
# Great Atlantic Salt Project
# Environmental Assessment Registration

## Pursuant to the Newfoundland and Labrador *Environmental Protection Act (Part X)*

**February 28, 2024**


**Submitted by:**

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# EXECUTIVE SUMMARY

Atlas Salt Inc. (Atlas) is proposing to develop the Great Atlantic Salt Project (the Project), located on the west coast of the Island of Newfoundland within the municipal boundaries of the Town of St. George's.

## Project Components and Schedule

The Project will consist of an underground salt mine and associated surface facilities and infrastructure in Western Newfoundland, the primary components of which include:

- An underground salt mine and ore processing (crushing and screening) facilities;
- Mine site surface infrastructure;
- An overland conveyor system routed along the existing Flintkote Road;
- Use of the existing Turf Point marine facility, with some planned modifications and upgrades (onland only); and
- Associated, ancillary infrastructure including access roads, water and sewer systems, and power supply.

The Project will produce and export crushed salt for the road de-icing market, with an initial production capacity of 2.5 million tonnes of rock salt per year. All mining, crushing and sizing facilities and activities will be located underground, and the resulting product will be transported by covered or enclosed conveyor to a dedicated storage and port facility at Turf Point. From there, it will be loaded onto ships for destination markets in the Maritime Provinces, Quebec and Eastern United States.

Commencing Q4 2024 with detailed permitting, engineering and the procurement of key long-lead components, the current Project schedule would see construction activity in the field beginning in Q2 2025 and continuing year-round. The operations phase of the Project will commence upon completion of construction and associated commissioning, with initial (capital development) mining commencing in Q4 2025 and extending to approximately Q2 2029. This will be followed by the installation of underground infrastructure, after which mine production will ramp up to commercial production levels in Q4 2029 and extend for an operational period of at least 34 years.

## Project Context, Rationale and Benefits

This Project represents an important aspect of the continued growth and – as the province’s first ever salt mine – future diversification of Newfoundland and Labrador’s mining sector. It will continue and further build upon the mining history of the St. George’s region, where mining and associated shipping activities dating back to the 1950s have helped sustain the community and have led to generations of workers and families being familiar with and skilled at these activities. This industrial legacy establishes a solid foundation for the further expansion and diversion of the area’s mining sector, through the proposed salt mining and shipping project that is the subject of this EA Registration.

The Project will be an important and significant contributor to the local, regional and provincial economies as a result of the employment and business activity that it will create throughout its various phases. It will represent hundreds of millions of dollars in capital investment for the region, and over its construction phase will create considerable employment and business opportunities. During operations, a large number of new positions in a variety of occupations will be created and maintained over several decades, and the requirement for goods and services during this phase of the Project will again provide significant business opportunities for local and provincial businesses. These direct and indirect economic benefits will be supplemented by “spin-off” effects as these incomes and revenues move through the regional, provincial and national economies.

Residents, communities and organizations have expressed a strong interest in these economic opportunities, and in seeing the local social and economic benefits of the Project maximized, which has led to an overwhelming level of local support for the Project. Maximizing local social and economic benefits will be facilitated through the development and implementation of hiring, procurement and human resources policies, plans and procedures throughout the various phases of the Project, as well as on-going communication and cooperation between Atlas and all applicable agencies and organizations.

Atlas is very encouraged by the social and economic benefits that will be realized through this Project and is confident that any environmental considerations that may be associated with it can be addressed through sound Project planning, design and implementation, including the various environmental protection measures and future analyses and plans that have been identified and committed to in this EA Registration document. The Project will therefore help facilitate the continued growth and diversification of the province’s mining sector, but also do so with a very small environmental footprint – including minimal GHG emissions.

**Environmental Planning and Management**

This EA registration document provides an assessment and evaluation of the Project’s potential environmental effects, focussed on the various Project components and activities outlined above (and described in detail in Chapter 2), and considering the existing environment within and adjacent to the Project Area (Chapter 3) and the outcomes of Atlas’ public, Indigenous and governmental engagement activities (in Chapter 4). It includes the associated identification of measures to avoid or reduce potential adverse effects, and to create and maximize potential benefits resulting from the Project, with a focus on the following Valued Environmental Components (VECs):

1) Atmospheric Environment;
2) Water Resources (surface and ground water);
3) Fish and Fish Habitat;
4) Wildlife and Their Habitats;
5) Species at Risk;
6) Protected and Special Areas;

7) People and Communities;
8) Land and Resource Use;
9) Fisheries and Other Marine Activities; and
10) Economy, Employment and Business

As part of its Project planning and design work to date, and in support of the EA registration, Atlas has undertaken considerable environmental baseline study work and associated environmental analysis, based on and reflecting the current stage of design. This initial environmental work, along with Atlas' extensive public, stakeholder and Indigenous engagement program to date, have provided a good understanding of key environmental considerations and approaches to managing these.

The Project is being planned, and will be undertaken, in a manner that avoids or reduces adverse environmental effects. This includes various approaches and characteristics that have been "built-in" to the Project in order to proactively address potential environmental issues, such as:

- the planned location and layout of the Project site to avoid interactions with environmentally sensitive areas;
- the planned conduct of all mining and processing activities underground;
- equipment used in the underground operations will be electrical, thereby minimizing atmospheric / GHG emissions from Project activities;
- the design of Project access routes to avoid vehicular traffic through the Town; and
- the planned development and use of a covered or enclosed conveyer system with no transfer points along Flintkote Road near residential areas to avoid dust, reduce noise and other emissions and any associated public health concerns.

These measures, along with the rather straightforward and environmentally benign nature of the planned mining and processing operations, which will not include the use of chemicals nor result in the generation of tailings, will help ensure that the Project is undertaken in a safe and environmentally responsible manner.

The Project will also be carried out in full compliance with applicable legislation and regulations, including the environmental protection measures defined and committed to by Atlas in this EA Registration. These include a variety of plans, processes and mitigation measures addressing site water management, the control of noise, light and dust, and other issues and requirements.

Atlas has also committed to undertake, in parallel with its on-going and planned detailed engineering design work for the Project, a number of additional environmental studies, analyses, plans and monitoring initiatives. These include:

- Design and completion of a detailed groundwater assessment, including fieldwork and modelling, that will build upon the preliminary and conceptual analyses presented herein. This will involve further hydrogeological investigations which will include in-situ hydraulic conductivity testing of overburden and bedrock lithologies, pump testing, groundwater level measurement and long-term monitoring, and water quality sampling.

- Development of a Water Management Plan addressing site water management, discharge and associated monitoring to ensure regulatory compliance.

- Development and implementation of a Blasting Management Plan for the construction phase, designed to reduce air emissions, and noise and vibration levels and to ensure adequate clearance areas / evacuations and public notifications. This will include a pre-blast impact study of nearby infrastructure, as well as monitoring during and after blasting activity.

- Air quality (dust) and noise monitoring during Project construction and operations to evaluate the nature, amount and distribution of any such emissions from the mine and conveyer, as well as their potential to interact with nearby residents.

- Assessment of Town of St. George's water and sewer infrastructure for feasibility of use or improvement.

- Monitoring for bird nests will be conducted in advance of any planned site clearing during the breeding season (May 1 - August 15).

- Development and implementation of Environmental Protection Plan(s) and Emergency Response Plans (Appendix C).

Each of these additional environmental studies, analyses, plans and monitoring initiatives will be developed in cooperation with, and their eventual designs and results submitted to, the appropriate regulatory authorities. Atlas will also actively engage the Town of St. George's and other local organizations in the development and conduct of these future studies, as well as in their use in future Project planning and implementation. The objective will be to address any environmental issues that may emerge either proactively in Project design, or through an adaptive management approach throughout the various phases of the Project.

Atlas' intent is to continue to engage with communities, Indigenous groups and other organizations and individuals to provide Project information and updates on on-going and planned activities, as well as discussion of any issues and potential means of addressing them.

Atlas and its contractor(s) will also apply for, receive, and adhere to the terms and conditions of, any subsequent (post EA) regulatory approvals and authorizations that are required for specific Project components and activities in its construction, operations and maintenance, and decommissioning and closure phases. These subsequent regulatory review processes will facilitate the provision of more detailed information on key Project components, activities and potential environmental emissions and interactions to the various applicable regulatory authorities for review and approval, as such information becomes progressively available through Atlas' on-going engineering work. These include, for example, required permits from the Government of Newfoundland and Labrador related to: Project construction and operations (industrial processing works); water use and water management; any activities located in proximity to, or which may otherwise alter waterbodies; overall Project development, rehabilitation and closure; and others (see Appendix A).

The proposed Project area overlaps with previously granted land and crown land. Atlas is currently in the process of acquiring, through the Mineral Lands Division of the Department of Industry, Energy and Technology, a mining lease for the subsurface mining rights and a surface lease for the crown lands areas of the Project. Atlas has also engaged a legal firm, surveying company, and title search firm to define the current state of the granted lands, with the intent to purchase the required lands if they are deemed private, or include them in the surface lease, if the granted lands are returned to the Crown. These initiatives are on-going, and while it would not be prudent for Atlas to purchase land prior to the receipt of key Project approvals (including EA release), the proponent commits to have all necessary land rights in place prior to moving forward with Project development. It is also recognized that this may become a condition of any forthcoming EA approval.

**EA Findings and Outcomes**

The proposed Project represents a technically feasible, economically viable, attractive, and environmentally and socially responsible means of developing the salt resources in the Project Area, addressing an important market demand while at the same time providing significant socioeconomic benefits to the region and to the province as a whole.

With the implementation of the various Project design and mitigation measures identified and proposed throughout this document, the Project is not likely to result in significant adverse effects to any aspect of the biophysical or socioeconomic environments, during either of its phases.

# TABLE OF CONTENTS

# LIST OF FIGURES

# LIST OF TABLES

# LIST OF APPENDICES

# LIST OF ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| AC CDC | Atlantic Canada Conservation Data Centre |
| ATV | All-terrain vehicle |
| BEV | Battery electric vehicles |
| dBA | A-weighted decibels |
| cm | Centimeter |
| CM | Continuous miner |
| CMA | Coastal Management Area |
| CN | Canadian National |
| COSEWIC | Committee on the Status of Endangered Wildlife in Canada |
| CSM | Conceptual site model |
| DFO | Fisheries and Oceans Canada |
| dmt | Dry metric tonne |
| DWT | Deadweight tonnage |
| EA | Environmental Assessment |
| EBSA | Ecologically and Biologically Significant Area |
| E&I | Electrical and instrumentation |
| eDNA | Environmental DNA |
| ELC | Ecological Land Classification |
| EPP | Environmental Protection Plan |
| ESA | Endangered Species Act |
| GAS | Great Atlantic Salt |
| GDP | Gross Domestic Product |
| GHG | Greenhouse Gas |
| GOSLIM | Gulf of St. Lawrence Integrated Management |
| Ha | Hectare |
| HDPE | High density polyethylene |
| IAA | Impact Assessment Act |
| IAAC | Impact Assessment Agency of Canada |
| IDF | Intensity duration frequency |
| in | Inch |
| km | Kilometer |
| km2 | Square kilometer |
| kt | Kilo tonne |
| kV | Kilovolt |
| L | Liter |
| L/min | Liters per minute |
| m3/h | Cubic meter per hour |
| m | Meter |
| m/s | Meters per second |
| masl | Meters above sea level |
| mbgs | Meters below ground surface |
| min | Minute |

| | |
|---|---|
| mm | Millimeter |
| Mt | Million tonnes |
| Mtpa | Million Tonnes Per Annum |
| MWh | Megawatt-hour |
| NaCl | Sodium chloride |
| NAFO | Northwest Atlantic Fisheries Organization |
| NL | Newfoundland and Labrador |
| NLECC | Newfoundland and Labrador Department of Environment and Climate Change |
| NLEPA | Newfoundland and Labrador *Environmental Protection Act* |
| NLESA | Newfoundland and Labrador *Endangered Species Act* |
| NLFFA | Newfoundland and Labrador Department of Fisheries, Forestry and Agriculture |
| NLIET | Newfoundland and Labrador Department of Industry, Energy and Technology |
| NOC | National Occupation Codes |
| QDC | Qalipu Development Corporation |
| QFNB | Qalipu First Nation Band |
| PAO | Newfoundland and Labrador Provincial Archaeology Office |
| PPWSA | Protected Public Water Supply Area |
| RCM | Reference climate station |
| ROM | Run-of-mine |
| SAR | Species at risk |
| SARA | *Species at Risk Act* |
| SOCC | Species of conservation concern |
| t | Tonne |
| TCH | Trans-Canada Highway |
| tph | Tonnes per hour |
| µm | Micrometer |
| VEC | Valued Environmental Component |
| YPS | Yellow prussiate of soda |
| 2SLGBTQ+ | Two-Spirit, Lesbian, Gay, Bisexual, Transgender, Queer or Questioning |

# 1.0 INTRODUCTION

**PROJECT NAME:** GREAT ATLANTIC SALT PROJECT

Atlas Salt Inc. (Atlas) is proposing to develop the Great Atlantic Salt Project (the Project), located on the west coast of the Island of Newfoundland (Figure 1.1). The Project is located within the Town of St. George's, Newfoundland and Labrador (Figure 1.2).

## 1.1 Nature of the Undertaking

The proposed Project involves the production of road salt for use as a safety product during winter road maintenance activities, for sale to eastern North American markets.

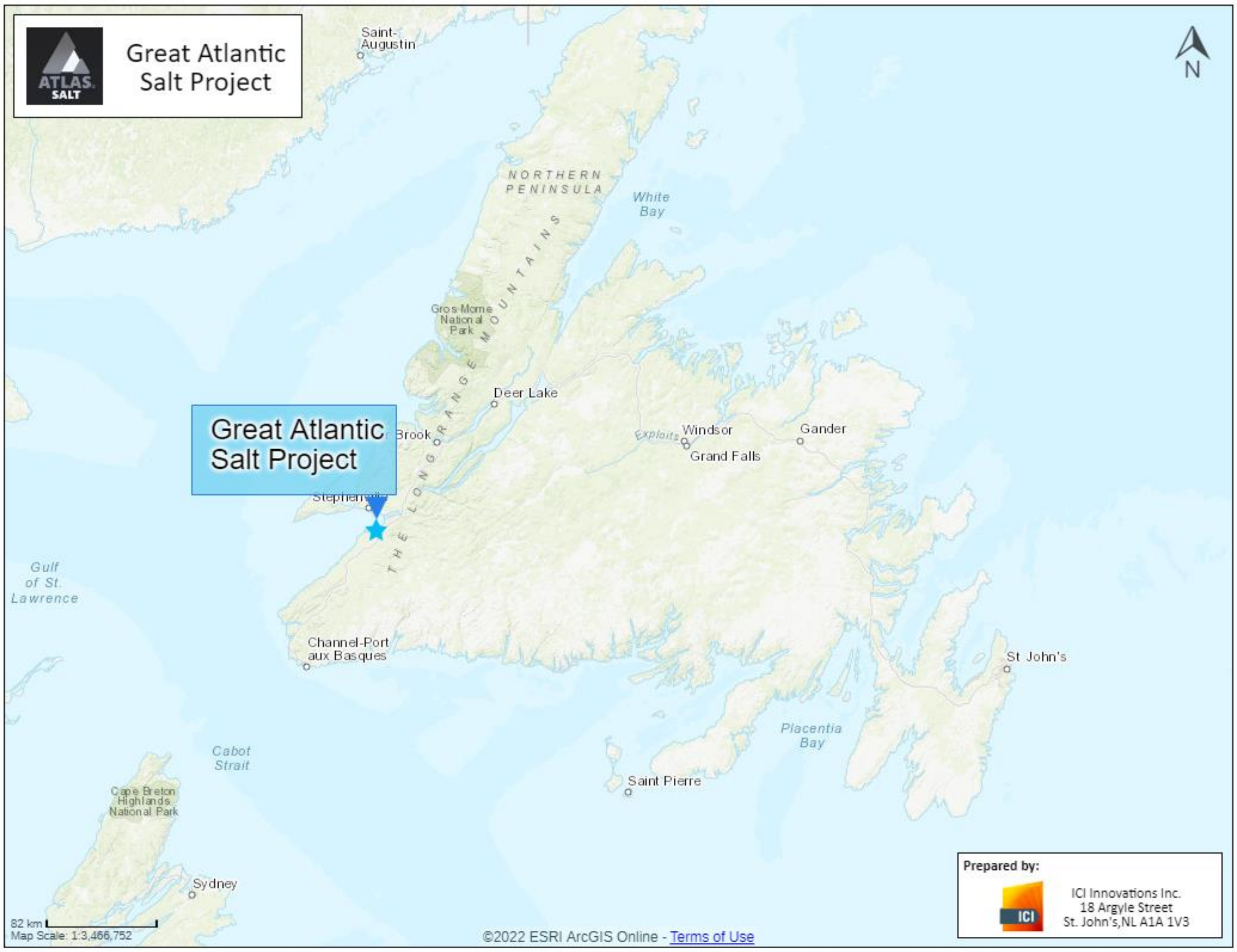


*Figure 1.1: Proposed Location of the Great Atlantic Salt Project.*

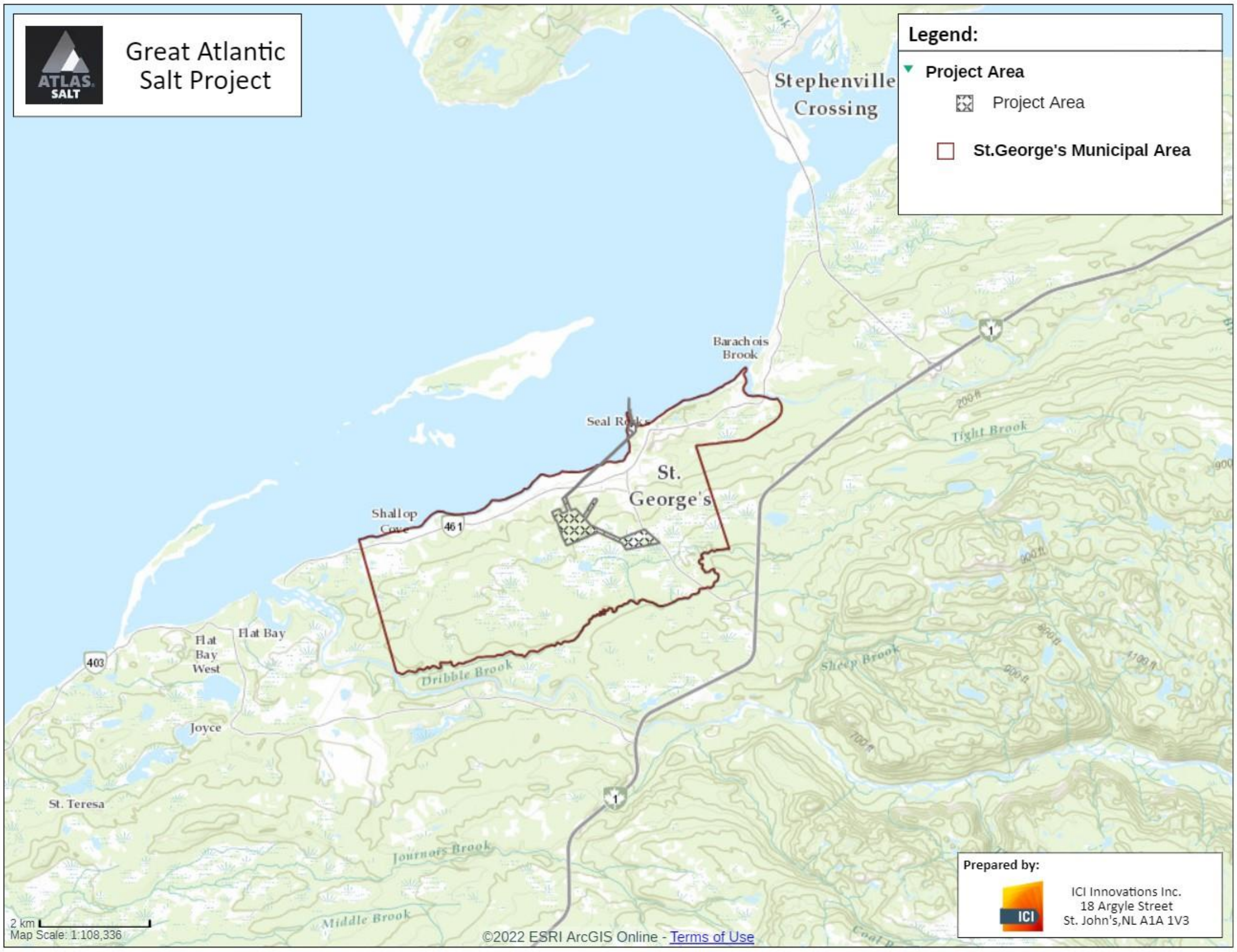


*Figure 1.2: The Proposed Great Atlantic Salt Project - Local Setting*

The Project will consist of the construction, operation and maintenance, and eventual closure and decommissioning of an underground salt mine in Western Newfoundland. The core components of the Project will include:

- An underground salt mine and ore processing (crushing and screening) facilities;
- Mine site surface infrastructure;
- An overland conveyor system routed along the existing Flintkote Road;
- Use of the existing Turf Point marine facility, with some planned modifications and upgrades (onland only); and
- Associated, ancillary infrastructure including access roads, water and sewer systems, and power supply.

