge crossing at Station Road and Newfoundland T’Railway, and a second bridge crossing over the marina access road.
- Turf Point port is an existing aggregates exporting facility owned by a third party that is currently used to ship gypsum to markets in North America. The GAS Project plans to use the port for the shipment of salt based on coming to a commercial agreement with the third-party.
- The principal components of the port as it exists today include an aggregate storage building, outdoor aggregate storage, reclaim system feeding onto a single conveyor, and

a ship loader mounted on the structural steel trestle with a loading rate of nominally 1,000 tph. Vessels up 225 m long, 32.26 m in beam and an alongside depth of 10 m can be accommodated.

- It is proposed that the existing port facilities will be augmented to enable the port to be suitable for exporting 2.5 Mtpa of rock salt. The following key changes proposed include modifying the existing storage building to accommodate the delivery of rock salt via overland conveyor, constructing a new 47,300 t storage building in the area of the current outdoor storage, completing a series of reclaim feeders underneath the new building to feed salt to the ship loader; and refurbishment of the existing ship loader. With the addition of the new storage building, the total storage at the port will be 60,000 t, or approximately two ship loads. The ship loader would be upgraded and refurbished to maintain its capacity to load at a rate of 1,000 tph.
- A waste management facility is included in the design comprised of thee piles. The waste pile and is sized to accommodate the waste rock generated from the initial declines, box cut, and excess cut volume from the site terrace. A second pile is planned for salt excavated during the pre-production period. A third pile is planned for the organic material that will be stripped during initial excavation work.
- A tailings management facility is not planned for the Project, as all processed material is either sold as product or returned to underground mined out areas.

25.5 Marketing

- The sole product produced from GAS will be rock salt used for de-icing purposes.
- The target market with the highest potential for GAS to penetrate is Quebec and the Maritimes, New England, and the US East Coast (USEC) (collectively, the High Potential Market). The combined annual consumption of road salt in these markets ranges from 11.0 million tonnes per annum (Mtpa) to 16.0 Mtpa.
- The deposit will be developed for a production rate a throughput of 2.5 Mtpa of saleable product as a base case, achieved in Year 3 of operations after a two-year ramp up period. At 2.5 Mtpa, this would position GAS to supply 16% to 23% of the High Potential Market by the time it achieves full production. This market penetration would be achieved by first supplanting rock salt that is imported from overseas markets, followed by eventual replacement of production from aging rock salt mines in the St. Lawrence Basin.
- Key material handling infrastructure such as the process plant, decline conveyor, and overland conveyor, has been sized for 4.0 Mtpa from the beginning, to support potential future expansion.
- Based on a review of both publicly available information and commissioned studies, the economic analysis for this FS is based on a price of C$72.24/dmt for road salt FOB Turf Point (with a Q3 2023 basis).

25.6 Environment

- The Company initiated baseline studies in 2022 which focussed on water and ecology components.
- A comprehensive environmental assessment has not yet been conducted for the Project. To support the FS, subject matter experts carried out desktop work which included

reviewing the available baseline information and the Project description to identify potential environmental and social impacts as well as mitigation measures and made recommendations for further work to support Project development and environmental approval processes.

- Mitigation measures have been incorporated into the Project design such as the conveyor which will be buried where it passes close to receptors and the conveyor and transfer points above ground will be fully enclosed, which should mitigate most dust and noise impacts, and the buried section and two bridges will offer animal passage opportunities. A water management plan has been developed to manage dewatering water, to divert clean water around the Project infrastructure area and to contain runoff from infrastructure areas in water management conveyance infrastructure and a settling pond to minimize impacts on the receiving environment. Other design mitigation includes lining of the pre-development (temporary) salt stockpile, and adequate protection from erosion at the discharge point from the settling pond.
- An environmental approval and permit register and high-level schedule has been developed for the Project. The Project requires registration pursuant to the NL Environmental Protection Act and the approval process under this legal framework. No federal environmental assessment is anticipated. Several environmental permits will be required.
- The Project is located within the town of St George’s. The Qalipu Mi'kmaq First Nation has a community in St George’s.
- Atlas maintains a list of stakeholders and Indigenous communities and have engaged with local communities. Butland Communications, a consultant working with Atlas, has development engagement plans for the Project to be implemented as the Project progresses and to support the environmental approval processes.
- Conceptual closure planning and a high-level closure costing has been developed as part of the FS for the Project and will be the starting point to develop a Rehabilitation and Closure Plan as part of the mine development plan approval process.