The mine will have an initial production capacity of 2.5 million tonnes per year (Mtpa) of rock salt, for eventual use in road de-icing. All mining, crushing, and screening facilities will be located underground, with the resulting product transported by conveyor to the surface, and then via an enclosed or covered overland conveyor approximately 2.6 km to a dedicated storage and port facility at Turf Point, St. George's, NL. From there, the product will be loaded onto ships for destination markets in the Atlantic Canada, Quebec and the Eastern United States.

Some key characteristics of the Project include:

- Straightforward underground mining and processing methodologies.
  - Continuous miner excavation, with four lifts per level, across seven levels.
  - Conventional dry crushing and screening, with three crushing stages and four screening stages.
  - All processing activities will be completed underground.
- The salt ore is approximately 95% pure, allowing for a processing design that requires no water or chemicals to convert it into product. This means no tailings are produced and thus, no associated tailings management requirements nor effluent.
- All of the salt ore produced will be sold as product or returned to underground mined out areas.
- Equipment used in the underground operations will be electrical, thereby minimizing atmospheric / GHG emissions from Project activities.
- It is estimated that Project operations will remain well below the GHG emission thresholds set by both Provincial and Federal guidelines, aligning with the best in the industry.
- The Project is located within the limits of the Town of St. George's, and proximal to previous mining activities in the area. It will continue and further build upon the mining history of the region, which has led to generations of workers and families being familiar with and skilled at these activities.
- It will utilize existing infrastructure in the region, including the Turf Point Marine Terminal, causeway, and the Flintkote Road (a former conveyor-way from a previous gypsum mine), which minimizes its resulting footprint and potential environmental effects (Figure 1.3).
- The Town of St. George's, local Band Councils, and other organizations have been part of a continuous process of engagement and are supportive of this development. Atlas has also engaged with the Qalipu First Nation (QFN) and is in on-going discussions with QFN regarding the Projects and its potential socioeconomic benefits.
- A detailed Feasibility Study and several environmental studies have been completed in relation to the Project to date, which have helped inform this Registration document.
- Road salt is an important safety product used for winter road maintenance throughout North America. Much of the salt used in Newfoundland and Labrador and elsewhere in North America for this purpose is imported via marine shipping. This Project may therefore reduce such shipping activities and thus, associated GHG emissions.


*Figure 1.3: Existing Marine Terminal and Road / Conveyor Route*

## 1.2 Purpose of the EA Registration

The proposed Project requires registration and review under Newfoundland and Labrador's environmental assessment (EA) process, pursuant to the requirements of the *Environmental Protection Act* (Part 10) and its associated *Environmental Assessment Regulations*. This document is intended to initiate the provincial EA review for the Project, and in doing so it:

- Describes the proposed Project, including its overall purpose and rationale, location and layout, and alternatives to and within the Project, and provides an overview of its key components and planned construction and operational activities and eventual closure and decommissioning phase;
- Provides an overview of the existing environmental setting for the Project, including relevant aspects of the biophysical and socioeconomic environments in the immediate Project area and surrounding region;

- Describes recent and ongoing public, stakeholder and Indigenous engagement activities undertaken by Atlas in relation to the Project, and the main outcomes and findings of these initiatives; and
- Identifies and assesses the key, potential environmental effects that may be associated with the Project, as well as Atlas' planned approaches for addressing these in Project planning, design and eventual implementation.

This EA Registration document has been prepared and submitted by Atlas, as the Proponent of the Project, with the assistance of ICI Innovations Inc. in association with Worley Consulting and GEMTEC Consulting Engineers and Scientists Limited.

## 1.3 The Proponent

Atlas owns 100 percent of the Great Atlantic salt deposit, North America's premier undeveloped salt project, which is strategically located on the west coast of Newfoundland.

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 and Labrador. Atlas is the 100% owner of the Great Atlantic Salt Project.

| **Name of Corporate Body** | Atlas Salt Inc. |
|---|---|
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| **Chief Executive Officer** | Rick LaBelle, ICD.D, MBA<br>CEO and Director |
| **Principal Contact Person for the Purposes of Environmental Assessment** | Alasdair Federico<br>Vice-President, Corporate Affairs |

Additional information on Atlas can be found at: AtlasSalt.com

## 1.4 Environmental Assessment Processes and Requirements

The Newfoundland and Labrador *Environmental Protection Act* (NL EPA) requires anyone who plans a project that could have a significant effect on the natural, social or economic environment (an "Undertaking") to present it for examination through the provincial EA process.

The associated *Environmental Assessment Regulations* (Part 3) list those projects that require registration and review. These include, for example:

> 33 (2) *An undertaking that will be engaged in the mining, beneficiating and preparing of a mineral as defined in the Mineral Act whether or not these operations are to be performed in conjunction with a mine or at mills that will be operated separately shall be registered.*

The provincial *Mineral Act*, subsection 2(1)(f), defines a "mineral" as meaning:

> *… a naturally occurring inorganic substance including coal and minerals contained in mine tailings, but does not include (i) water, (ii) quarry materials as defined in the Quarry Materials Act, (iii) stratified deposits other than coal from which oil can be extracted by destructive distillation, or (iv) petroleum as defined in the Petroleum and Natural Gas Act;*

Following public and governmental review of this EA Registration, the provincial Minister of Environment and Climate Change will determine whether the Project may proceed, subject to any terms and conditions and other applicable legislation, or whether further assessment is required.

The proposed Project is not subject to federal review under the Canadian *Impact Assessment Act* (IAA), as it does not include physical activities that constitute the "designated projects" that require federal impact assessment, as listed in the associated "*Physical Activities Regulations*". This has been confirmed by Atlas through discussions with the Impact Assessment Agency of Canada (IAAC), and in subsequent written correspondence from IAAC dated December 6, 2023.

In addition to review and approval under the provincial EA process, the Project will also require a number of other provincial, federal and municipal permits and authorizations. These are identified in a later section of this document (Appendix A).

# 2.0 PROJECT DESCRIPTION

The proposed Project consists of an underground salt mine in Western Newfoundland, with associated surface facilities and activities. The primary components of the Project include (Figure 2.4):

- An underground salt mine and ore processing (crushing and screening) facilities;
- Mine site surface infrastructure;
- An overland conveyor system routed along the existing Flintkote Road;
- Use of the existing Turf Point marine facility, with some planned modifications and upgrades (onland only); and
- Associated, ancillary infrastructure including access roads, water and sewer systems, and power supply.

The Project will produce and ship a single product – namely, crushed and screened salt for the road de-icing market. It will entail a technically straightforward operation, with all mining and processing occurring underground. The mined salt product will be transferred from the underground processing plant to surface via an incline conveyor. The product will then be transferred to an enclosed or covered overland conveyor, extending approximately 2.6 km to the existing Turf Point Marine Terminal for shipment to destination markets in Quebec, Atlantic Canada, and the Eastern United States. The local Western Newfoundland market will be served via storage and offloading to trucks directly from the mine site.

The following sections provide a description of the Project, based on, and reflecting its current stage of planning and design. This includes an overview of the Project's need and purpose, location and layout, key components, alternatives to and within the proposed development, construction and operations activities, schedule, and estimated labour force requirements.

In conjunction, and concurrent with the EA registration, related review processes and other subsequent permitting, Atlas will continue its planning and engineering work, which will include optimizing the location, layout, and functioning of key Project-related components and activities. As is common with any proposed development, it is anticipated that the Project conceptual plan will be subject to some degree of change and evolution during subsequent engineering design, based on technical, economic, environmental, and social considerations. This would include the eventual findings and outcomes of the EA process and on-going engagement activities by Atlas. Any such modifications are not expected to affect or to materially change the nature and scope of the Project from how it is described in this document, or specifically, result in any new or increased adverse environmental effects.

An initial mining plan for the Project is based on a 34-year Project life at an initial production rate of 2.5 Mtpa of rock salt. Key facilities (including the processing plant and conveyors) have been sized to facilitate a potential future expansion to 4.0 Mtpa. The Project description provided in this chapter covers both the initial and expanded production scenarios, and EA approval is being sought for both.


*Figure 2.4: Overview of Key Project Components*

## 2.1 Geology, Mineralization and Exploration

The Project's Indicated Mineral Resources are estimated to total 383 million tonnes (Mt) averaging 96.0% sodium chloride (NaCl), thereby 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. Resource modeling indicates a good continuity of the salt resource at this location (SLR 2023, Technical Report on the Great Atlantic Salt Project, SLR)

As noted above, an initial mining plan for the Project has been developed based upon probable mineral reserves for an initial 34-year Project life at a rate of 2.5 Mtpa of road salt product, and a potential future expansion to 4.0 Mtpa per year. It is important to note that a significant amount of mineral resources remain after the initial mine life plan, so the actual mine life may be considerably longer. A salt deposit of this magnitude likely has decades-long production potential.

### 2.1.1 Regional Geology and Physiography

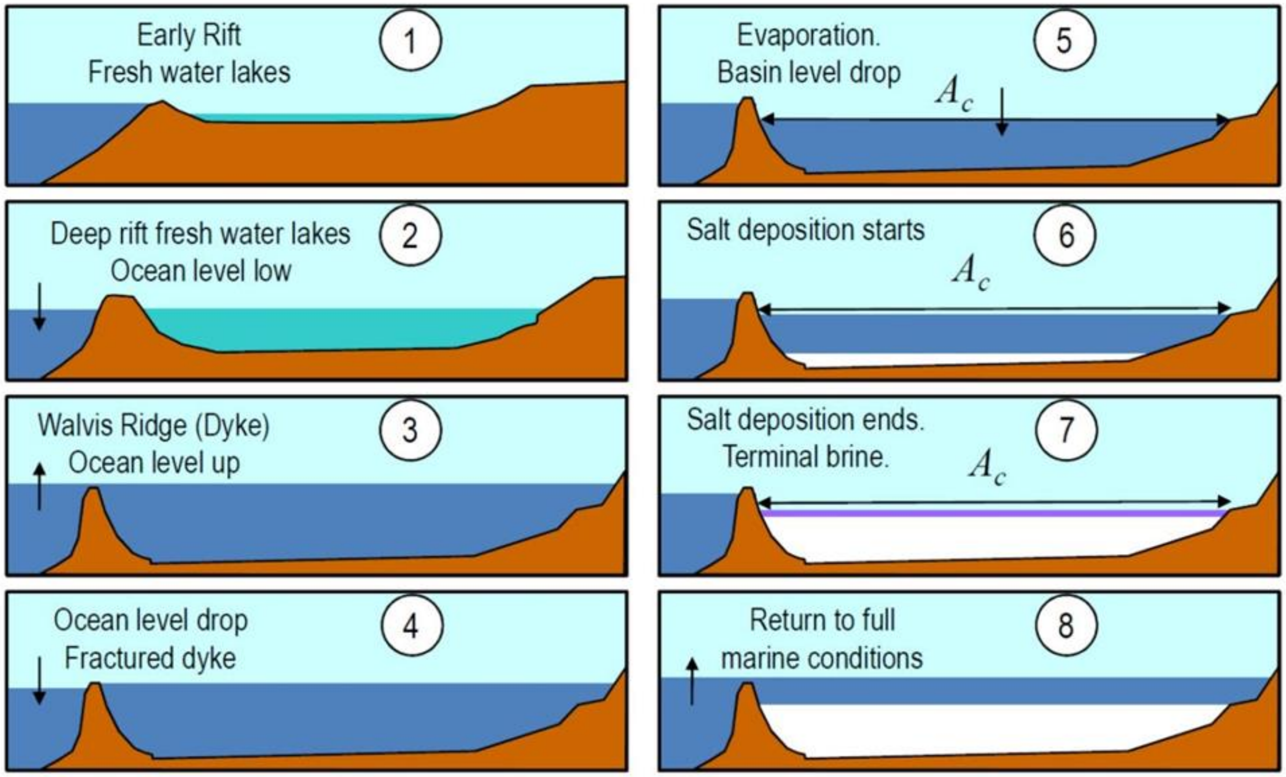
The Project is located within the Bay St. George Sub-Basin, which represents the northeastern extension of the regional Maritimes Carboniferous Basin of southwest Newfoundland. This Basin is an extensive geological basin complex underlying the Gulf of St Lawrence and surrounding areas. During Sub-basin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

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 based on its wide lateral extent and overall stratigraphy. Sedimentary strata from a range of depositional environments including marine, shallow marine, salina, to fluvial and deltaic facies are included.

Salt formation within sedimentary environments occurs through the evaporation of seawater within shallow enclosed or isolated basins (Figure 2.5). 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.

The Codroy Formation of the Codroy Group represents the dominant stratigraphic unit within the Project Area. Bedrock exposures may be observed across the region, including the workings of the Flat Bay Gypsum Quarry, located approximately six kilometers to the southwest of the Project.

The Bay St. George Sub-Basin area contains three distinct topographical areas: 1) the St. George's Bay Lowlands, 2) the Uplands of the Anguille Mountains, and 3) the Codroy Lowlands. The proposed Project is located within the St. George's Bay Lowlands and consists of a gently rolling coastal plain at an




Source: Montaron and Tapponnier (2010)
*Figure 2.5: Evaporite Deposit Model*

elevation of approximately 40 to 60 metres above sea level (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 to the southeast of these. The adjacent coastal areas consist primarily of sandy beaches.

### 2.1.2 Exploration History

Geological mapping of the Bay St. George Sub-Basin has been undertaken since the mid-1970s. Exploration drilling across the larger surrounding region has been undertaken by numerous owners from the 1950s up to the late 1990s. Understanding the full extent and structure of the Carboniferous strata of the Sub-Basin was the focus of early exploration, later shifting to an assessment of the 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 licenses, historical exploration has largely been focussed on gypsum quarrying, with the nearby Flat Bay Gypsum Quarry being in operation since the 1950s. Other gypsum quarries include those operated at Fischells Brook in the 1990s and at Coal Brook in the early 2000s. The Flat Bay Quarry is located directly southwest of the Project's halite deposit, while Fischells Brook is located approximately 18 km to the southwest of the deposit.

Red Moon Potash Inc. was incorporated on June 15, 2011, to manage the 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 three percent production royalty in 2012. In August 2021, Red Moon was renamed Atlas Salt with 36% ownership held by Vulcan Minerals. Atlas also owns and contracts out the operation of the Flat Bay Gypsum Quarry (Ace Gypsum) located approximately six kilometers southwest of the Project.

Exploration of the deposit, initially by Vulcan Minerals and more recently by Atlas, has comprised several phases of drilling (bore holes depicted in Figure 2.6) informed by multiple 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 deposit was completed in 2010 and the interpretation of reflectors was subsequently tested through drilling of four drill holes in 2013 and 2014 by Vulcan Minerals. Data from this exploration were used for an initial mineral resource estimate in 2016.

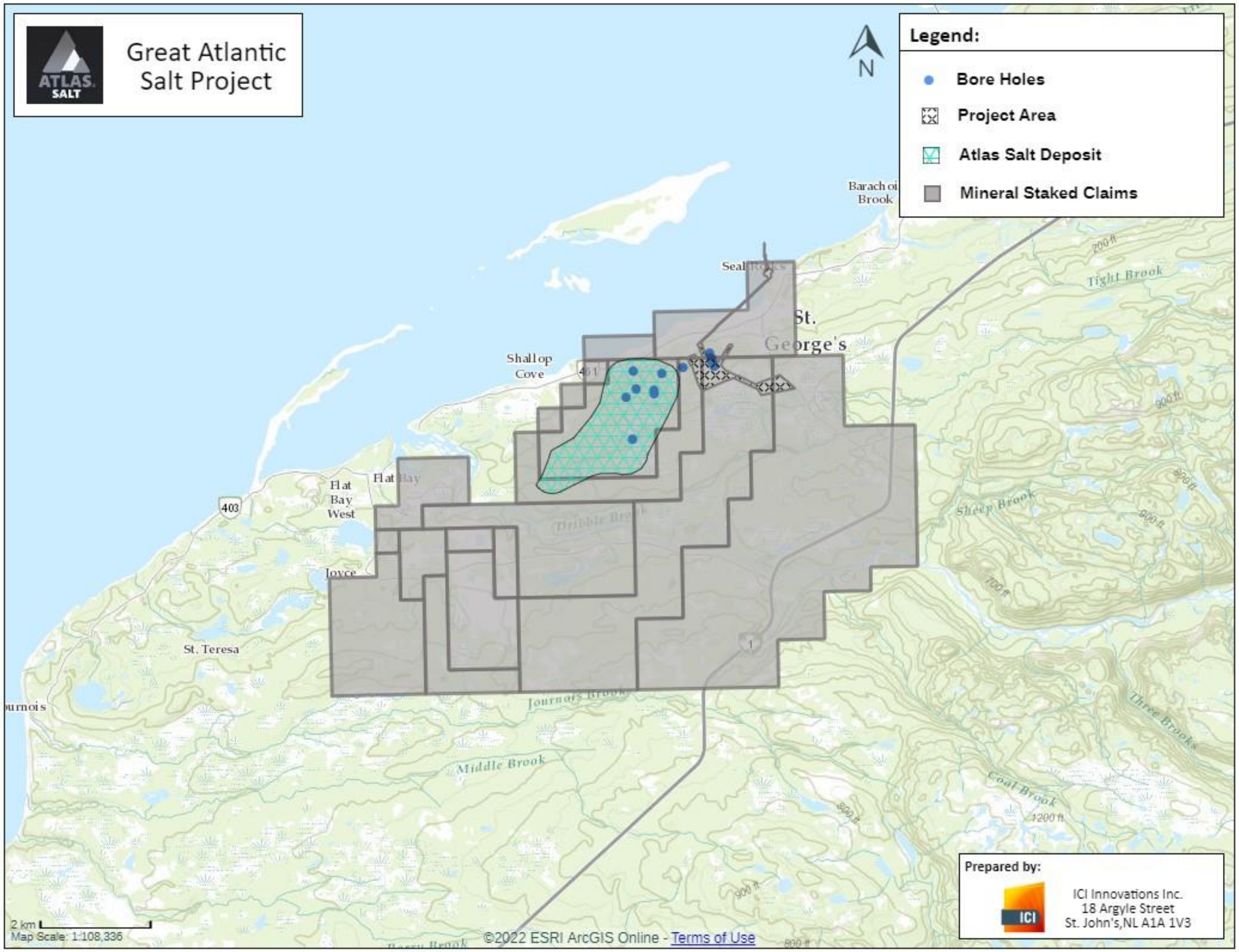
In 2022, Atlas completed an additional four drill holes within the deposit, the data from which have been combined with previous drill holes and seismic survey data to inform an updated mineral resource estimate.

In 2022, Atlas spun-off other regional license holdings as Triple Point Resources, which is currently investigating the possible development of the Fischell's Salt Dome project. That potential development would be entirely separate from this Project and is therefore not part of the scope of the undertaking that is the subject of this EA Registration.

## 2.2 Project Purpose and Need

The mining industry is an integral component of the Newfoundland and Labrador economy and one that has been identified as having considerable potential for future growth. As the province's first-ever salt mine, this Project represents an important aspect of the future growth and diversification of Newfoundland and Labrador's mining sector.

The Project will produce a single product, rock salt to be used for de-icing purposes. Throughout Eastern North America the market for de-icing salt is relatively continuous and stable, and not subject to the volatile market highs and lows commonplace with many mined products. All jurisdictions that experience winter conditions have a seasonal demand for road salt, which helps ensure that there will be a steady market for the rock salt that is produced by this Project. The North American road de-icing market is a multi-billion-dollar industry that is largely under served by domestic options (USGS & Canadian Salt Industry Data, 2020).




Source: Based on information from NLIET (2023)

*Figure 2.6: Current Mineral Exploration License Holdings and Historical Drilling*

Newfoundland and Labrador itself utilizes approximately 300 to 400 kt of rock salt annually, but the province currently does not produce any of the rock salt that it requires. For any salt product that is sold directly to the Newfoundland and Labrador market, Atlas will arrange for the delivery of salt to the final point of sale determined by the customer (typically a municipality). This would either be accomplished by truck to nearby municipalities or by marine vessels.

The initial priority markets for the road salt produced by this Project are Eastern Canada (Quebec and the Maritimes), the New England states, and elsewhere within the Mid-Atlantic East Coast. The estimated total annual consumption of road salt in these markets ranges from 11 to 16 Mtpa, a large proportion of which is currently imported from South America, Northern Africa, and elsewhere. High shipping costs from these overseas suppliers, general supply chain issues, and aging mines in the United States and Canada, have collectively posed a threat to the long-term security of supply of high-grade rock salt that is necessary to keep North American roads and highways safe during the winter season. For markets outside Newfoundland and Labrador, Atlas plans to sell salt as far as the point of delivering it dockside at each of the destination ports, at which point a distribution company would manage the unloading of the salt, salt storage, and delivery of salt to the final point of sale.

The Project is uniquely positioned to capture a significant portion of the road salt market in Eastern North America, due to the scale and quality of the salt resource, its economically attractive production costs, and its geographic proximity to key markets. In doing so, the Project can help alleviate the current reliance on overseas imports, thereby reducing GHG emissions associated with trans-Atlantic shipping of salt from foreign suppliers.