25.7 Risks and Opportunities

- Through the risk review process undertaken as part of the FS, no major unique risks were identified that expose the Project Base Case to unreasonable risk. The risks identified are typical of large capital projects in the mining industry.
- Some of the risks associated with the Project, such as the penetration into the market, price of salt, and lead times on critical equipment, are open ended or beyond the control of the Project at this stage.
- A number of opportunities were identified that can only be realized during the Front-End Engineering and Design (FEED), Implementation and Operational phases of the Project.
- The QPs consider the most significant opportunity to be the extension of the mine life based upon the conversion of Inferred Mineral Resources at depth and beyond the current resource extents.

26.0 Recommendations

The outcome of this FS shows that the Project has significant economic potential. The QPs recommend that the Project be advanced to the next level of study, and that the environmental permitting process be further advanced. The QPs offer the following recommendations by work area. In certain areas, the recommendations have been split between those that are recommended as part of the next level of study, and those that are intended for longer-term Project development.

26.1 Geology and Mineral Resources

The QP recommends the following be considered as part of any future drilling programs and Mineral Resource updates:

1 During 2022, SLR independently verified geological logging of CC-2, CC-4, and CC-8 drill holes. The QP recommends that this be repeated for CC-1 and CC-5 as further verification of previously obtained geological data. The QP recommends that CC-1 and CC-5 core be re-photographed.

2 Where possible, future drill holes should be completed at a larger drill core diameter to provide greater material for sampling and to reduce issues with core splitting and sampling.

3 The QP offers the following recommendations with respect to QA/QC:

   a) Increase the frequency of laboratory repeats to account for the difficulty in the collection of reliable field duplicates due to issues with core splitting.

   b) Obtain appropriate blank material, for example equivalent material used internally by Actlabs, for blind insertion into the sample stream by Atlas. This could be a commercially available blank or inert material obtained locally and crushed by Atlas.

   c) Obtain additional infill and/or check samples in drill hole CC-5. Current Mineral Resource classifications consider that grade continuity between CC-5 and CC-2, spaced at approximately 600 m, is more variable than observed between other closely spaced drill holes, which warrants validation.

26.2 Mining and Mineral Reserves

The QP recommends the following:

1 Advance the Project planning towards construction and production through further engineering and definition of the capital and operating costs.

2 Review of the mining sequences to maximize the productivity of the mining operation.

3 Review of the room and pillar dimensions, including the suitability for selected production equipment.

4 Review of sill and barrier pillar dimensions to maximize the extraction ratio.

5 Review of the CM and haul truck productivity

6 Complete further haul truck evaluations to assess cycle times and battery life

7 Undertake further geomechanical and hydrogeological investigations including:

   a) Additional packer testing in Red Beds in the areas of the planned declines.

   b) Installation of wells for continuous, long-term monitoring of groundwater levels.
   c) Transient groundwater modelling.
   d) Incorporate updated hydrogeological conditions into decline geotechnical design.
   e) Near surface geotechnical investigation around the mine terrace and box cut area.

8 Ongoing definition of the location and character of the interburden layers and larger mudstone inclusions.

9 Update the estimate of inflows and subsequent development plans for the handling of ground water inflows in the decline.

10 As part of mine optimization work, consider automation systems including:
   a) Truck dispatch systems to optimize production.
   b) Automated control of the CM alignment (horizontal and vertical).

11 Develop plans and procedures for:
   a) Determination of the salt grades for production planning.
   b) Grade control to meet product specifications.

12 Implement InSar surface deformation monitoring two years prior to the commencement of mining.

13 Develop a ground control manual for development and operations.

14 Evaluate of the ventilation requirements based upon a waste heat analysis.

15 Consider “ventilation on demand” to supply fresh air when and where required to suit the mining activities.

16 Establish ventilation monitoring and control systems to demonstrate that the air quality is suitable and to reduce fan operation.

17 Complete detailed design of the process plant ventilation system.

18 Complete detailed design of the auxiliary ventilation at the continuous mining units.

19 Re-evaluate the mining of the 1-Salt horizon after the 1-Salt is exposed in the mine access development.

26.3 Mineral Processing

While the engineering completed during the feasibility study is sufficient to support the capital cost estimate at AACE Class 3 level, the QP recommends that the following be considered as part of basic and detailed engineering:

1 Refine the process plant layout while considering the configuration of all transfer points – vertical drops through chutes into crushers and onto screens and conveyors should be avoided to minimize fines generation and airborne dust. Chutes should be designed to provide sloped transfers at a high enough angle that will prevent the chutes from blocking up, while at a low enough angle to minimize impacts by ensuring that transfers are by sliding rather than falling streams. Consideration should be given to the possible need for low-friction linings in all transfer chutes.