In addition to providing revenue and profits for Atlas and its shareholders, the proposed Project will be a significant contributor to the local, regional, and provincial economies through employment and business activity in the various phases. The Project will represent hundreds of millions of dollars in capital investment for the region, as described in a later section. Project construction will occur over approximately four and a half years, during which significant direct employment in a wide variety of occupations will be created (described in more detail in Section 2.9.1 and 3.2.3). During Project operations, which is expected to have a budget in the order of $85M/year, it is estimated over 170 long-term positions will be created over several decades in a variety of occupations (described in more detail in Section 2.9.2 and 3.2.3). The requirement for goods and services during Project construction and operations will also provide significant local, regional and provincial business opportunities. These direct economic benefits will be supplemented by indirect and induced employment and business opportunities through, for example, spending by Project employees, contractors, and suppliers. The anticipated nature, magnitude, and distribution of the Project's economic benefits are assessed and described in Section 5.11.

As the proponent, Atlas is very encouraged by the social and economic benefits that will be realized through this Project. The company is also confident that any environmental considerations that may be associated with the Project can be addressed through sound planning, design, and implementation, supported by public, community and Indigenous engagement throughout.

## 2.3 Project Location and Access

The proposed development is located in Western Newfoundland, within the town limits of St. George's, adjacent to other communities in the region including Flat Bay, Robinson's, Jeffrey's, and Heatherton, and approximately 15 km south of the Town of Stephenville (Figure 2.7). The approximate central point of the Project Area is at longitude 58.49184, latitude 48.41892, or 387,550 E, 5,362,650N (NAD83 Zone 21 North).

The Trans-Canada Highway (TCH) passes 3.5 km to the east of the Project Area, with the various communities of the St. George's Bay region being serviced by all-weather paved roads. The Town of St. George's itself is accessed via Steel Mountain Road, which extends northwest from the TCH. The Town of Flat Bay, to the southwest of the property, is accessed via the secondary highway NL-403 (Flat Bay Road), which extends westwards from the TCH.

An all-weather gravel haul road, known as Flintkote Road, was constructed during historic mining operations to connect the Flat Bay Gypsum Quarry with the Turf Point Port. It extends northeast-southwest across the property, between Flat Bay Mine and St. George's. Use of this private road to access the Project Area has been granted to Atlas by the owner.

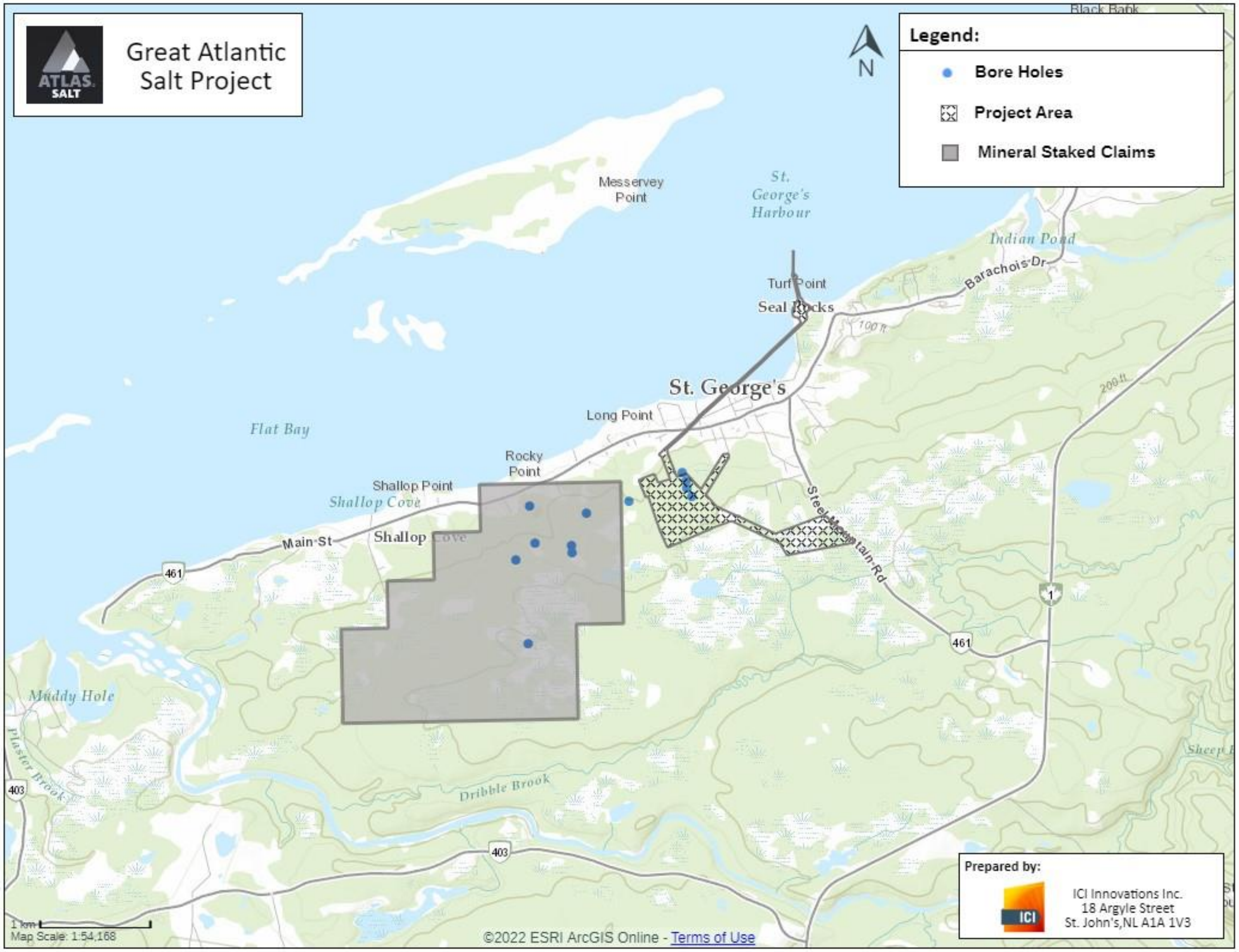
The salt deposit itself and the Project's planned surface infrastructure, are located within four mineral exploration licenses currently held by Atlas Salt, including 027183M (22 claims), 027333M (16 claims), 032294M (52 claims), and 027334M (1 claim). The salt deposit is predominantly contained in the 22-claim block of license 027183M, which totals approximately 550 ha in area. (Figure 2.8). Atlas Salt has submitted an application for a mining lease to the Mineral Lands Division, Government of Newfoundland and Labrador, that covers the boundaries of 027183M, and has completed a professional land survey of the surface footprint of the land. The extent of this lease will provide more than 30 years of minable rock salt.

## 2.4 Project Planning and Alternatives

As a planning tool, EA review is intended to help inform and influence project design and in doing so, help to proactively address potential environmental issues and outcomes. The EA process allows for the identification, analysis, and evaluation of possible or alternative project concepts and approaches, at an early stage, thereby helping to proactively incorporate environmental considerations into development planning. This includes identifying and considering potential alternatives to a project, including possible alternative means of carrying out the Project that are technically and economically feasible.

The consideration of environmental issues from the earliest stages of project planning and design is an integral part of Atlas' approach to its development activities.


*Figure 2.7: Project Site and Adjacent Communities*




Source: Based on information from NLIET (2023)

*Figure 2.8: Atlas Salt Deposit and Mining Lease*

### 2.4.1 Alternatives to the Project

In the context of an EA review, "alternatives to" a project are defined as functionally different ways of meeting the Project’s needs and achieving the Project's purpose.

The identified need for and purpose of this Project is as described above, namely - to develop the salt deposit located within Atlas’ property in Western Newfoundland, and to produce a rock salt product suitable for sale to local and international markets. In doing so, the Project is intended to help meet the significant demand for salt for road de-icing in Eastern North America.

In terms of alternatives to the Project, the requirement for road salt in these areas could conceivably be addressed through new mines in other areas, which would also provide associated economic benefits to the regions and jurisdictions within which they are developed. With the exception of this proposed Project, however, no other such alternatives are within the ability and responsibility of Atlas. The only alternative to Atlas’ planned construction and operation of the Project is, therefore, that the company decide to not sanction and proceed with the proposed development described herein.

As illustrated throughout this EA Registration, the proposed Project provides a technically straightforward and feasible, economically viable, and environmentally and socially responsible means of addressing the identified need for and purpose of the development. The Project can and will be planned and implemented in a manner that avoids or reduces potential adverse environmental effects and optimizes local, regional, and provincial socioeconomic benefits.

### 2.4.2 Alternative Means of Carrying Out the Project

As noted above, the EA review process allows for the identification and evaluation of potential alternative project concepts and approaches, to directly incorporate environmental considerations into project planning at an early stage. This EA Registration therefore also considers possible alternative means of carrying out the Project that are technically and economically feasible, and the potential environmental effects of any such alternative means.

The following provides a discussion of various identified alternatives by Project component or activity. In doing so, it considers environmental, technical, and economic factors, both in terms of the potential pros and cons of each identified alternative, as well as highlighting the rationale for the proposed design options that are the focus of this EA Registration, and thus, for which EA approval is being sought. These evaluations were completed early in Project planning to allow for a focused and thorough EA review of a feasible Project.

As part of Project planning and design work undertaken by Atlas to date, alternatives were identified and evaluated for the following Project components:

- Type of Mine (surface or underground)
- Main Access Road
- Power Supply

- Construction Workforce Accommodations
- Transportation of Salt (mine site to port facility)

TYPE OF MINE – SURFACE OR UNDERGROUND

Atlas Salt is planning to extract rock salt from the defined deposit (see Section 2.1), which is located between 240 m and 530 m below the surface. Two options were considered for the mining of the salt deposit:

1) Surface mining: A traditional open pit mine with excavation from the surface down into the deposit or;
2) Underground mining: An underground operation with all salt extraction and processing (including crushing) occurring underground in a room and pillar type of operation.

The following factors were considered in review of these two options:

- *Technical / Economic*: Given the extent and depth (up to 530 m) of the deposit, it is not reasonably amenable to open pit mining approaches.
- *Environmental*: Given the mine's proximity to the Town of St. George's, the blasting, excavation, transfer and crushing activities associated with surface mining would likely have a greater potential for interaction with nearby peoples and residences, and other aspects of the biophysical and socioeconomic environments.

Therefore, underground mining with all processing activities also taking place below ground has been identified as the only viable option for the Project. Of particular importance in this evaluation is the potential effect of dust, noise and related disturbances on the Town of St. George's and its residents. Engagement with local residents (see Chapter 4) indicated particular interest around these issues, and to seeing the Project address such concerns in its planning and implementation. The planned use of an underground mine, including underground processing, with limited blasting and covered or enclosed conveyor to move the final product to storage is intended to help address these concerns.

MAIN ACCESS ROAD

Two options for main site access were considered as part of early Project planning and design (Figure 2.9):

1) Use of the existing Flintkote Road haul road to the west of the mine site, and
2) A new access to the mine site off Steel Mountain Road

The evaluation of these two options included consideration of the following:

- *Technical / Economic*: Most of the larger equipment and traffic will be accessing the Project site via the TCH. The shorter effective travel distance and proximity of the main access road to the highway will reduce overall travel distances, and in turn, vehicle emissions. Similarly, avoiding travel of heavy equipment through the Town of St. George's will reduce any effect on municipal infrastructure.

- *Environmental*: Creation of a new access road off Steel Mountain Road avoids residential areas within the Town of St. George's and as such, would have considerably less effect to people and residences. Also, there are potential safety issues related with Project-related traffic to and through the Town of St. George's. Development of a new access off Steel Mountain Road is considered to be preferable from an environmental perspective, for that reason.

Based on these factors and considerations, the main site access via Steel Mountain Road is considered to be the preferable option, both in terms of minimizing travel distances and associated air emissions, as well as for reducing interference and potential safety concerns.

Atlas recognizes that the specific location where the main access road connects to Steel Mountain Road must adhere to current provincial highway safety standards. This includes adequate sight lines to ensure vehicles can safely exit and enter the main access road off Steel Mountain Road. The Project has defined a preliminary location that it feels meets these requirements.

Refinement of the exact access point to Steel Mountain Road will be completed during future Project planning through the Highway Access Permit Approval Process in consultation with Newfoundland and Labrador Department of Transportation and Infrastructure.

POWER SUPPLY

Newfoundland Power has infrastructure in place along Steel Mountain Road that can be utilized for the Project. Two potential options have been identified to connect the Project to this existing infrastructure (Figure 2.10):

1) Connecting to the existing Newfoundland Power Sub Station (66kV/25kV) that exists adjacent to the intersection of Muises Lane and Steel Mountain Road, and running a new 25kV transmission line along Muises Lane into the mine site, or
2) Tie into the existing 66kV transmission line that runs along Steel Mountain Road and run a new 66kV transmission along the proposed main access road into the mine site.

In the evaluation of these options, the following factors were identified and considered:

- *Technical / Economic*:
    - Use of the Option 1 substation on Muises Lane would require modifications to the substation that would increase the overall cost of the required service


*Figure 2.9: Access Route Alternatives*

- Option 2, tie into the 66kV transmission line along Steel Mountain Road, is the shortest route with the least cost of upgrades. This option may require a small switchyard adjacent to Steel Mountain Road to connect into the existing 66kV line, but the overall cost of this is substantially less than that required for Option 1 (connecting into the Muises Lane substation).

- *Environmental*:
  - For Option 1, there is the potential for disruption to local residents as a new 25kV transmission line would need to be installed along Muises Lane directly in front of the existing houses.
  - Installing the Option 2 transmission line along the new main access road does not interfere with residents in the vicinity.

The preferred option 2, (tie into the existing 66kV transmission line along Steel Mountain Road and run a new 66kV line along the proposed main access) does not interact with residents, is shorter and has less required upgrades resulting in lower cost and disturbs less land. The implementation of this option will still require a system impact study by Newfoundland Power, and the approval of the Public Utilities Board, facilitated by Newfoundland Power, in addition to Newfoundland Power's determination on the requirement of a switchyard.

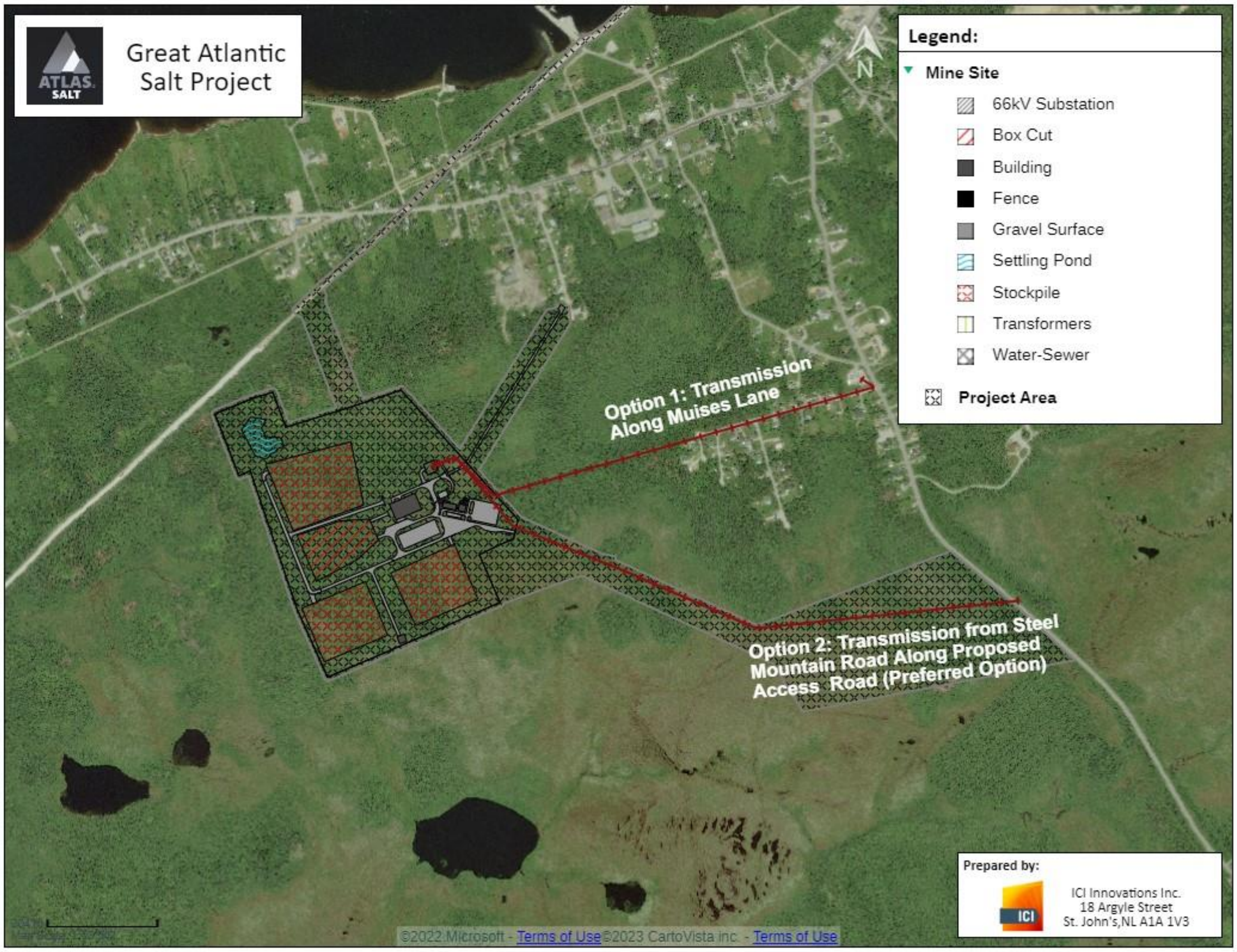



*Figure 2.10: Transmission Route Alternatives*

<u>CONSTRUCTION WORKFORCE ACCOMMODATIONS</u>

During the anticipated four and a half years of Project construction, it is estimated a peak of between 200 and 250 onsite workers will be required. Atlas is committed to the adjacency principle of hiring and contracting as many local qualified persons and companies as possible. While many of these workers will come from the nearby communities and elsewhere in the region (within commuting distance), given the number of workers and diversity of occupations required during this phase of the Project it is possible that a portion of the construction labour force will come from outside the region.

Several options for temporary accommodation of the non-resident construction workforce are being considered and evaluated:

1) Workers will be housed in existing accommodations in nearby communities and transported to and from the worksite daily;
2) Atlas will establish and use a temporary, onsite construction camp.

In the evaluation of these potential options, the following factors were identified and considered:

- *Technical / Economic*: At this stage of Project planning, it is not known exactly what proportion of the construction workforce will be comprised of local residents (who would commute to and from the worksite each day) vs those from outside the area for which Project accommodations will be required during this phase of the Project. The required nature and amount of Project related accommodations during construction will therefore depend upon various factors, including the availability, interest and qualifications of the local workforce, potential competition for local workers from other projects and activities in the region and beyond, and the nature and outcomes of the Project's recruitment and retention initiatives. Further information and analysis are also required regarding the availability and capacity of local accommodations to house the non-resident construction workforce.

- *Environmental*: Each of these worker accommodation approaches and options can have both positive and negative environmental implications, which can themselves vary based on specific interests and objectives. On the one hand, the housing and overall presence of large numbers of transient workers within small towns can create social issues, and negatively affect the availability, cost or quality of local services and infrastructure (including rental housing) for local residents. Alternatively, and if adequate and appropriate capacity exists, housing and feeding non-resident workers in nearby communities can present business opportunities and important potential economic benefits for local individuals and businesses.

As part of its on-going Project planning and design, Atlas will continue its definition and analysis of the Project's construction accommodation requirements for its non-resident workforce. This will include further analysis and discussions with local authorities and businesses around the availability and capacity of local accommodations in accordance with the Project's requirements and schedule, as well as to further understand the communities' priorities and preferences in that regard. Once available, this information will be used in an eventual decision by Atlas around the accommodations approach that will be implemented for Project construction.

At this stage, each of the options listed above are being brought forward for EA review and approval, including: 1) the establishment and operation of a temporary construction camp for 200 to 250 persons during construction, to be located along the proposed access road to the mine site near Steel Mountain Road; 2) housing the non-resident workforce entirely in existing local accommodations, and 3) a "blended" approach, utilizing a combination of both local accommodations and a smaller camp that will accommodate a portion of the non-resident workforce.

TRANSPORTATION OF SALT

The Project requires that the mined salt product be transported from the mine site to the marine terminal for loading onto ships for delivery to market. Two options were considered for transporting the salt product from the underground mine to Turf Point:

1) The development and operation of a conveyor system, and
2) Trucking from the mine site to the marine terminal

In the evaluation of these potential options, the following factors were identified and considered:

- *Environmental*: As for the evaluation of the access road options, the volume of Project-related traffic within the Town, and associated safety concerns, nuisance effects, and atmospheric emissions were key considerations in evaluating these options. Many of these concerns were raised by the public during Atlas' engagement program (Chapter 4); and

*Technical / Economic:* The Project's planned production volumes would require a large number of trucks and associated transits, which was considered economically prohibitive.