2 Conduct detailed constructability and operability reviews of the processing plant and conveying and storage infrastructure to ensure that the construction schedule is realistic and that the process plant can be safely and efficiently maintained and operated.

3 Develop the processing plant, and pre-processing and post processing conveying and storage engineering designs to a level that is adequate to obtain equipment costs and quantity estimations to support progression of the capital cost estimate to an AACE Class 1 capital cost estimate, and refine the operating cost estimate.

26.4 Infrastructure

As part of the next level of study, the QP recommends the following:

1 Conduct further geotechnical investigations around the area of the proposed site terrace, to determine the suitability of this area to host the site infrastructure and mine access locations, specifically in the locations of the planned waste piles.

2 Conduct geochemical testing of the overburden and red beds, to determine whether there are any deleterious elements that could impact the water effluent treatment system.

3 Review possible effluent discharge locations in the vicinity of the Project.

4 Continually update the site-wide water balance.

5 Complete hydrogeological testing of the red beds and overburden in the area of the surface facilities.

6 Review overland conveyor alignment routes and site access routes, and determine whether any easements, right of ways, or land purchases are required to achieve the selected alignment.

As part of ongoing project development, the QP recommends the following:

7 Conduct studies to identify suitable road construction material in the vicinity of the Project.

8 Conduct a logistics and traffic study to determine the impact of construction on the town.

9 Conduct further discussions with NL Power to determine any modifications required at the St. George's substation.

10 Conduct further review with the town of St. George's, to confirm suitability for the Project to connect services to the municipal sewer and water systems.

11 Install a weather station at the Project to gain site-specific meteorological conditions, which will assist in infrastructure planning.

12 Develop a commercial agreement with the port owners that summarizes the terms on which Turf Point port can be used by Atlas to export salt.

26.5 Marketing

In order to further develop the marketing and logistics plan, the QP recommends the following:

1 Meet with potential customers and arrange letters of intent or other documentation that will lead to formal supply contracts.

2 Meet with Canadian and international shipping companies to develop letters of intent or contracts for shipping and logistics.

3 Further investigate transportation and distribution options to customers inland of the destination ports.

26.6 Environment

As part of ongoing project development, the QP recommends the following:

1 Complete recommended further studies and baseline work identified by the subject matter experts to supplement baseline data, assess potential impacts and develop management plans. This will be required as part of the provincial approval process.

2 Ensure all the required environmental and approvals are obtained prior to commencement of the Project by implementing a permitting and approvals plan as part of the PEP and schedule, which should include engagement with relevant regulators

3 Confirm with IAAC that the Project will not require environmental review under the federal Impact Assessment Act (IAA).

4 Confirm with Environment and Climate Change Canada that Metal and Diamond Mining Effluent Regulations (MDMER) are not applicable to the Project.

5 Engage with the relevant provincial regulators to initiate the provincial approval process and discuss the planned studies and work identified by the subject matter experts, as well as the aim of the Project Team to provide sufficient information in an EPR report.

6 Compile a Project Registration document to formally initiate the provincial approval process.

7 Implement the Indigenous community engagement plan and the general community and stakeholder (including relevant regulators) engagement plan. Ensure that sufficient information is provided to the Qalipu Mi'kmaq First Nation, communities, and stakeholders regarding potential Project effects during the engagement process.

8 Develop frameworks for community support and agreements, investments and initiatives with local councils and organizations. These should be aimed at responding to the community needs and concerns related to the Project.

9 Develop agreements with local band councils and Qalipu First Nation.

10 Compile a Rehabilitation and Closure Plan and ensure the financial assurance is in place prior to commencement of the Project. The conceptual closure planning and costing provided in the Feasibility Study and summarised in this report should be the starting point to develop the Rehabilitation and Closure Plan.

26.7 Budget

To move the Project forward to the next stage of study, the following budget is proposed, as shown in Table 26-1.

Table 26-1: Proposed Work Budget

Item	Program	Cost (C$ '000)
1	Initial Engineering and Procurement Planning	2,000

Item	Program	Cost (C$ ‘000)
2	Geotechnical and Hydrogeological Program	1,000
3	Environmental and Social Studies	1,500
4	Owner’s Team	1,500
	Total	**6,000**

It is noted that the capital cost described in the FS are inclusive of items #1 and #4, and exclusive of items #2 and #3.