With these factors in mind, Atlas is proposing to build and utilize a conveyor system as a continuous means of moving the salt from the mine site, north northwest to the existing haul road (Flintkote Road), and then along that road, via an existing causeway to the existing Turf Point marine terminal. Moreover, this conveyor system will be enclosed or covered as a means of avoiding dust, noise and other environmental disturbances.

## 2.5 Project Components

The key components of the Project required for its successful construction, operation and maintenance and eventual closure and decommissioning are described below. These can be categorized into five main areas, as listed below:

**1) Mine Site Surface Facilities and Infrastructure**

- Site Roads
- Electrical Interconnection and Substation
- Mine Site Buildings and Facilities
- Perimeter Fence and Distribution Ditches
- Organics and Waste Rock Stockpile
- Pre-Production Stockpile
- Water Management Infrastructure
- Storage and Laydown Area (Life of Mine)
- Mine Portals and Box Cut
- Onsite Salt Storage

**2) Underground Mine and Processing Facilities**

- Access Declines
- Incline Conveyor
- Processing Plant
- Production Levels
- Internal Declines
- Transfer Conveyors

**3) Overland Conveyor System**

**4) Turf Point Facility**

- Planned Modifications to Existing Storage and Offloading Facility
- Turf Point Marine Terminal

**5) Ancillary Facilities and Infrastructure**

- Access Roads
- Power and Transmission
- Water and Sewerage Systems
- Temporary Construction Camp (if required)
- Services for Temporary Construction Camp (if required)
- Temporary Laydown and Storage during Construction

As noted previously, key project infrastructure has been sized to meet the requirements of the expansion case, with only the timing of mine development, the equipment fleet, and a tertiary crushing plant requiring additional investment to support future mine expansion.

Table 1.1 below provides a summary of the physical area that each component will occupy. As indicated, Project disturbance is largely associated with two components: mine site surface facilities, and the ancillary facilities and infrastructure. This table represents the maximum area of potential disturbance. Actual disturbance is anticipated to be less than that presented.

*Table 1.1: Physical Area of Major Project Components*

| **Project Component** | **Total Area (hectares)** | **Brownfield Area (ha)** | **Greenfield Area (ha)** |
|---|---|---|---|
| Mine Site Surface Facilities and Infrastructure | 39.9 | 0 | 39.9 ha |
| Underground Mine and Processing Facilities | NA | NA | NA |
| Overland Conveyor System | 4.2 | 3.1 | 1.1 |
| Turf Point Facility | 4.1 | 4.1 | 0 |
| Ancillary Facilities and Infrastructure | 31.8 | 0 | 31.8 |
| **Totals** | **80.0** | **7.2** | **72.8** |

Unless otherwise indicated, Project drawings are from Atlas' *Technical Report on the Great Atlantic Salt Project, Report for NI 43-101* (SLR 2023, Technical Report on the Great Atlantic Salt Project, SLR).

### 2.5.1 Mine Site Surface Facilities and Infrastructure

The mine site surface facilities and infrastructure required to operate the underground mine will be located within an area of approximately 40 hectares, the general layout of which is illustrated in Figure 2.11. The area is categorized as gently sloping toward the north-northwest, with an elevation ranging from 28 masl to 45 masl. The area is largely covered by vegetation with some smaller bog areas, predominantly on the eastern extents of the mine site. This initial site plan offers a good and reasonable representation of the planned surface infrastructure based on the information available and developed to date. The plan was developed during early engineering studies and reflects the current stage of Project planning and design.

#### Site Roads

Approximately 3-4 km of on-site roads will be required within the Project area itself to provide access to various components of the mine site surface infrastructure. These compacted gravel roads will be of adequate width to safely accommodate 2-way traffic and will be restricted to authorized personnel and vehicles only. The site roads will be designed and built to permit the safe travel of all vehicles according to industry standards and comply with applicable legislation and regulations. Access to the mine site and subsequently the site roads will be restricted at the entrance to the mine site via a gatehouse and gate.

#### ELECTRICAL INTERCONNECTION AND SUBSTATION

Electrical power will be transmitted to the Project via a new 66 kV wood-pole transmission line (which is discussed further in Section 2.4.5 above and Section 2.5.5 below). A new, on-site substation (Figure 2.11) will receive the power and step it down to 13.8 kV for distribution to key areas of the Project including the mine, process plant, surface buildings, and overland conveyor. The substation will be located on the northeastern edge of the Project area, be approximately 30 m by 30 m in size, and will be fenced to prevent access by unauthorized personnel. Additionally, all liquid-filled transformers will be installed on concrete pads, distribution transformers will be placed adjacent to key buildings for power delivery. The total installed power capacity will be approximately 15 MW, and it is estimated that total annual electrical consumption by the Project will be approximately 100,000 MWh.

All surface mine site facilities; underground mining and transfer equipment and facilities; underground ventilation, pumping and lighting; and the overland conveyor are powered via the on-site substation. In the event that the Newfoundland Power supply becomes unavailable (due to a power outage), mining operations will halt. However, standard backup power supplies will be available on the mine site to support core functions such as lighting, ventilation and other safety related components on the mine site.

#### MINE SITE BUILDINGS AND FACILITIES

The following buildings and other surface facilities are planned for the surface mine site area:

- Gatehouse (with gate) at the eastern edge of the site for all people entering and exiting the site
- Administration building, including offices
- Mine Rescue/Safety and Training Center connected to the administration building
- Mine dry building (change house) connected to the administration building
- Light vehicle parking lot adjacent to the administration building
- Surface mobile equipment maintenance shop (with the main maintenance shop being in the underground mine)
- Spares and supplies storage
- Cold storage area
- Explosives storage sited on the southern edge of the site, approximately 350 m away from the administration and other buildings, and 250 m away from the box cut and laydown area.
- Fuel storage facility required for a small fleet of mobile equipment, including personnel transport, maintenance vehicles, front-end loaders and compact wheel loaders, forklifts, and mobile cranes.


*Figure 2.11: Planned Mine Site Surface Facilities*

PERIMETER FENCE AND DIVERSION DITCHES

As shown in Figure 2.11 above, chain-link perimeter fencing will be established around the entire Project site (10 feet high, for a total distance of approximately 2.8 km). A security gatehouse will be established on the new road at the entrance to the Project mine site to restrict access to authorized vehicles and personnel only.

Diversion ditches will be established on the southern perimeter of the Project area to prevent clean surface water from entering the mine site (discussed further in Water Management Infrastructure below). The diversion ditches will be excavated and constructed of rock and soil recovered as part of the clearing of the site area during construction and sandstone extracted from the early decline construction. There are two diversion ditches planned, the preliminary design of which is depicted below in Figure 2.12. The berm section of the diversion ditches will have a height of between 0.9 and 1.4 m and a slope of 2H:1V. This berm will continue from the diversion ditches to surround the mine site. The berm will be outside the planned permitter fence at a height of 0.9-1.4 m and a slope of 2H:1V.

Drainage culverts are required near the outlet of the diversion ditch where it crosses the proposed access road. These culverts will be sized to convey the same design flow as the diversion ditches. A 2 m diameter circular pipe is proposed where the diversion ditch crosses the access road.

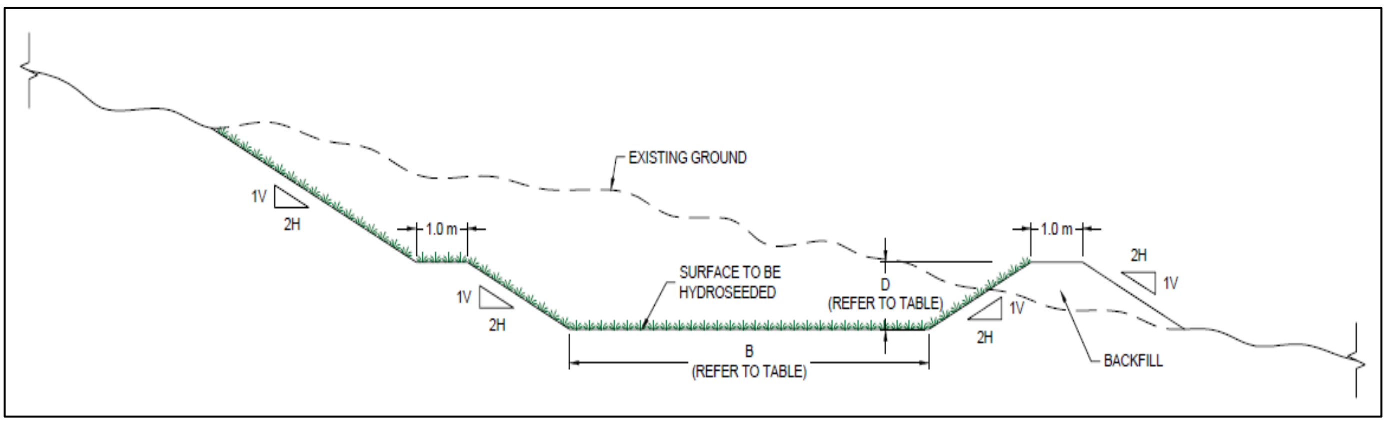



*Figure 2.12: Diversion Ditch Design*

ORGANICS AND WASTE ROCK STOCKPILE

The initial construction of the box cut and declines will require the clearing and removal of organics that represent the initial land covering and the excavation of the underlying waste rock. The organic overburden has been estimated at 0.25 m to 1.0 m thick. The glacial till layer below the organics is between 8.8 m to 12.4 m below the surface.

An organics stockpile of approximately 162,000 $m^3$ capacity is planned for storing the organic soil material (overburden) 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. The identified area for the organics stockpile area is 185 m x 150 m. In general, the overburden at the Project site is comprised of organic deposits and glacial till. The till is composed of silty sand and gravel with trace clay overlying a layer of red-brown, sandy silt to silty sand with trace clay and gravel. Till is described as compact to very dense base on STP-N values (SLR 2023, )

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. Additionally, this material will be used for the construction of the berm surrounding the Project site. The waste rock stockpile will be approximately 230 m x 185 m (or, approximately 3.81 ha) in size. The waste rock stockpile will have organics and topsoil (overburden) removed, and will then be proof rolled with a prepared foundation of crushed rock and sand base. The waste rock stockpile will have a maximum height of 28 m with a slope of 2H:1V (Figure 2.13). A collection ditch will surround the waste stockpile to catch run-off from the stockpile (See “water management” section, below).

#### Pre-Production Stockpile

Salt excavated during the pre-production period, including during the excavation of the area that will accommodate the underground processing plant, will be temporarily stored on a lined stockpile on the surface until it can be processed. The stockpile will have a storage capacity of approximately 291,000 $m^3$ of salt material, and will be located adjacent to the organics stockpile and to the southeast of the box cut and portals. The pre-production stockpile will have organics and topsoil (overburden) removed then be proof rolled with a prepared foundation of crushed rock and sand base. 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 come into contact with the salt. The pre-production stockpile will have a maximum height of 15 m with a slope of 1.5H:1V (Figure 2.13). Water collected from this area will be collected in collection ditches and directed to the settling pond where it will be monitored for compliance with Schedule A of the *Environmental Control Water and Sewage Regulations* (2003) prior to release.

#### Water Management Infrastructure

The ore to be mined from the deposit is a high-grade ore with an average of 96% pure sodium chloride. Processing of the ore for the intended use as road salt requires only crushing and screening. There will be no requirement for any chemical or other processing that produces tailings or other waste products that require tailings management. As such, the Project will not require a tailings management process or tailings management facility.

The Project will not require process water but will manage water on the mine site and any water associated with underground discharge will be directed via mine dewatering. The feasibility study completed for the Project included water management planning, the content of which is summarized below and included as Appendix B to this Registration. Generally, the approach to water management is to divert all water that is within the mine site to the settling pond on the mine site, including mine dewatering. Water that is outside the mine site limits will be diverted away from (or around) from the mine site and continue to be captured in the surrounding environment. A detailed Water Management Plan will be submitted to the appropriate government authorities as part of future regulatory (permitting) processes for the Project.

The infrastructure associated with mine site water management are shown on Figures 2.13 to 2.15 taken from the Project Feasibility Study and include:

- Diversion Ditches – to divert water from coming onto the mine site
- Settling Pond – to facilitate settling of suspended solid particles
- Spillway Overflow Weir - to allow water to flow out of the Settling Pond
- Spillway Outlet Channel – to connect the spillway to collection ditch 7
- Collection Ditches 1-6 – to collect and convey water on the mine site to the settling pond
- Collection Ditch 7 – to convey water into adjacent vegetation towards Man o'War Brook

The settling pond is designed with a three-day retention time allowing for suspended solids to settle out of the water using gravity before release. The discharge from the settling pond is the only point of discharge to the receiving environment for the Project.

#### SETTLING POND DAM DESIGN

The planned location and layout of the settling pond is intended to take advantage of the natural topography to help provide containment. Locating the settling pond downgradient within the mine site and proximal to Man o' War Brook also maximizes gravity drainage and facilitates the discharge of water to the environment (Figure 2.14). The settling pond is approximately 120 m long at its maximum length and 80 m at its widest point. Containment requires construction of a 'U' shaped dyke as illustrated in Figure 2.15. The typical cross section of the dyke is also presented in Figure 2.15. The proposed dyke will be an earthfill embankment (silty sand till) with erosion protection on the downstream slope (cobble size), a filter and a toe drain. Erosion protection will also be placed on the upstream slope within the expected wave action zone. A 5.0 m wide crest will be applied with road surfacing material to allow vehicular traffic for inspection and maintenance. The road cap is sloped 3% to allow runoff. The dyke will have a slope of 2H:1V on the settling pond side, with a slope of 3H:1V on the downslope side.

The Canadian Dam Association (2013) guidelines define a dam as a barrier for the retention of water that:

- Impounds at least 30,000m3; or
- is 2.5 m or more in height; or

- is less than 2.5 m or impounds less than 30,000 m3 where operations or failure is high risk.

The settling pond proposed for the Project will have a maximum embankment height of 6.0 m which meets the CDA definition for a dam, and a volume of impoundment of 10,095 m3 which is much lower than the CDA volume criteria for a dam.

The Project has completed feasibility level engineering and the design criteria used by SLR Consulting (Canada) Ltd., an independent engineering firm, for the settling pond embankments are listed in Table 1 of the Technical Memorandum – Design of Waste and Temporary Salt Stockpiles and Site Water Management Infrastructure (Appendix B). At this feasibility stage of engineering design, a hazard classification of “Low” was determined by SLR Consulting (Canada) Ltd. after considering the ratings from the Canadian Dam Association (CDA)’s Consequence Classification Ratings for Dams, which considers population at risk, and consequences of failure as it pertains to loss of life, environmental and cultural values, and infrastructure and economics. It was assessed that there was no identifiable population at risk, no possibility of loss of life other than through unforeseeable misadventure, minimal short-term loss or deterioration and no long-term loss or deterioration of: fisheries or wildlife habitats, rare or endangered species, or unique landscapes or sites of cultural significance, and low economic losses affecting limited infrastructure and residential buildings, public transportation or services or commercial facilities, or some destruction of or damage to locations used occasionally and irregularly for temporary purposes. SLR did not perform a dam breach analysis or study as part of their assessment.

During detailed engineering design, a more thorough review of risk factors will be completed including a field data collection program for geotechnical and hydrogeological data, and a flood inundation analysis. Atlas Salt will consult with Water Resources Management Division during the design of the field programs as well as the detailed engineering design of the settling pond embankments to ensure the safety of the public and local infrastructure is protected. Atlas recognizes the various permits required under Section 48 of the Water Resources Act for work within 15m of a wetland or waterbody, water discharge and dam design (Appendix A) and will consult with Water Resources Management Division during the detailed engineering phase of the Project prior to construction. Atlas, as a proposed dam owner, recognizes its responsibilities pursuant to the Water Resources Act and specifically sections 43 and 44 for operational repairs, inspections, review and reporting to ensure public safety.

Maximum monthly flow occurs in May (104,300 m3/month), resulting in an operational settling pond volume estimated at 10,095 m3. The settling pond will have an overflow spillway positioned near the south end of the west arm of the dyke to allow gravity flow discharge towards Man o’War Brook. The structure is a compound weir with a small opening at a lower elevation to allow flow discharge. The opening (0.3 m depth) was sized to convey peak flow resulting from a normal rainstorm event of 1.1 m3/s. Spillway dimensions are presented below in Table 2.2.

The spillway overflow weir will be built with riprap lining and a reinforced concrete sill to set the invert elevation at 33.4 MASL. The spillway will have an outlet channel lined with riprap to convey the flow discharge to Collection Ditch 7. Both the outlet channel and collection ditch 7 have been sized to convey a peak flow of 3.3 m3/s. The spillway outlet channel will be lined with two layers of riprap placed above non-woven geotextile to withstand high flow velocities and prevent or mitigate erosion.

It is proposed that surface runoff from around the Project facilities (waste rock stockpile, pre-production salt stockpile, and site terrace and any other component that is within the mine site berm) will be captured in collection ditches and then directed to the settling pond (Figure 2.13 and Figure 2.14).

*Table 2.2: Catchment Area and Dimensions of Spillway Outlet Channel*

| Attribute | Value |
|---|---|
| Catchment Area | 15 ha |
| Bottom Width | 1.0 m |
| Water Depth | 0.4 m |
| Channel Depth | 0.6 m |
| Gradient | 17% (6H:1V) |
| Peak Velocity | 4.7 m/s |
| Side Slopes | 2H:1V |

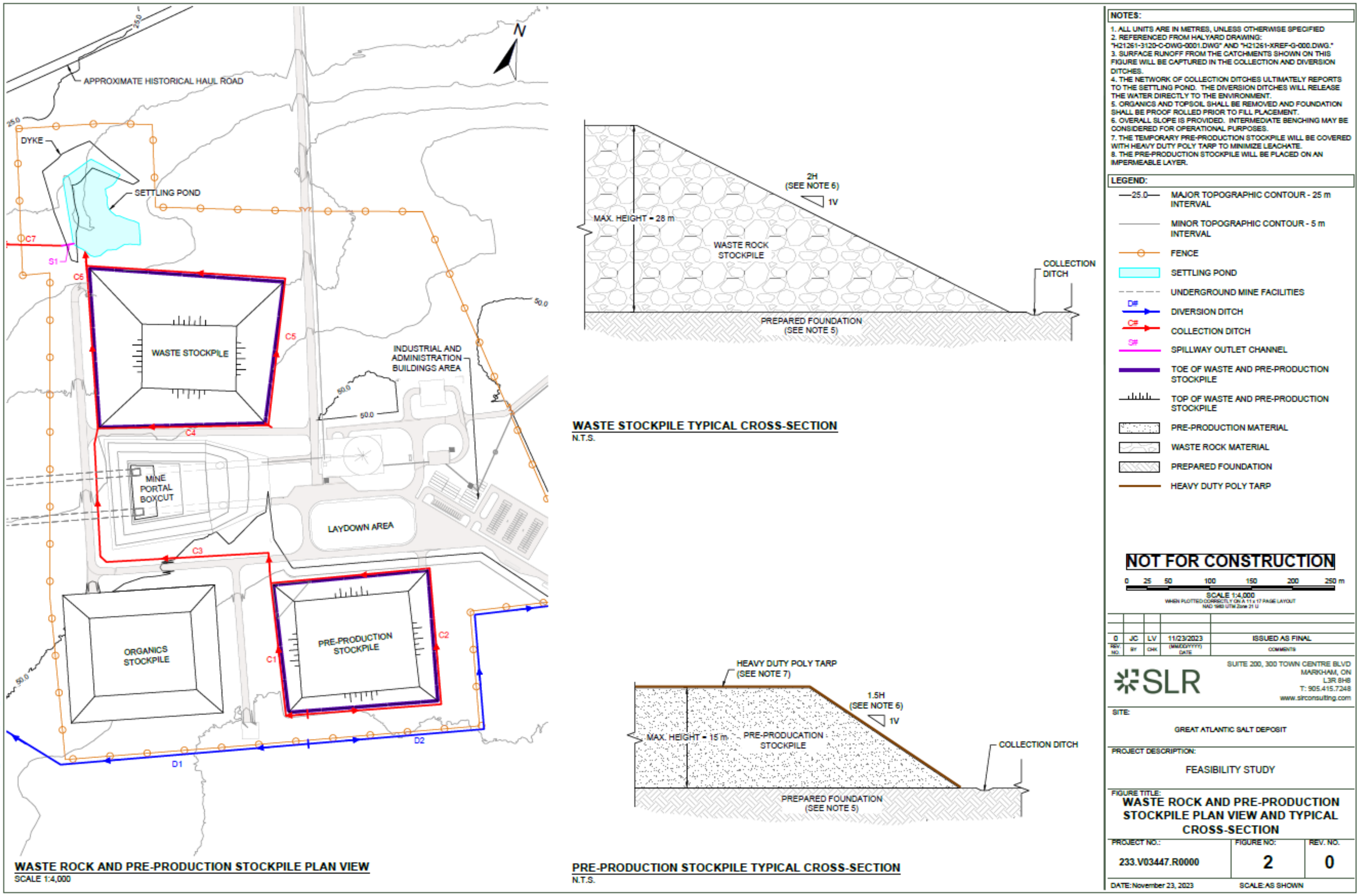



*Figure 2.13: Waste and Pre-Production Stockpile Design*

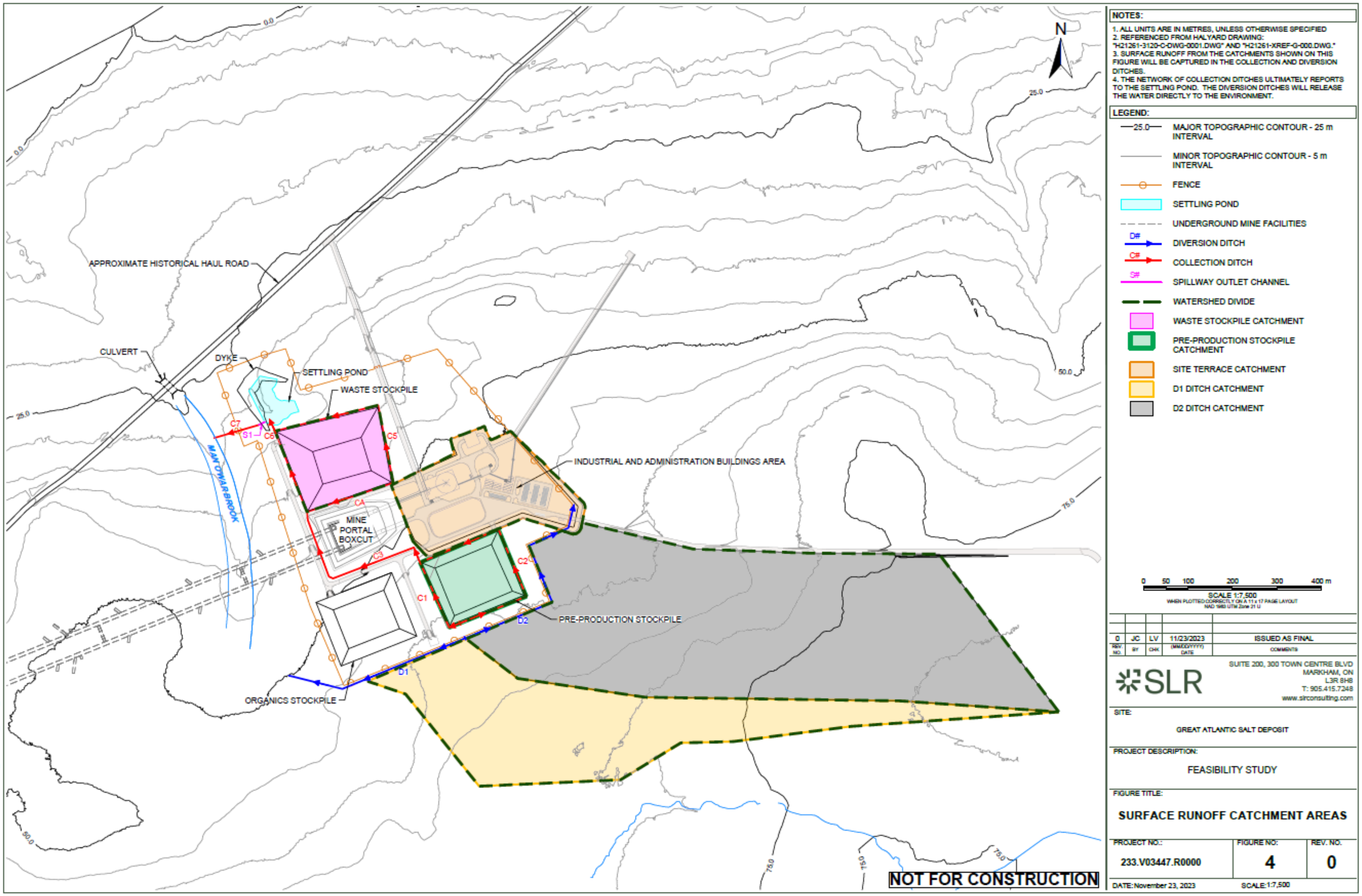



*Figure 2.14: Surface Flow and Runoff Around Mine Site*

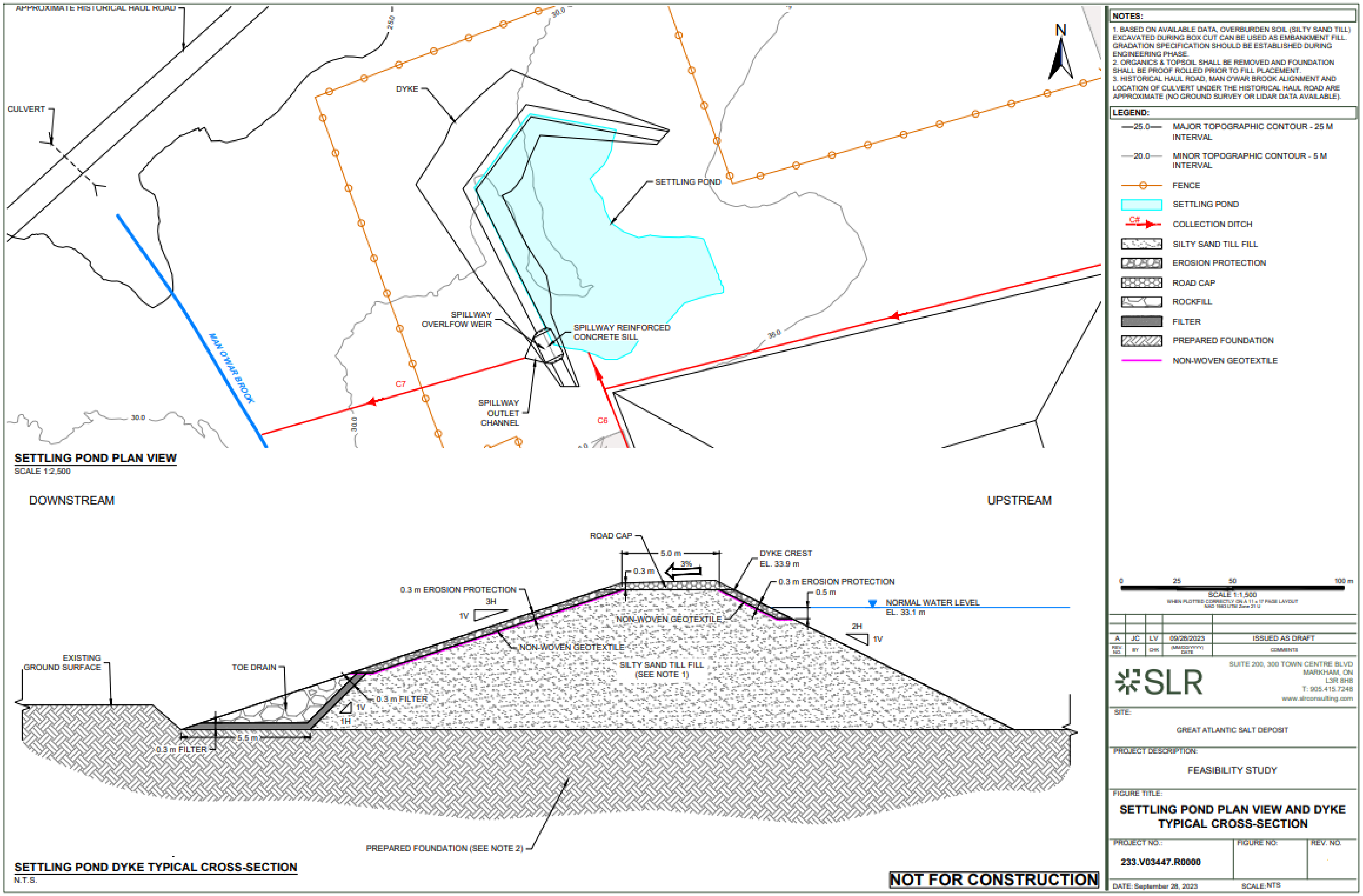



*Figure 2.15: Settling Pond Plan View and Dyke Typical Cross Section*

Any such alternative controls and mitigations will be further evaluated during detailed engineering design and will be part of future regulatory (permitting) processes for the Project.

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.

### Storage and Laydown Areas (Life of Mine)

The Project site has a defined operations and maintenance storage and laydown site adjacent to the indoor salt storage facility and connected to the onsite roads. The site will encompass a 40 m x 100 m area for temporary storage of equipment, materials and related components that will be utilized during regular operations and maintenance. This would include replacement parts, transient equipment (including vehicles) and other materials and products used in the mining operation. The storage and laydown areas site will not be utilized for the storage of fuel or other potentially harmful substances. All fuel storage will occur at the controlled Fuel Storage Facility discussed previously.

### Mine Portals and Box Cut

The deposit is planned to be accessed by two declines from the surface to the plant elevation at the 240 Level (nominally, 240 m below the surface). The declines are discussed in further detail in a later section.

The box cut provides the first excavation or cut made into the surface of the earth when starting an underground mine. It will serve as a portal for the mine, providing a secure and stable entrance from which further decline development activities can proceed. The box cut will be gradually sloped on one side to provide mobile equipment and conveyor access to and from the declines, and will be sloped and supported on the remaining sides to ensure slope stability, safe entry, and operation of the roadway and conveyor in and out of the mine. A major function of the box cut is to collar the two declines. Once 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. The box cut is therefore a temporary excavation, and once the steel covers are installed the entire box cut will be backfilled. Figure 2.16 provides a generalized illustration of the proposed box cut design.

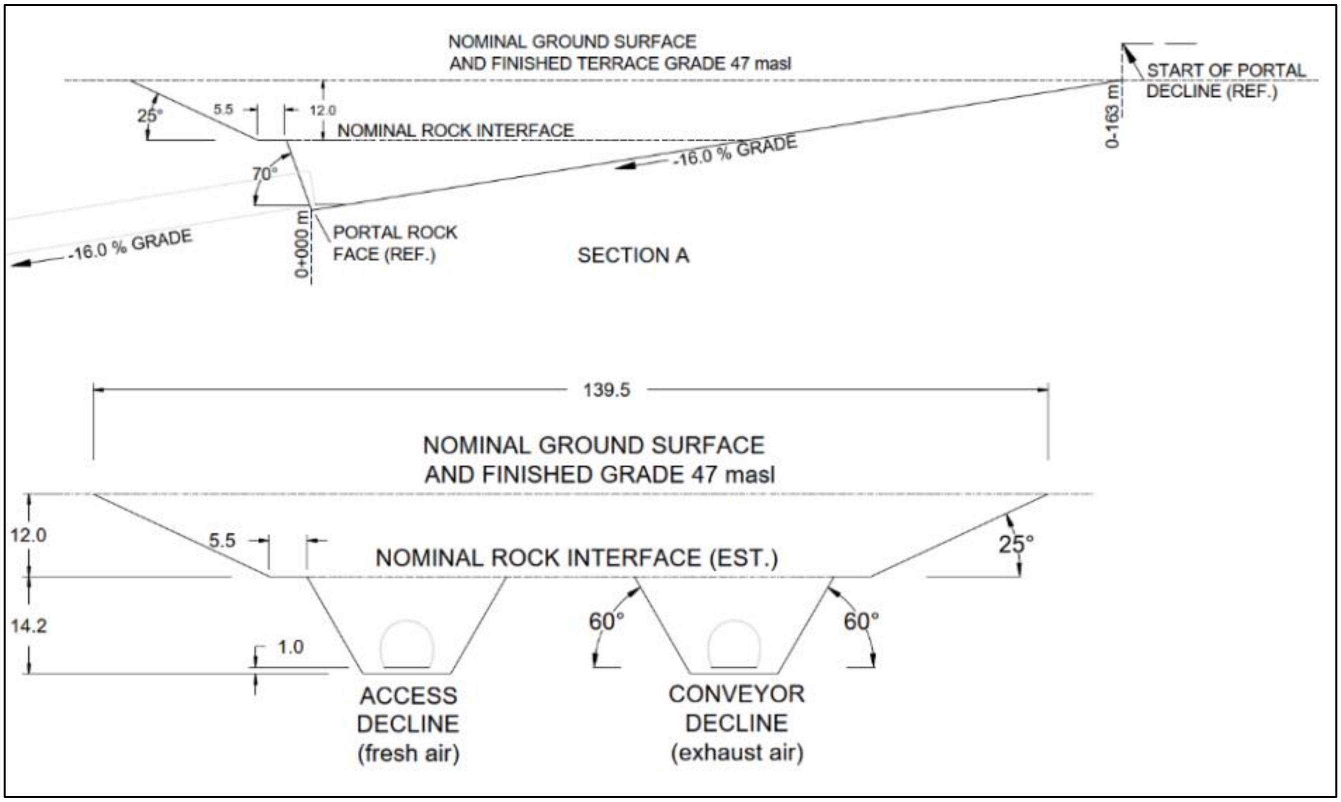



*Figure 2.16: Box Cut Design Sections*

ONSITE SALT STORAGE

An on-site salt storage building will be developed at the mine site to 1) provide a buffer if the overland conveyor requires planned maintenance, and 2) serve as a location for loading salt into trucks for selling into local markets. This facility will have a capacity of 11,700 t of salt product (or, approximately two days of production).

The site salt storage building will include a system for applying an anti-caking agent (yellow prussiate of soda, or YPS) and will have the ability for a front-end loader to reclaim the salt into the conveyor system for delivery to the Turf Point storage and loading facility. The onsite storage facility is an indoor (covered and walled) storage facility of approximately 45 m x 75 m. The building will be a steel-walled and roofed building to provide dry storage for salt.

### 2.5.2 UNDERGROUND MINE AND PROCESSING FACILITIES

The underground mine design, plans, and schedules are based on a “mechanized square room and pillar” mining operation. 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. An isometric view of the mine is shown in Figure 2.17. A schematic of the underground mine and processing components is presented in Figure 2.18

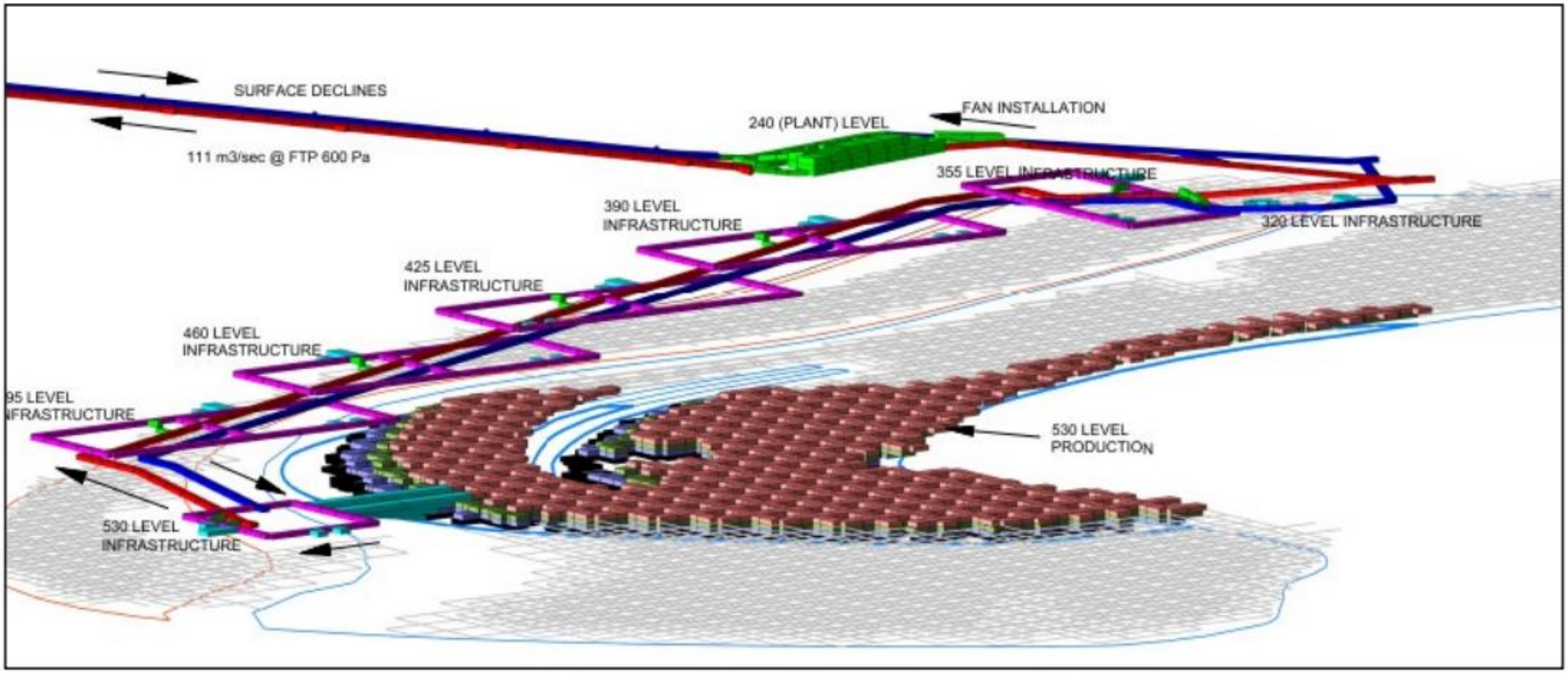



*Figure 2.17: South Facing Isometric View*

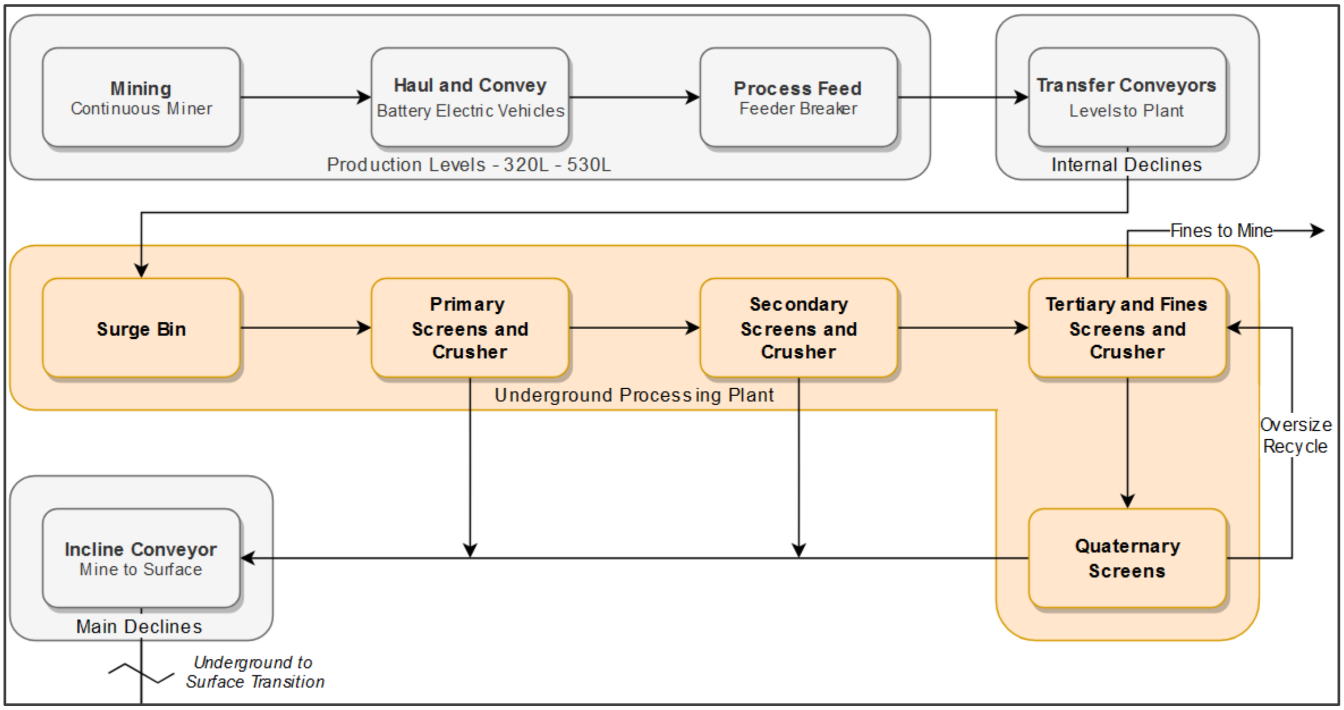



*Figure 2.18: Underground Mine Components and Process*

<u>ACCESS DECLINES</u>

The two access declines will be driven underground from the mine site at the surface, via the portals to the plant processing level (240 Level). Each decline will have an open area of 42 m² to accommodate the ventilation airflow requirements. The declines will be 1,400 m long to the 240 Level where the processing plant will be located. One decline will provide fresh air into the mine and be used for vehicle access, while the other will exhaust air and contain the incline conveyor to transport finished salt product to the surface. The airflow at the face will be accomplished with directed flows from auxiliary fans and ducting to ventilate the area. A communications system for telephone, radio, and data will be established and run through the access declines. The second decline will also serve as an emergency egress. The declines will be separated by a 40 m pillar. Power will also be supplied to the underground mine through the access declines. A 13.8 kV armoured cable will run down the declines from the mine site surface sub-station to the processing plant and charging stations at the processing plant level, then continuing through the internal declines to the level infrastructure in each production level in operation.