26.8 Project Execution and Schedule

It is recommended that the core Atlas Salt Project team be resourced and established as soon as possible to advance the project execution planning. The key activities of the project team will be the following:

1 Establish a detailed short term 100 day and 300 day plan
2 Continue developing the environmental permitting documents
3 Complete an external peer review of the feasibility study
4 Establish a safety plan and associated systems for safe and successful project execution
5 Establish a Procurement, Logistics, and Warehousing Plan
6 Advance and develop more detail to the FS schedule and cost estimates
7 Execute applicable recommendations from the FS in advance of the next phase of engineering.
8 Establish a detailed contracting strategy by work package level.
9 Identify early work package engineering and execution in advance of the box cut construction and electrical substation installations.
10 Complete value engineering studies on:
   a) EPCM vs integrated project team execution models.
   b) Mining development rates and methodologies.
   c) Conveyor advancement with decline drives.
11 Detail the Atlas Salt QA/QC strategy.
12 Detail the Operational Readiness planning.
13 Order key long lead equipment based on advanced engineering designs.

The purpose of the recommended tasks is to reduce the risk to safety, schedule, cost and quality during the project execution period.

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28.0 Date and Signature Date

This report titled "Technical Report on the Great Atlantic Salt Project, Newfoundland and Labrador, Canada" with an effective date of July 31, 2023 as amended and restated on May 1, 2024 was prepared and signed by the following authors:

(Signed & Sealed) ***John G. Kelly***

Dated at Belfast, UK
May 1, 2024

John G. Kelly, EurGeol, P.Geo., FIMMM, MIQ

(Signed & Sealed) ***Lance Engelbrecht***

Dated at Toronto, ON
May 1, 2024

Lance Engelbrecht, P.Eng.

(Signed & Sealed) ***Derek J. Riehm***

Dated at Toronto, ON
May 1, 2024

Derek J. Riehm, M.A.Sc., P.Eng.

(Signed & Sealed) ***David M. Robson***

Dated at Toronto, ON
May 1, 2024

David M. Robson, P.Eng., MBA

(Signed & Sealed) ***Graham G. Clow***

Dated at Toronto, ON
May 1, 2024

Graham G. Clow, P.Eng.

29.0 Certificate of Qualified Person

29.1 John G. Kelly

I, Dr. John George Kelly, EurGeol, P.Geo., FIMMM, MIQ, as an author of the technical report entitled: “Technical Report on the Great Atlantic Salt Project, Newfoundland and Labrador, Canada” with an effective date of July 31, 2023, prepared for Atlas Salt Inc., do hereby certify that:

1. I am a Technical Director (Geology) working at SLR Consulting Ltd., Clockwise, River House, 48 High Street, Belfast, BT1 2BE, Northern Ireland, United Kingdom.
2. I have received the following degrees:
   - BSc (Hons) 2.1 Geology, Queens University of Belfast, United Kingdom, 1986
   - Ph.D. Geology, National University of Ireland, Dublin, 1989.
3. I am a registered Professional Geologist (PGeo) with the Institute of Geologists of Ireland, a registered European Geologist (EurGeol) with the European Federation of Geologists, a Fellow of the Institute of Materials, Minerals and Mining, and registered in the Province of Newfoundland and Labrador (Reg #5550). I have been practicing my profession continuously since 1991. My relevant experience for the purpose of the Technical Report is:
   - Over 15 years experience being a technical advisor to an operating rock salt mine located in Europe.
   - Experience with estimating Mineral Resources at other industrial minerals (including halite) deposits located globally.
4. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
5. I am responsible for Sections 4 through 11, 12.1, 14, 23, 25.1, and 26.1 of the Technical Report.
6. My prior involvement in the Project includes being a named qualified person of a previous Technical Report completed on the Project with an effective date of January 30, 2023.
7. I performed a personal inspection of the Project site from October 17 to 20, 2022.
8. I am independent of the Issuer as described in Section 1.5 of NI 43-101.
9. I have read NI 43-101 and the Technical Report has been prepared in compliance with NI 43-101 and Form 43-101F1.
10. At the effective date of the Technical Report, to the best of my knowledge, information, and belief, Sections 4 through 11, 12.1, 14, 23, 25.1, and 26.1 in the Technical Report, for which I am responsible, contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 1st day of May, 2024