Groundwater inflow is expected within the red beds between the surface and the salt horizon. Any inflow that occurs will be directed down each decline to dewatering sump and pump stations, where sump pumps will be used transport it to the surface and directed to the settling pond. Each decline will have two pumping stations, one midway and one at the bottom of the decline. One sump pump will be used at each station. Each pump will have a capacity of 1,000 $m^3$/day at 100% capacity. At full capacity the system will have the ability to pump 2,000 $m^3$/day. The pump stations will be placed immediately above the salt horizon, approximately at the midpoint of the access declines.

### Incline Conveyor

Salt product will be conveyed up one of the access declines from the processing plant at 240 Level to surface via a Product Incline Conveyor. It will be approximately 1.35 km long with a 36 inch wide belt. The Product Incline Conveyor will operate while mining operations are underway and salt is being extracted from the mine. The underground conveyors will be powered by electricity supplied from either the processing plant level or via the nearest mobile power center on the appropriate production levels. The Product Incline Conveyor will carry the final salt product to the mine site surface storage facility. This conveyor will be uncovered while underground and covered from the short distance (75m) from the decline surface entrance to the mine on site salt storage building.

### Processing Plant

The processing plant will be located at the 240 Level, constructed in an underground room that will be nominally 20 m wide, 187 m long, and up to 20 m high. It will house the crushing and screening equipment, including the primary and secondary screens and double roll crushers, the tertiary and fines screens and crusher, and quaternary screens. The final ready for market salt product will be offloaded to the incline conveyor that carries the salt product in its final state to the surface through the access decline. The main ventilation fan infrastructure that exhausts air from the mine site will also be housed in this level. Adjacent to the processing plant there will be an infrastructure garage that will include maintenance shops, vehicle charging bays, and gear storage.

### Production Levels

The production levels are the underground mine areas where the rock salt will be extracted from the walls of the mine in the room and pillar structure. The initial production level will be located at the 320 Level, and the mine will be deepened as necessary to sustain the target production rate throughout the mine life. A total of seven production levels will be developed and extracted over the life of the mine plan, and the deepest level will be approximately 530 m below the surface. It is anticipated that one or two production levels will be operational at any particular time.

Within the production level a continuous miner will extract the rock salt from the mine walls, and feed it to a haul truck which transports the salt to the production level infrastructure near the decline entrance to the level. The haul truck will dump ore onto a feeder breaker that feeds the run of mine (ROM) material onto a transfer conveyor. The underground conveyors moving ore from the production levels to the processing plant will be uncovered.

The first production level will house the underground equipment shop to facilitate equipment repairs and maintenance. As the mine progresses deeper, the production levels will also contain charging stations for the electric mining equipment.

INTERNAL DECLINES

Internal declines will connect the processing plant 240 m below the surface level to the 320 m below the surface production level and connect each of the subsequent production levels as they are constructed. The mine will be deepened as necessary to sustain the target production rate of 2.5 Mtpa through the 30-year mine life. As noted above, a total of seven production levels supported with seven sets of two internal declines and associated infrastructure will be constructed to support mining activities on each level. The transfer conveyors, the mine ventilation, emergency 2nd egresses and the access between production levels will be contained within the internal declines.

CONVEYORS

A series of conveyors will carry the run of mine (ROM) material from the production levels to the processing plant at level 240. These will be electrically powered, and will be installed and extended as production levels are created deeper into the mine. Based on the feasibility level engineering design completed to date there will be 15 transfer points or transfer towers as part of the underground mine conveyor system. The first transfer point will be at the first production level where the 300 m Level Conveyor Head Chute transfers salt to the Run of Mine Transfer Conveyor and the last transfer point underground will be where the salt transfers from the Product Transfer Conveyor at the Processing Plant onto the Product Incline Conveyor that will convey salt up the decline to the mine surface site.

The Product Incline Conveyor will travel up the decline bringing salt into the mine site at the temporary on site salt storage building. It is currently anticipated that there will be 13 transfer points or transfer towers on the surface as part of the salt conveyor system from the temporary salt storage facility at the mine site to the marine terminal at Turf Point. In total, there will therefore be 28 transfer points or transfer towers from underground production to product conveyance onto vessels at the existing marine terminal at Turf Point (Table 2.3).

Sections 2.5.3 and 2.7.7 describe the engineered features of the Project to minimize dust generation and additional mitigations to minimize any effects of fugitive emissions on workers and the public. Transfer points and transfer towers located at Turf Point marine terminal are shown on Figures 2.24 and Figure 2.25. The two Transfer Points of the Overland Conveyor route along Flintkote Road are shown on Figure 2.19.

*Table 2.3: List and location of all Transfer Points/Transfer Towers for the Great Atlantic Salt Project*

| Location | Description | Specific Transfer Points |
|---|---|---|
| Underground Production Areas Below Processing Plant | Two transfer points as Run of Mine (ROM) Salt is conveyed from production areas to the entrance of the Underground Processing Plant | 300 m Level Conveyor Head Chute<br>Run of Mill Transfer Conveyor Head Chute |

| | | |
|---|---|---|
| Underground Processing Plant | 13 transfer points within the underground processing plant to convey material through three stages of crushing and four stages of screening, then product is fed onto the Product Incline Conveyor to convey material from the exit of the Underground Processing Plant to Surface and into the onsite salt storage building. | Feed hopper feed conveyor head chute<br>Grizzly feeder feed conveyor head chute<br>Primary Screen transfer conveyor head chute<br>Primary Screen Feed conveyor head chute<br>Secondary Screen Feed conveyor head chute<br>Tertiary Screen Feed conveyor head chute<br>Tertiary Crusher Transfer conveyor head chute<br>Tertiary Crusher Feed conveyor #1 head chute<br>Quaternary Screen Feed conveyor head chute<br>Quaternary Screen Coarse conveyor head chute<br>Tertiary Crusher Feed conveyor #2 head chute<br>Product Transfer Conveyor #1 Head Chute<br>Product Incline Conveyor Head Chute |
| Mine Site | Two transfer Points at the Mine site: Salt Product leaving the Product Incline Conveyor for the Temporary Salt Storage at Mine Site and also the beginning of overland conveyor system leaving the mine surface site. | Salt SB Stockpile Conveyor Head Chute<br>Overland Feed Conveyor Head Chute |
| Flintkote Road | Overland Coveyor System: Two Transfer Points along Flintkote Road: 1. At the beginning where the conveyor meets Flintkote Road and 2. at the Port site. | Overland Conveyor Head Chute<br>Port SB Conveyor Head Chute |
| Turf Point Marine Terminal | Nine transfer points at Turf Point from two salt stockpiles feeding one main Port Transfer conveyor to the Ship Loader conveyor and Head chute. | Port SB Tripper Conveyor Head Chute #1<br>Port SB Tripper Conveyor Head Chute #2<br>Port Reclaim Conveyor #1 Head Chute<br>Port Reclaim Conveyor #2 Head Chute<br>Port Reclaim Conveyor #3 Head Chute<br>Port Reclaim Transfer Conveyor #1 Head Chute<br>Port Reclaim Transfer Conveyor #2 Head Chute<br>Port Transfer Conveyor Head Chute<br>Ship Loader Conveyor Head Chute |

### 2.5.3 Overland Conveyor System

The proposed overland conveyor system will transport the market ready salt product from the mine site to Turf Point storage facilities. The system is designed to support the transportation of up to 4.0 Mtpa, with the initial plan of 2.5 Mtpa.

The overland conveyor will generally follow the secondary access from the site (described below) to the historical haul road (Flintkote Road) and causeway that was built in the 1960s to serve the gypsum quarry (see earlier Figure 2.4). To achieve the alignment between the site and port, the overland conveyor is proposed to be comprised of three separate conveyors connected by two transfer towers. The first overland conveyor section extends from the mine site storage facility to the haul road (Flintkote Road), where a transfer tower will connect the second conveyor section that will run to the far side of the causeway to the second transfer tower for a short run to the Turf Point storage facility. There will be no transfer points along the overland conveyor route between the two aforementioned transfer towers where it passes through the Town of St. George's and near some residential areas.

The overland conveyor makes use of two primary engineering designs, enclosed or covered systems, into the four types of conveyor components including:

- *Covered Conveyor* (Figure 2.20) - the conveyor will be covered from above with a u-shaped protective covering that ensures that the salt is protected from precipitation, wind and related physical environmental elements. From below the conveyor has a covering, but is not considered an airtight space. There is an integrated fence that prevents access and protects the conveyor from tampering. This conveyor method will generally be used in areas not populated or near residential receptors.
- *Enclosed Conveyor* (Figure 2.21) - the conveyor will be fully enclosed on all sides in an enclosure that provides a secure site for safety purposes. The enclosure will generally be weather tight, which will also help prevent fugitive dust and noise from leaving the enclosure. An enclosed conveyor will generally be used where the conveyor is located adjacent residential receptors within the Town of St. George's including:
    - Enclosed Bridge Conveyor (Figure 2.22) - the conveyor is fully enclosed on all sides and elevated above ground to allow traffic flow to occur below.
    - Enclosed Tunnel Conveyor – the conveyor is fully enclosed underground.

Three portions of the overland conveyor require crossings of Town of St. George's municipal infrastructure – one in the area of Main Street, one at the intersection of Station Road and Beach Lane, and a third 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 three designated crossings will provide safe passage for people and vehicles.

Early consultation with the Town of St. George's, local Indigenous leaders and the public (see Chapter 4) helped identify three key considerations associated with the design and operation of the overland conveyor system, including the need to:

- Minimize fugitive dust emissions related to the transportation of the processed salt during operations;
- Maintain public access across the conveyor route at key points such as the intersection with Main Street and to maintain access to the small craft harbour; and
- Protect public safety along and adjacent to the conveyor.

To address these concerns, the proposed conveyor design is planned to be:

- Fully enclosed or covered conveyors from the portal at the mine site where it surfaces all the way along the route to the Turf Point storage facility;
- Enclosed where the route travels on the surface along or near residential, recreational, or similar areas;
- Bridged over two key road intersections to allow traffic and recreational activities to occur below and cross conveyor route;
- Placed in a buried tunnel under route 461 to allow unobstructed flow of traffic , and
- Elevated along the causeway to lift the conveyor above grade with no activity to occur below

These design factors will minimize noise and dust, and also protect bystanders and wildlife from operating machinery. The conveyor system is highly automated, significantly reducing the necessity of continuous human presence along the conveyor. This automation not only decreases the risk of accidents but also mitigates noise generation and other potential disruptions linked to manual operations.

From the mine site the salt will be conveyed by an enclosed or covered 2,665 m long conveyor with 36-inch wide belts and a capacity of 800 tonnes per hour (tph). Along this route the covered conveyor will travel under the main road (Route 461), over the beach road and over the road to the marina.

The following summarizes the planned lengths and locations of the various sections of the overland conveyor (Figure 2.19):

- 290 m of covered conveyor within the mine site boundaries;
- 300 m of covered conveyor, fenced, from the mine site boundaries to the first transfer station adjacent to the existing Flintkote haul road;
- 350 m of covered conveyor, fenced, alongside the haul road;
- 100 m of enclosed conveyor within a tunnel under Main Street at the intersection with Butt's Lane;
- 100 m of enclosed conveyor alongside the haul road between Butt's Lane and Beach Lane;
- 75 m of enclosed conveyor in a bridge over Beach Lane;
- 370 m of covered or enclosed conveyor, fenced, alongside the haul road between Beach Lane and the marina access road;
- 60 m of enclosed conveyor in a bridge over the marina access road;
- 890 m of elevated covered conveyor across the causeway to a second transfer tower; and
- 130 m of covered conveyor to the Turf Point facility

A number of measures are planned to help minimize dust emissions from the Project's conveyer system. These measures are being integrated into the design and operational practices of the conveyor, focusing on containment, suppression, and collection, and include:

1) *Adjustable Skirt Edge Sealing Systems:* These are required to limit spillage and dust propagation at the conveyor feed points. This design ensures that material is contained within the conveyor belt, significantly reducing the potential for dust emissions.

2) *Dust Collection Flanges:* These are integrated at strategic locations along the conveyor system, including before and after conveyor load points, at the head pulley, and at every transfer point. These flanges facilitate the connection to dust collection systems, which remove airborne dust particles, thereby minimizing fugitive dust emissions.

3) *Conveyor Belts and Splice Kits:* The use of high-quality conveyor belts and splice kits for hot vulcanizing contributes to minimizing dust generation. Belts are selected to suit design conditions and service, with a focus on ensuring minimal spillage and dust release.

4) *Belt Cleaners and Ploughs*: Primary and secondary belt cleaners, as well as return belt ploughs, are deployed to reduce carryback on the conveyor belt. This carryback material can be a significant source of dust if not properly managed.

5) *Enclosed Conveyor Systems:* Where feasible, the conveyor systems are designed to be enclosed, reducing wind-induced dust dispersion. This enclosure is particularly crucial in areas of high environmental sensitivity or where the conveyors pass through or near workspaces.

6) *Material Moisture Management:* Maintaining optimal material moisture levels is a commonly employed dust mitigation technique in bulk material handling. It is planned that moisture control measures, either through material conditioning or spray systems, would be established and used as part of the dust mitigation strategies.

The dust control system for the conveyor system will include design specifications ensuring that it is:

- Designed and sized to achieve a minimum dust collection efficiency of 99.5% for particles larger than 10 microns and 95% for particles smaller than 10 microns.
- Equipped with automatic pulse-jet cleaning systems to maintain the filter media in good condition and prevent clogging; and
- Equipped with pressure gauges, differential pressure switches, and alarms to monitor the filter media condition and indicate the need for maintenance.

The Project's conveyor system design will therefore incorporate several dust mitigation measures aimed at minimizing dust emissions during operation, and which demonstrate a comprehensive approach to dust management.


*Figure 2.19: Proposed Overland Conveyor Route*

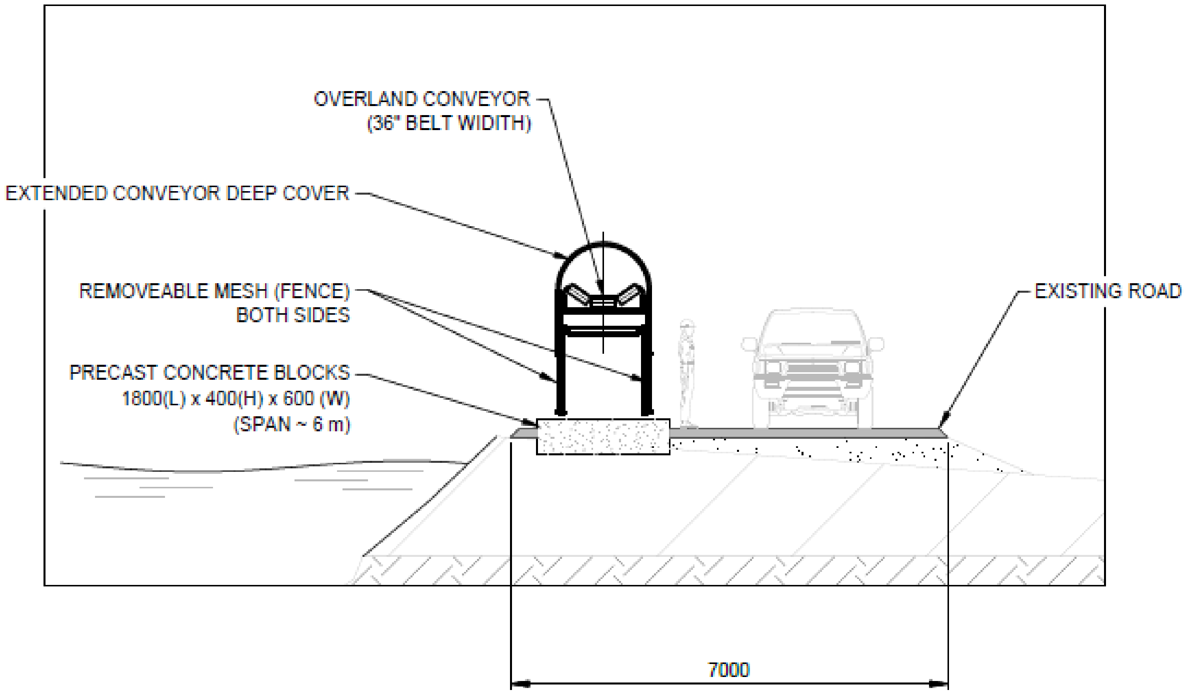



*Figure 2.20: Covered Conveyor Cross Section*

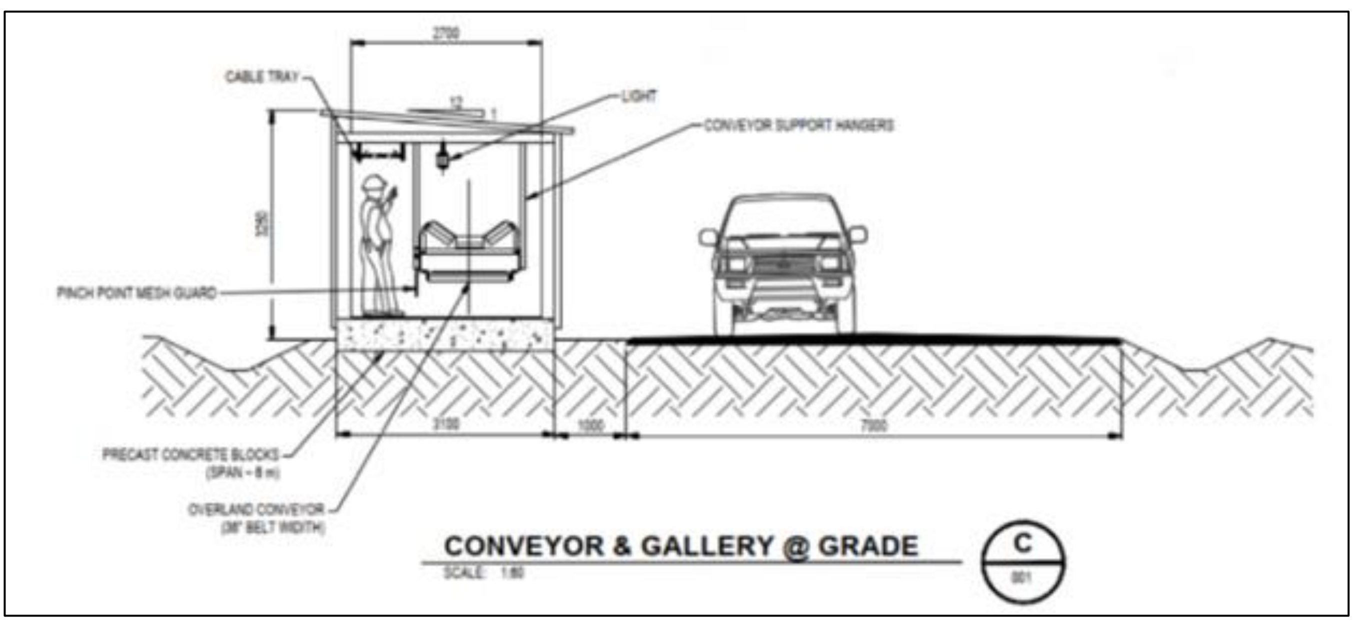



*Figure 2.21: Enclosed Conveyor Cross Section*

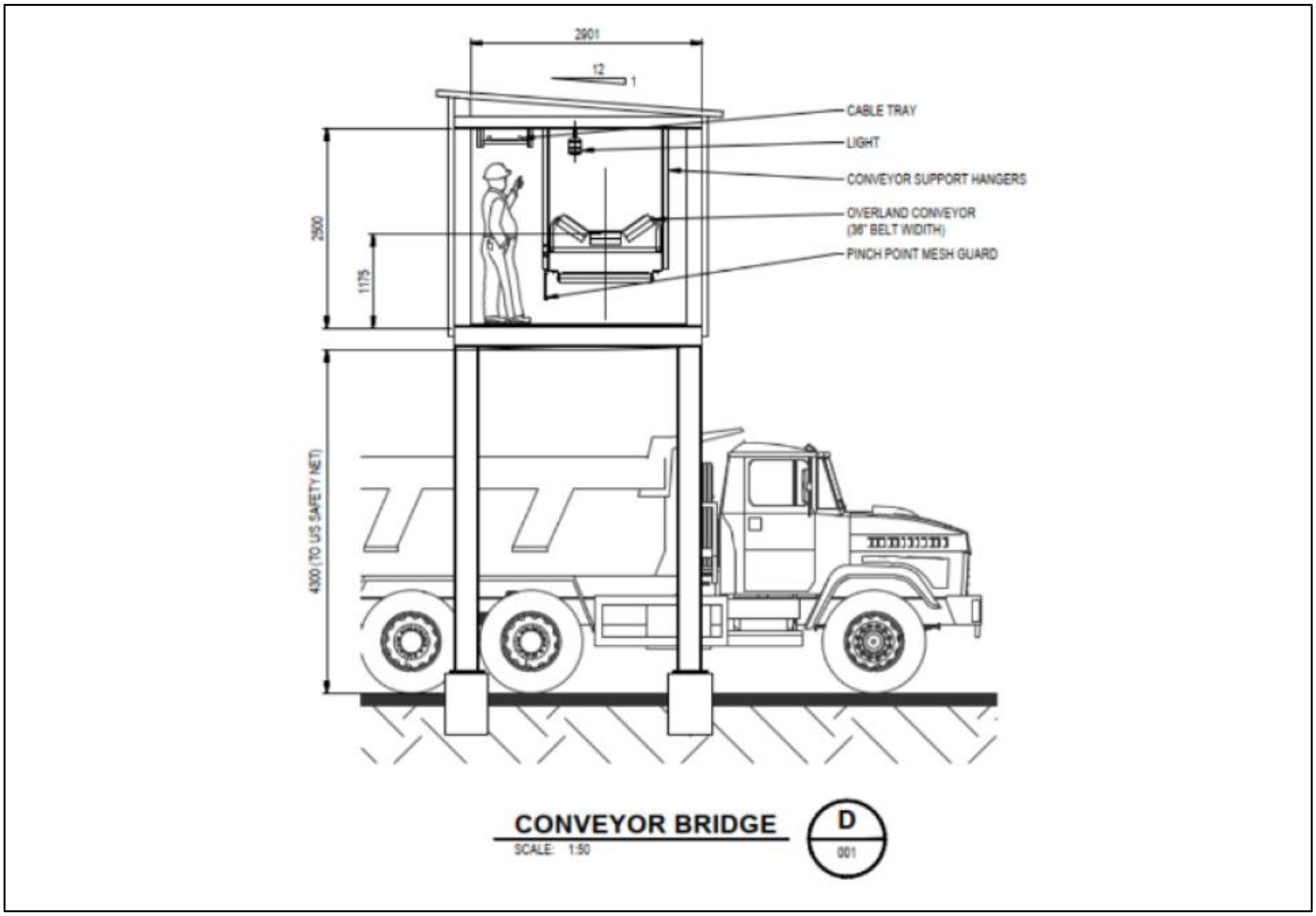



*Figure 2.22: Enclosed Overland Conveyor Bridge Cross-sections*

### 2.5.4 Turf Point Facility

Planned modifications to Existing Storage and Loading Facility

The existing Turf Point facility is located in St. George's, approximately 2.25 km to the northeast of the Project's proposed surface mine site facilities. The facility is owned by a third-party and is currently utilized by Atlas to ship gypsum (approximately 150,000 to 200,000 dmt per year) from its Ace gypsum quarry in Western Newfoundland to markets in North America. Some of the main components of the existing Turf Point storage and loading facility that are relevant to Project operations include (Figure 2.23):

- a large, graveled dockside area of approximately 7,000 m2
- a large, steel-clad aggregate storage building of approximately 50 m x 65 m, with an estimated capacity of approximately 12,700 t (if it was to be used for salt)
- outdoor aggregate storage area
- a conveyor system connecting the storage facility and the main port ship-loading terminal, with

- Seven draw points (one inside the building and six under the outdoor storage) feeding onto a single reclaim conveyor feeding the ship loader, and
- Ship loader and 36 inch wide conveyor within the structural steel trestle with a loading rate of nominally 1,000 tph

The storage and conveyor facilities 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 ceased operations. The conveyor system at Turf Point is operational and recently used to load gypsum for shipping.