(Signed & Sealed) *Dr. John G. Kelly*

Dr John G Kelly, EurGeol, P.Geo., FIMMM, MIQ

29.2 Lance Engelbrecht

I, Lance Engelbrecht, P.Eng., as an author of this report entitled “Technical Report on the Great Atlantic Salt Project, Newfoundland and Labrador, Canada” with an effective date of July 31, 2023, prepared for Atlas Salt Inc., do hereby certify that:

1. I am Technical Manager – Metallurgy and Principal Metallurgist with SLR Consulting (Canada) Ltd, of Suite 501, 55 University Ave., Toronto, ON M5J 2H7.
2. I am a graduate of the University of the Witwatersrand, Johannesburg, South Africa in 1992 with a B.Sc. degree in Engineering, Metallurgy and Materials (Mineral Processing Option).
3. I am registered as a Professional Engineer in the Province of Ontario (Reg. # 100540095), and Province of Newfoundland and Labrador (Reg. #10730). I have worked as a metallurgist for a total of 28 years since my graduation. My relevant experience for the purpose of the Technical Report is:
    - Reviews and reports as a metallurgical consultant on numerous mining operations and projects for due diligence and regulatory requirements.
    - Preparation of Conceptual, Prefeasibility, and Feasibility Studies for projects around the world including industrial minerals, as well as test work interpretation, recommendations, and supervision.
    - Management and operational experience at Canadian and international milling, smelting, and refining operations.
4. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
5. I visited the Project on October 4 to 7, 2021.
6. I am responsible for Sections 12.3, 13, 17, 25.3, and 26.3 of the Technical Report.
7. I am independent of the Issuer applying the test set out in Section 1.5 of NI 43-101.
8. My prior involvement in the Project includes being a named qualified person of a previous Technical Report completed on the Project with an effective date of January 30, 2023.
9. I have read NI 43-101, and the Technical Report has been prepared in compliance with NI 43-101 and Form 43-101F1.
10. At the effective date of the Technical Report, to the best of my knowledge, information, and belief, Sections 12.3, 13, 17, 25.3, and 26.3 in the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 1st day of May, 2024

(Signed & Sealed) *Lance Engelbrecht*

Lance Engelbrecht, P.Eng.

29.3 Derek J. Riehm

I, Derek J. Riehm, M.A.Sc., P.Eng., as an author of this report entitled "Technical Report on the Great Atlantic Salt Project, Newfoundland and Labrador, Canada", prepared for Atlas Salt Inc. with an effective date of July 31, 2023, do hereby certify that:

1. I am a Principal Consultant with SLR Consulting (Canada) Ltd., of Suite 501, 55 University Ave., Toronto, ON, M5J 2H7.
2. I am a graduate of Queen´s University in Kingston, Ontario, in 1983 with a B.Sc. (Honour's, First Class) degree in Metallurgical Engineering and of the University of British Columbia in Vancouver, B.C., in 1990 with a M.A.Sc. degree in Metals and Materials Engineering.
3. I am registered as a Professional Engineer in the Province of British Columbia (Reg #21391), and Province of Newfoundland and Labrador (Reg. #11349). I have worked as an engineer and mining executive for 31 years since my graduation from UBC. My relevant experience for the purposes of the Technical Report is:
    - Environmental and social impact assessments, due diligence evaluations, audits and reviews of numerous mineral exploration and mining projects around the world including preparation of relevant sections of NI 43-101 Technical Reports.
    - A senior position with an international consulting firm focusing on environmental reviews and permitting.
    - Performing as an environmental and social manager and executive for several Canadian mining companies.
4. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
5. I visited the Project on October 17 to 20, 2022.
6. I am responsible for Sections 12.5, 20, 25.6, and 26.6 of the Technical Report.
7. I am independent of the Issuer applying the test set out in Section 1.5 of NI 43-101.
8. My prior involvement in the Project includes being a named qualified person of a previous Technical Report completed on the Project with an effective date of January 30, 2023.
9. I have read NI 43-101, and the Technical Report has been prepared in compliance with NI 43-101 and Form 43-101F1.
10. At the effective date of the Technical Report, to the best of my knowledge, information, and belief, sections 12.5, 20, 25.6, and 26.6 of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 1st day of May, 2024

(Signed & Sealed) *Derek J. Riehm*

Derek J. Riehm, M.A.Sc., P.Eng.

29.4 David M. Robson

I, David M. Robson, P.Eng., MBA, as an author of this report entitled "Technical Report on the Great Atlantic Salt Project, Newfoundland and Labrador, Canada" with an effective date of July 31, 2023, prepared for Atlas Salt Inc., do hereby certify that:

1. I am a Principal Mining Engineer with SLR Consulting (Canada) Ltd, of Suite 501, 55 University Ave., Toronto, ON M5J 2H7.
2. I am a graduate of Queen's University in 2005 with a B.Sc. (Honours) in Mining Engineering and Schulich School of Business, York University, in 2014 with an MBA degree.
3. I am registered as a Professional Engineer in the Province of Saskatchewan (Reg. #13601) and Province of Newfoundland & Labrador (Reg. #11085). I have worked as a mining engineer for 18 years since my graduation. My relevant experience for the purpose of the Technical Report is:
    - Design, planning, and scheduling of underground mines located globally, both in a consulting capacity and working at site operations, in a number of commodities, including industrial minerals.
    - Financial analysis, capital cost estimation, operating cost estimation of mining projects located around the world in a variety of commodities, including industrial minerals.
4. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
5. I have visited the Project on three occasions – October 4 to 7, 2021, October 17 to 20, 2022, and April 17 to 20, 2023.
6. I am responsible for overall preparation in addition to Sections 1, 2, 3, 12.2, 15, 16, 18, 21, 22, 24, 25.2, 25.4, 25.7, 25.8, 26.2, 26.4, 26.7, and 26.8 of the Technical Report.
7. I am independent of the Issuer applying the test set out in Section 1.5 of NI 43-101.
8. My prior involvement in the Project includes being a named qualified person of a previous Technical Report completed on the Project with an effective date of January 30, 2023.
9. I have read NI 43-101, and the Technical Report has been prepared in compliance with NI 43-101 and Form 43-101F1.
10. At the effective date of the Technical Report, to the best of my knowledge, information, and belief, Sections 1, 2, 3, 12.2, 15, 16, 18, 21, 22, 24, 25.2, 25.4, 25.7, 25.8, 26.2, 26.4, 26.7, and 26.8 in the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 1st day of May, 2024

(Signed & Sealed) *David M. Robson*

David M. Robson, P.Eng., MBA

29.5 Graham G. Clow

I, Graham G. Clow, P.Eng., as an author of this report entitled "Technical Report on the Great Atlantic Salt Project, Newfoundland and Labrador, Canada" with an effective date of July 31, 2023, prepared for Atlas Salt Inc., do hereby certify that:

1. I am Strategy Director – Global Mining Advisory with SLR Consulting (Canada) Ltd, of Suite 501, 55 University Ave., Toronto, ON M5J 2H7.
2. I am a graduate of Queen's University, Kingston, Ontario, Canada in 1972 with a Bachelor of Science degree in Geological Engineering and in 1974 with a Bachelor of Science degree in Mining Engineering.
3. I am registered as a Professional Engineer in the Province of Ontario (Reg. #8750507), and Province of Newfoundland and Labrador (Reg. #11186). I have worked as a mining engineer for a total of 49 years since my graduation. My relevant experience for the purpose of the Technical Report is:
   - Experience in the marketing, pricing, and logistics for industrial minerals including talc, gypsum, wollastonite, and polyhalite.
   - Experience in costs and logistics for sea-borne bulk commodities.
   - Experience in mining evaporite deposits including gypsum and potash.
   - Review and report as a consultant on numerous mining operations and projects around the world for due diligence and regulatory requirements.
   - Senior Engineer to Mine Manager at seven Canadian mines and projects, senior person in charge of the construction of two mines in Canada, senior VP Operations in charge of five mining operations, and president of multiple mining companies.
4. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
5. I have not visited the property.
6. I am responsible for Sections 12.4, 19, 25.5, and 26.5 of the Technical Report.
7. I am independent of the Issuer applying the test set out in Section 1.5 of NI 43-101.
8. My prior involvement in the Project includes being a named qualified person of a previous Technical Report completed on the Project with an effective date of January 30, 2023.
9. I have read NI 43-101, and the Technical Report has been prepared in compliance with NI 43-101 and Form 43-101F1.
10. At the effective date of the Technical Report, to the best of my knowledge, information, and belief, Sections 12.4, 19, 25.5, and 26.5 in the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 1st day of May, 2024

(Signed & Sealed) *Graham G. Clow*

Graham G. Clow, P.Eng.