The Project will involve a number of additions and modifications to the existing storage and conveyor systems to enable them to export rock salt from Project operations (Figure 2.24 and Figure 2.25). The following key changes are proposed:

- 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;
- Refurbish the existing ship loader including replacement of corroded steel members, sand blasting and coating as required, and
- Replace the existing load-out conveyors with wider conveyors (42 inches vs. the existing 36 inch wide equipment) to allow the conveyors' speed to be reduced and improve equipment functionality and reliability.


*Figure 2.23: Turf Point Storage and Loading Modifications*

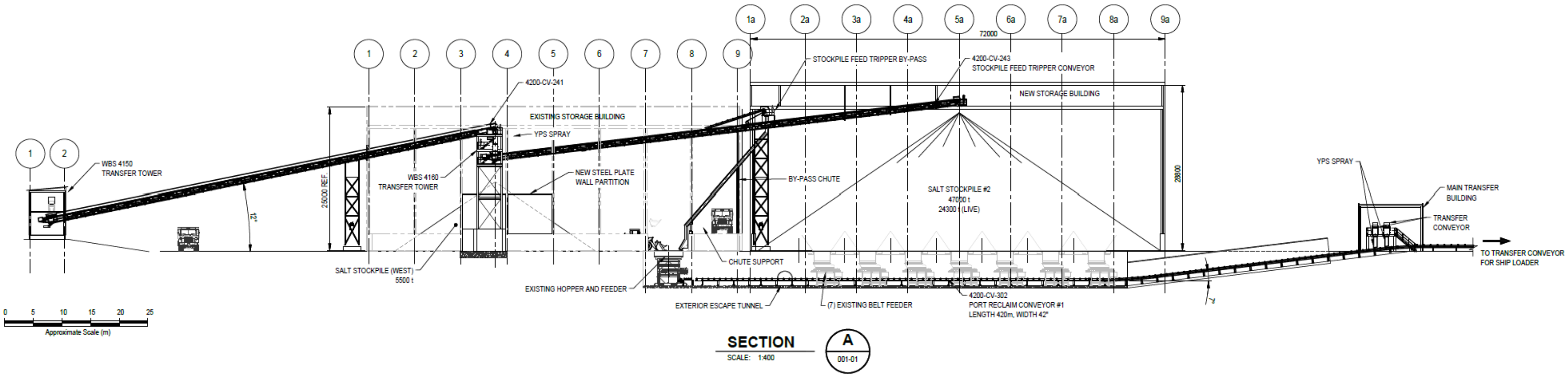


*Figure 2.24: Proposed Storage and Loading Modification*

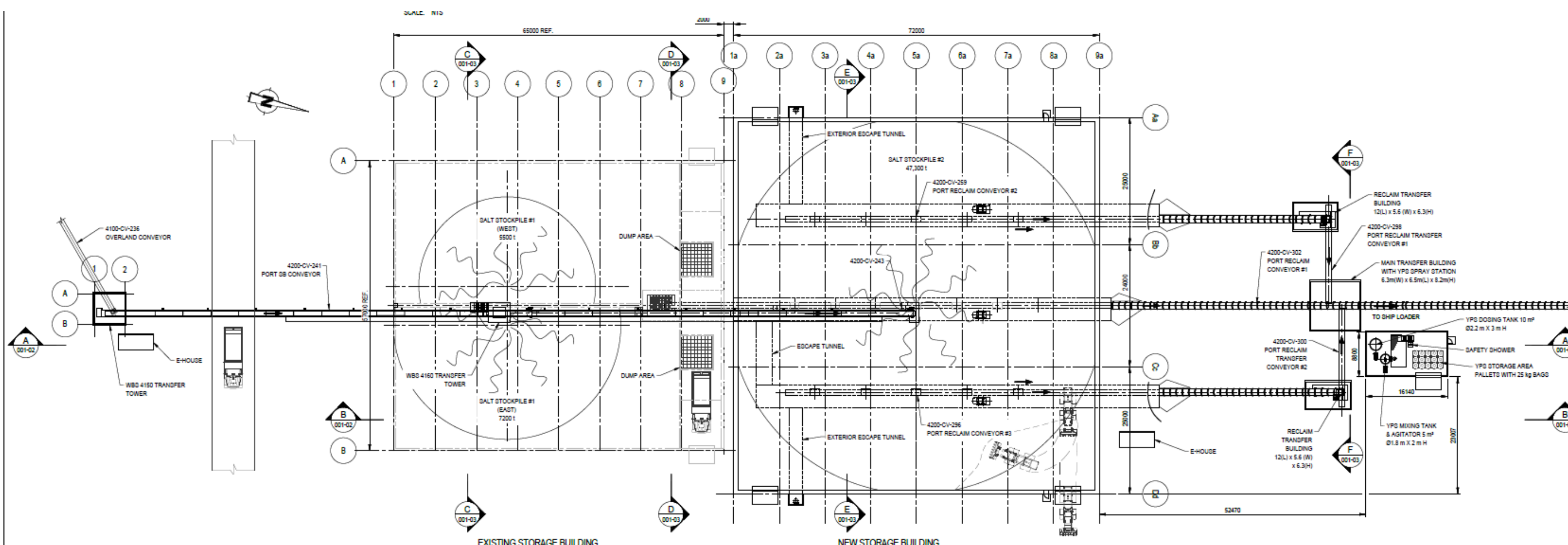


*Figure 2.25: Proposed Storage and Loading Modification – Plan View*

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.

EXISTING TURF POINT MARINE TERMINAL

The Turf Point Marine Terminal is an existing port, visible in the updated satellite imagery from June 2023 (Figure 2.26). This existing terminal will be used as is, with no required or planned marine or in-water side alterations. The marine terminal is capable of loading Handymax bulk ship carriers (40,000 to 50,000 deadweight tonnage (DWT), Handy bulk ship carriers (less than 40,000 DWT), as well as barges carrying nominally 10,000 DWT. The port has a series of five concrete caissons extending into Bay of St. George's connected by a structural steel trestle. 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. At present, vessels up to 225 m long, 32.26 m in beam and an alongside depth of 10 m can be accommodated at the port facility.


*Figure 2.26: Existing Turf Point Marine Terminal Infrastructure*

### 2.5.5 Ancillary Infrastructure and Facilities

The following section discusses the ancillary facilities and infrastructure components required for the Project, including: access roads, transmission lines, water and sewerage systems, the potential construction camp and its associated services, and temporary laydown and storage required during construction. Micro-siting of the access roads, transmission lines, and water and sewerage will occur during engineering design. As such, the area along each of these routes is currently defined with a 100m buffer to allow the required micro-siting.

#### Access Roads

The main mine site access will be from Steel Mountain Road (Figure 2.27). This compressed gravel surface road will be approximately 1.3 km in length, with an estimated width of 12 m. The access point from Steel Mountain Road has been sited to ensure that required visual line-of-sight in each direction will be available for safe exit and entry off Steel Mountain Road. Additionally, the road maintains a minimum 250 m distance from existing residential housing. This new road will be the main access route to the Project site during both construction and operations for the transport of personnel, materials, and supplies, and for eventually trucking salt to the local Newfoundland market. Appropriate signage will be installed indicating speed limits, stops, cautions, and others as required. There are currently no plans for lighting to be installed along the access road.

The main site access runs from approximately 81 m elevation from Steele Mountain Road and is generally downslope to 60 m elevation at the site entrance. The main access road does not cross or interact with any identifiable streams, ponds or lakes. The main site access does cross a large wetland complex that exists east of the mine surface site (Section 3.1.3 for further details). The access road will have drainage, culverts and ditching as required, which will be further defined through detailed engineering and design and permitting, and in consultation with the Water Resources Management Division. Atlas recognizes the various permits required under Section 48 of the Water Resources Act for work within 15 m of a wetland or waterbody, water discharge and dam design (Appendix A) and will consult with the Water Resources Management Division during the detailed engineering phase of the Project and prior to construction.

A secondary access road will be established from the historical haul road (Flintkote Road) and along the planned conveyor route at the north side of the Project (Figure 2.27). This access will be an approximately 300 m long gravel road from the existing service road to the limit of the mine site and will travel another 250 m to the limits of the box cut where the declines exit the mine. It will extend from an elevation of 28 m at the service road, to an elevation of 43 m as it enters the mine site. This access road will be approximately 7 m wide, suitable for maneuvering heavy machinery, and will provide additional access for construction. During operations, it will be used for conveyor maintenance purposes only. The secondary access route from the haul road to the mine site does not cross or interact with any identifiable streams, waterbodies or wetlands.

A third site access will be constructed along a planned utility corridor where potable water and sewage pipelines will connect the Project to the town's existing infrastructure. This access route will be approximately 475 m long, and will be established to facilitate earthworks and pipelines for the water and sewer lines. This road is not expected to be regularly used once the pipelines have been laid, buried, and become operational. The access route will run from an elevation of 41 m at Hayes Lane southwest to an elevation of 53 m where it will join to the mine site. It likewise does not cross or interact with any identifiable streams, lakes, or ponds. This access route and the associated water and sewerage lines will cross a small wetland area. Atlas recognizes the various permits required under Section 48 of the Water Resources Act for work within 15 m of a wetland or waterbody, water discharge and dam design (Appendix A) and will consult with the Water Resource Management Division during the detailed engineering phase of the Project prior to construction.


*Figure 2.27: Planned Ancillary Facilities and Infrastructure*

### TRANSMISSION LINE

Electricity will be supplied via a new 66 kV wood-pole transmission line that will run adjacent to (on the north side of) the new main access road from Steel Mountain Road (Figure 2.27). The line will connect to the existing Newfoundland Power line, without the need to connect to the nearby substation on Muises Lane. The new transmission line will run to the onsite substation (discussed previously) where the power will be stepped down from 66 kV to 13.8 kV for onsite distribution and use. Atlas is in communication with Newfoundland Power, and they have confirmed there is capacity on the 66kV line along Steel Mountain Road. The details of the connection into this line are currently being reviewed by the Protection and Control department of Newfoundland Power and will be refined and included in detailed engineering and design.

The transmission line route does not cross or interact with any identifiable streams, lakes, or ponds. However, the transmission line route will cross the wetland complex that is southeast of the mine surface site (discussed further in Section 3.1.3) Atlas recognizes the various permits required under Section 48 of the Water Resources Act for work within 15 m of a wetland or waterbody, water discharge and dam design (Appendix A) and will consult with the Water Resource Management Division during the detailed engineering phase of the Project prior to construction.

As indicated previously in Section 2.4.2 the implementation of the transmission line and the connection to the mine site substation may require that a system impact study be completed by Newfoundland Power. The Project will require the approval of the Public Utilities Board, facilitated by Newfoundland Power.

### WATER AND SEWERAGE SYSTEMS

Water will be supplied to the Project through a planned interconnection to the Town of St. George's water supply system (Figure 2.27). Discussions with the Town Manager have indicated that the water system can accommodate the water requirements of the Project. It is currently reported that the water supply has capacity to pump 150 gallons per minute or 216,000 gallons per day. Improvements to the water supply being planned now by the Town of St. George's include improvements to an existing ground water well and upgrades to the SCADA system for pump operations. These upgrades are expected to provide an additional 80 to 100 gallons per minute of drinking water. It is estimated by the Town Manager that these improvements will bring the existing water supply capacity to approximately 360,000 gallons per day. There is further opportunity to add another groundwater well with an expected yield of 100 gal/min that would raise the Town's water supply capacity to approximately 500,000 gallons per day. The Town of St. George's current water use is reported to be approximately 136,000 gallons per day. It is estimated that the Project will require between 8,500 and 10,200 gallons per day for life of mine. If required, the temporary construction camp will require between 12,500 and 15,000 gallons per day for the four and a half years of construction. This equates to an approximately 10% increase in demands on the system during the 4.5 year construction phase, which will reduce to approximately ~ 8% increase during operation of the mine. Analysis and discussions are continuing with the Town of St. George's to confirm the capacity of the system to accommodate the Project's water requirements, both in general and to ensure that any such interconnection will not have negative effects on distribution system pressures within the Town.

The mine will connect to the Town's water supply via existing lines on Parsons Road, with a water line of suitable size and material being installed. 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.

A fire protection system will be installed to service the onsite surface 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.

Atlas will continue to work closely with the Town of St. George's to ensure that the Projects water supply requirements do not interfere or hinder the ability of the Town to supply water to its citizens. During future detailed engineering design of the Project a thorough assessment of the Town's infrastructure will be completed including water volume, quality, and distribution systems pressure capacity. If upgrades are identified that are feasible and beneficial to both the Project and the Town, then Atlas will invest and work with the Town to implement these, thereby allowing the Project to use the Town's expanded water supply. Alternatively, and if the preferred option of connecting to and using the Town's water supply proves infeasible, Atlas will drill one or more drinking ground water wells as a potable water source during construction and operations. A Water Use License and a Non-domestic Well permit will be applied for as part of this option (Appendix A).

Similarly, the Project is proposing to connect directly to the Town's existing sewage system for the disposal of sewage and wastewater from the administration building maintenance facility and mine dry. The sewage lines will follow the same route from the mine site to the town septic system on Parson Road. Sewerage from underground facilities will use truck pump-outs to collect and carry sewerage to the Town's sewage disposal system. Over the life of the Project, and based on the planned operational workforce of 169 persons on site, an estimated 7,500 gallons per day (~33 m3/day) of sewage will be produced. Atlas will continue to work closely with the Town of St' George's to ensure that the Project's sewage disposal requirements do not interfere or hinder the ability of the Town to provide this service to it its citizens. During future detailed engineering design of the Project a thorough assessment of the Town's infrastructure will be completed including the capacity of its sewage system to accommodate the Project's requirements. If the existing sewer infrastructure cannot accommodate the additional requirements of the Project, Atlas will construct and operate its own waste treatment system on site for use during construction and operation, with applicable permits. The relatively small change in sewage volume is not expected to affect sewer infrastructure or represent a material change to the marine environment of Flat Bay. There is no requirement for process water to process salt, given that the processing system consists of conventional dry crushing and mechanical screening and separation. A small amount of water will be used for dust control by the continuous miners and 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.

### TEMPORARY CONSTRUCTION CAMP

As noted previously, various options for the accommodation of the non-resident workforce are being considered, and have been brought forward for EA review and approval, including: 1) the establishment and operation of a temporary construction camp for 200 to 250 persons during construction, to be located along the proposed access road to the mine site near Steel Mountain Road; 2) housing the non-resident workforce entirely in existing local accommodations, and 3) a "blended" approach, utilizing a combination of both local accommodations and a smaller camp that will accommodate a portion of the non-resident workforce.

If required, the temporary accommodations camp would be placed at the southern edge of the main access road as it exits Steel Mountain Road (Figure 2.28). The camp will be made up of accommodations modules that will each house between 25 and 50 people. Each module will provide sleeping, lounge and washroom facilities. Additional modular units will be used to provide eating and assembly areas. It is estimated that the construction camp will be approximately 400 feet by 500 feet and will be placed within the construction camp and parking area defined in Figure 2.28below.

### SERVICES FOR TEMPORARY CONSTRUCTION CAMP

Each of the modular buildings set up in the temporary camp (if required) will require power and water and sewer services. It is anticipated that power for the construction camp will be from the Newfoundland Power transmission line adjacent to the camp location. Alternatively, temporary diesel generators can be used that are options with the modular buildings. Equipment used for construction, including excavators, drill rigs, earth movers, and similar will be diesel powered.

Similarly, if feasible, water and sewer services from the Town of St. George's will be used and installed at the closest tie in point either on the western side of Steel Mountain Road, or at Muises Lane (Figure 2.28).

### TEMPORARY LAYDOWN AND STORAGE DURING CONSTRUCTION

Laydown and storage required during construction of the surface mine site will occur in two areas, one adjacent to the south of the main access road as it enters the mine site property, and a second to the northeast corner of the mine site property (Figure 2.28). These areas will be used for storage of equipment and materials, temporary storage of organic and soil materials removed from the mine site, and other related construction activities.

The temporary laydown and storage areas will have organics and topsoil (overburden) removed and have a prepared foundation of crushed rock and sand base to match the design. The onsite laydown area (laydown at the northeast corner of the mine site) will be inside the berm around the mine site and will be ditched where appropriate to adhere to the mine site water management plan. The laydown that is depicted outside the mine site itself (adjacent to the access road at the mine site entrance) will be designed to ensure offsite water remains outside the mine site area and will be integrated into the berm and ditch design as appropriate. The offsite laydown area during construction will be limited to inert uses to ensure no effects to the surrounding environment.

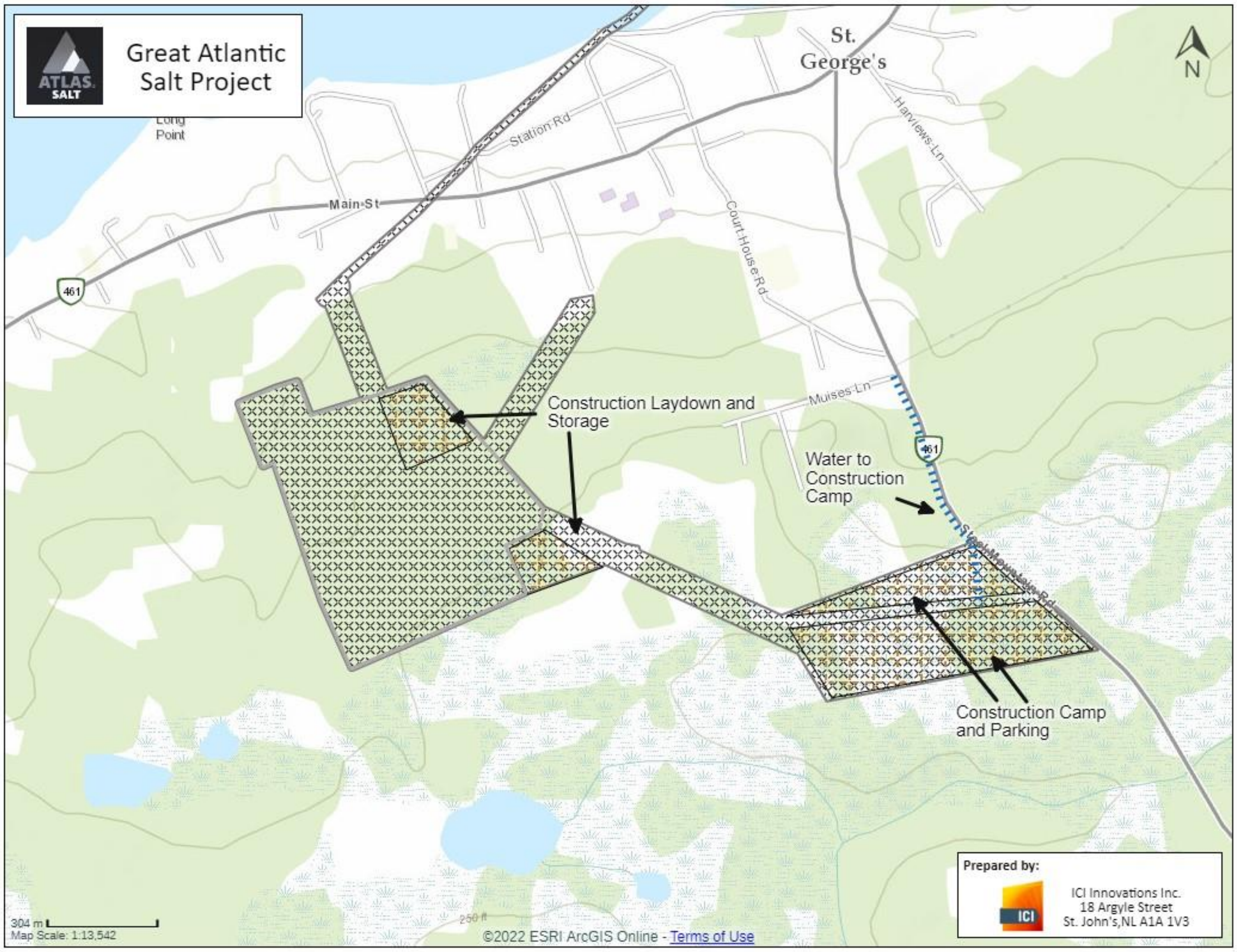



*Figure 2.28: Construction Facilities and Infrastructure*

## 2.6 Construction

Following release from the EA process, and the receipt of formal corporate approval and all other required regulatory approvals and permits, the Project would commence as early as Q4 2024 with construction permitting, detailed engineering and construction procurement and would extend to Q4 2029 upon reaching commercial production.

Atlas will develop specific guidelines and protocols for Project construction activities, based on industry standards and best practices. General construction activities for the Project will include:

- Site Preparation: Includes cutting and clearing of vegetation and removal of organic materials and overburden over the surface mine site and offsite infrastructure areas. The existing Turf Point Facility and the existing conveyor route will require minimal site preparation activities. Site preparation also includes the development of construction phase water and erosion control (e.g., ditching, settling pond), the development of lay-down areas, and the establishment of a temporary camp (if required).
- Installation of Surface Mine Site infrastructure: Includes transportation of equipment and construction materials to the surface mine site, placement of concrete foundations, and construction of the box cut, stockpiles, buildings, settling pond, and onsite roads
- Construction of the Overland Conveyor: Including concrete foundations and construction of the enclosure and covered conveyor, and the required conveyor tunnel, two conveyor bridges and the switch stations.
- Construction of the Underground Facilities: Including the 2 access declines into the underground mine, the processing facility, and the installation of all ventilation, power and incline conveyor systems.
- Upgrades and Modifications to the Turf Point Storage and Ship Loading: including construction of an additional storage building and upgrades to the ship loading infrastructure.

### 2.6.1 Site Preparation

Site preparation begins with defining the boundary and surface plans to demarcate site features and areas for clearing and earthworks activities. Any vegetation and other ground disturbances within the Project footprint will need to be removed. Vegetation clearing and other ground disturbance activities across the Project footprint will be confined to only those areas where it is necessary for Project development. Limits of clearing will be marked in advance, and only designated areas will be cleared. Standard procedures for the removal of trees and brush will be employed, and the Project construction environmental protection plan implemented. While most of the site has minimal forest cover any merchantable timber will be salvaged.

All clearing and removal of overburden will be completed in compliance with relevant permits and regulations. Organic material will be collected and stockpiled on its designated organic stockpile for reuse during Project reclamation and at the end of the operations phase to enable re-vegetation. Standard and proven practices will be used for the demarcation of active work zones and for erosion and sediment control. The construction development plan will include a water management and erosion control plan to be completed in consultation with and compliant with all government authorities, including the Mines Division of NL IET and Water Resources Division of NL ECC.

Development of the waste rock and organic stockpile areas will include clearing and grubbing over the footprint of the stockpiles to provide suitable foundation conditions in advance of placing the respective materials. Placement of the waste materials will begin at the low point of the disposal areas and will proceed in a series of lifts as the development of the mine dictates. The organics will be separated from the waste rock and stockpiled for planned future use.

There will be one major laydown area (Figure 2.11) that will serve for receiving and storing construction materials and equipment. Additional laydown areas may be defined for receiving and storing other construction materials and equipment.

The access roads and site roads will be constructed once all required permits and approvals are obtained. Some roadwork will be established during pre-stripping and other early works to allow for the movement of personnel and equipment during this initial part of the construction phase. Access road construction will include tree clearing and brush removal along the approved routes and the movement and placement of materials to establish the roadbed and its gravel surface. The planned main access road and third access adjacent to the water and sewerage lines cross wetland areas. As such, Atlas will work with the Water Resources Management Division through detailed engineering and design and the permitting process (under Section 48 of the Water Resources Act) to ensure water crossings, drainage, and culverts are designed and installed as per requirements and all permitting.

Materials for building the new access road will be obtained from waste material generated during site preparation activity, with additional material being sourced from existing and approved off-property quarries. Existing sites and sources will be used wherever possible and practical, and any new quarries or borrow areas will be established and operated in compliance with relevant permits and guidelines.

Construction of the accommodations camp (if required) and related water, sewer and power services will occur coincident with the surface site preparation activities defined above. If established, the camp will be present throughout the construction and commissioning phase. It will be constructed using modular temporary buildings that require site preparation and suitability engineered surface to support the modular buildings. Upon completion of the construction and subsequent commissioning phase the temporary buildings will be removed. Discussions are underway with the Town of St. George's regarding the feasibility of using municipal water and sewer infrastructure, and with Newfoundland Power for supply of electrical power.

### 2.6.2 Installation of Surface Mine Site Infrastructure

Standard materials and construction techniques will be used for the development of the site buildings and infrastructure. Following site preparation, the laying of foundations, assembly and erection of buildings, installation of electrical systems and other utilities, and the receipt and installation of equipment and instrumentation will occur.

Geotechnical design will occur during the engineering phase to support the associated loads for the stockpiles and buildings. Proper drainage and terracing will be implemented so that surface water will be contained within the surface mine site and will run off into the onsite settling pond. The construction sequence will allow for development and progressive rehabilitation in sections.

Based on geological data collected to date it is not anticipated that any salt ore will be encountered during site works excavation or excavation of the box cut or the declines.

### BUILDINGS AND SITE ROADS

Permanent mine site building structures will be made of steel with pre-painted steel cladding. Concrete foundations will likely consist of spread footings, although more detailed geotechnical surveys will determine if piling will be required in some areas. Secondary buildings will be of pre-engineered or prefabricated type when applicable. Temporary buildings and warehousing will be of “sprung structure” or “megadome” type. At this stage, Atlas is assuming that building foundations will be constructed on dense, natural glacial tills, bedrock, or with structural fill. Surficial organic materials will be removed from the footprint of the Project structures before placing foundations or structural fills.

### BOX CUT

The process begins by creating the “Box Cut”, which is a surface-level excavation that acts as the entry and exit point of the underground mine. The total boxcut excavation is approximately 140 m wide and 200 m long and includes gradual 25-degree overburden cutbacks to transition to the surrounding grade level (See previous Figure 2.16). The box cut will be 26 m deep in total, where the top 12 m will be in soil and the next 14 m in rock. The estimated total volumes of boxcut overburden and rock are 184,000 m3, and 25,000 m3, respectively. The excavation is characterized by a 16% grade sloping downward in the direction of the access declines, the remaining three faces steeply inclined according to the material characteristics. There will also be a 5.5 m catch bench at the soil/rock interface. The box cut design uses 30° slope angles in soil material and 60° slope angles in rock material.

The excavation begins by removing the soil overburden with mechanical excavation techniques to expose the bedrock. This is expected to occur over a series of three 4m deep excavations or “benches”. With the bedrock exposed the excavation will continue into the rock utilizing drilling and blasting excavation techniques. To reach the requisite depth in rock, it is planned to execute three engineered blasts or “benches” to fragment the rock for excavation to the prescribed depth and grade. At each bench, ground support will be installed, and a combination of rockbolts, welded wire mesh and shotcrete will be used to stabilize the walls of the excavation.

Prior to installing the boxcut portal cover, each decline will be advanced 20m and the ground support, including the #7 rockbolts, lattice girders, and two layers of shotcrete, will be applied. Boxcut portal cover work will commence once the ground and initial advances of the decline are adequately supported. Before backfilling occurs, an engineered cover will be installed to extend the declines from the bottom of the box cut to the original surface grade. A primary fan intake and airlock doors will be incorporated into the fresh air decline cover. The portal access road will be levelled and graded to ensure installation begins with a smooth base. Surveying will be completed, and a pre-cast concrete footing will be installed using #7 2.4 m long rebars. The boxcut portal cover will be assembled in sections on the ground and erected using a telehandler or crane. As each section is installed to its neighbor, the bolted connections will be completed and torqued to the manufacturers design specifications.

The decline construction will use the “drill and blast” technique. This excavation technique uses engineered, controlled explosives to break rock for excavation using equipment such as drills, loaders, scooptrams and haul trucks to excavate the decline further into the earth. As the decline progresses there are engineered ground support systems installed to reinforce the surrounding rock and prevent collapses. Engineered ventilation systems will be installed as the decline construction advances, to ensure a constant flow of fresh air is present.

#### SETTLING POND

The settling pond dimensions and depth are designed to accommodate the volume of water anticipated from the mine site area and allow sediments to settle out effectively (Figure 2.14 and Figure 2.15). The site for the settling pond will be grubbed and organic material moved to the organics stockpile. A liner, made of impermeable geotextile materials, will then be installed to prevent seepage and ensure that the pond retains water.

The network of ditches throughout the site will discharge into the settling pond (Figure 2.14). Surface runoff from the terrace where the industrial and administration buildings will be built will also be collected and directed to the network of ditches, ultimately reporting to the settling pond

#### STOCKPILES

Each of the three stockpiles will be developed on stable and leveled ground that will be created in layers to enhance stability. All stockpiles will have ditches that direct any water flow to the settling pond to allow for solids to settle out of suspension and for monitoring before discharge. The preproduction salt stockpile will be lined, ditched and will be covered with a tarp to minimize rainwater contact with the salt ore. Water from all site ditches will be directed to the settling pond.

### 2.6.3 CONSTRUCTION OF OVERLAND CONVEYOR

The overland conveyor route requires site preparation from the mine site to the existing haul road (Flintkote Road). The route along Flintkote Road that passes through the Town of St. George’s to Turf Point has previously been used as a conveyor route. This minimizes the construction activity relating to surface preparation that will be required along this section.

Following the limited site preparation activities mentioned above, conveyer foundations will be constructed, followed by the support structure. The installation of mechanical and electrical components and systems will then follow, with regular checks ensuring precise alignment.

To minimize disruption in the Town of St. George’s and to its residents over the life of mine, there will be construction work required at three intersections in St. George’s:

1) At the crossing of Main Street, the conveyor will pass through a tunnel under the road;
2) There will be a bridge crossing at the intersection of Station Road and Beach Lane; and
3) A second bridge crossing will be established near the municipal marina at Court House Road

These conveyor systems will be installed with care to ensure that they are aligned and leveled at any connections or splices. This is to prevent issues such as belt misalignment and unnecessary wear.

### 2.6.4 Construction of Underground Facilities

#### Access Declines and Internal Declines

Following site preparation and box cut construction on the surface, construction of the two declines into the underground mine will begin. This will require drilling, blasting and excavation of waste rock as the decline progresses. The waste rock that is mined will be stored in the designated waste stockpile area described previously. Following the development of the declines, the capital development will continue into the salt deposit. This salt removed during this phase will be stored in a designated pre-production stockpile for testing and processing.

As described previously, the declines will each have an open area of 42 $m^2$ to accommodate the ventilation airflow requirements. They will be approximately 1,400 m long to the 240 Level (nominally 240 m below surface) where the processing plant and related infrastructure will be located, and a further 550 m in length to the start of the 320 Level mining area. To manage water inflows in the access declines there will be four sumps, each with pumps to move water to surface. Each decline has a sump approximately halfway down and at the bottom of the declines before the waste rock and 1-Salt interface. Underground roadways will incorporate ditching to direct runoff into the decline sumps. The floor of the portal covers on the surface will be raised above the nearby topography to prevent runoff from entering the declines.

The decline cross section profile was designed to meet health and safety, stability, operational, and constructability requirements. Minimum clearances are required to 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 and Labrador *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.

#### Incline and Transfer Conveyors

The underground conveyor installation begins with a geotechnical evaluation to ensure the subsurface is suitable for the loading of the conveyor. When required, there will be staging or scissor lifts used where suitable, in addition to the drilling and installation of necessary anchors and hangers. The conveyor sections will be assembled on the ground and once ready are lifted into place, with checks made to ensure the correct alignment and tension. Once the conveyor tracks are installed the electrical and control systems are to be installed. Construction culminates for this component with extensive testing and then commissioning.

#### Processing Plant

The processing plant will be constructed in an underground room, located on the first level of the mine and the bottom of the surface declines, on the 240 Level. The excavation will be nominally 20 m wide, 187 m long, and up to 20 m high. Once the room has been excavated, installation of the processing infrastructure will begin. The processing plant utilizes a very simple, conventional dry crushing and screening process with three stages of crushing and four stages of screening, as described in a later section.

### 2.6.5 Upgrades and Modifications to the existing Turf Point Storage and ship loading

The existing Turf Point Marine Terminal does not require any marine-side modification, improvements or upgrades. Planned construction activities at Turf Point are related to the upgrade of the existing ship loading capacity and the improvement and extension of on-land storage. There is no large-scale site clearing required to make the requisite upgrades. Planned construction-related activities for the facilities at Turf Point include:

1) The construction of a new storage building with a capacity of 47,300 t adjacent to the existing storage building;
2) Construction of reclaim tunnels, feeders, and conveyors underneath the new building to feed salt to the existing ship loader;
3) Install YPS make-up, dosing, and addition equipment; and install salt sampling equipment; and
4) Refurbishment of the existing ship loader, including a detailed assessment of the structural steel condition, replacement of corroded steel members, sandblasting and coating, and replacement of the existing load-out conveyors with wider conveyors (to 42 inches vs. the existing 36 inches).

### 2.6.6 Construction of Ancillary Components

#### Water and Sewer

Pipelines for the water and sewage interconnections with the Town infrastructure will run below ground, the installation of which will follow best practices. Trenches will be excavated to connect the appropriate lines, and once the lines are laid, will be backfilled.

#### Power to Site

As indicated previously, Atlas is in discussions with Newfoundland Power regarding interconnection to the existing 66kV transmission line along Steel Mountain Road, which will require construction of a new transmission line to bring power from this interconnection directly to a new substation on the mine site property. Construction activities would include site clearing and levelling, excavation and installation of wood poles and supporting structures, and the installation and testing of the electrical equipment.

#### Access Roads

The main access road, connecting the Project site to Steel Mountain Road will be cleared, graveled and installed using industry standard techniques and best practices to a width to provide safe 2-way travel.

All additional mine site roads will be created using gravel and will follow all industry standards. All required permits will be acquired prior to construction.

## 2.7 Operation and Maintenance

The operations phase of the Project will commence upon completion of construction and associated commissioning and is expected to extend for a period of at least 34 years. Initial (capital development) mining will commence in Q5 2025 and extend to approximately Q4 2029. Following the installation of underground infrastructure, mine production will ramp up to commercial production in Q2 2029.

The rock salt will be mined in the underground mine on production levels using equipment known as "continuous miners". The run of mine (ROM) material will be transferred from the continuous miners to the feeder/breaker on each production level via haul trucks. From here material is conveyed from the production levels to the processing plant 240 Level, using the internal conveyor declines. From the processing plant, the final salt product will be moved up the main conveyor decline to the onsite salt storage building at the surface mine site. The covered overland conveyor will transfer the salt from the onsite salt storage building to storage at the Turf Point salt storage buildings, where it will then be loaded onto ships twice a week for delivery to market. Figure 2.29 depicts the overall operations process from mining through to ship loading. The following sections describe the various operations that will occur throughout these stages, including those associated with the underground mining operation, underground processing plant, the salt conveyor system, and the Turf Point storage and loading operations.

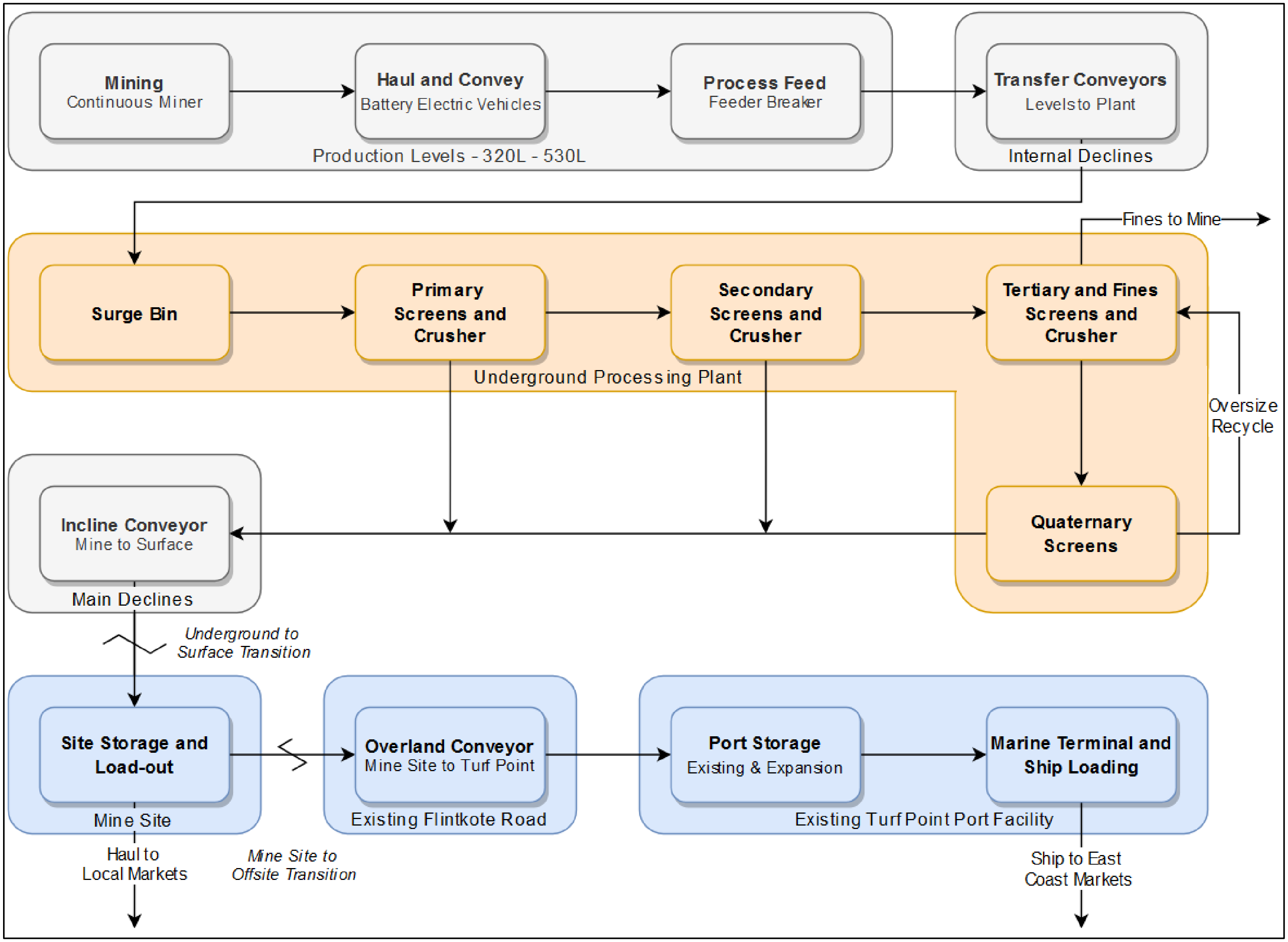



*Figure 2.29: Overview of Mine Operation Process*

### 2.7.1 Underground Mining

Within each of the underground mine's production levels, a square room and pillar mining method will be utilized for the Project. 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 (Figure 2.30). Rooms and pillars will be arranged in regular patterns and the pillars will overlay one another from level to level (Figure 2.31). Each mining level will be separated from the next by 15 m thick horizontal sill pillars. Roof and floor pillars, respectively eight metres thick and five metres thick, will be maintained between production excavations and non-salt material.

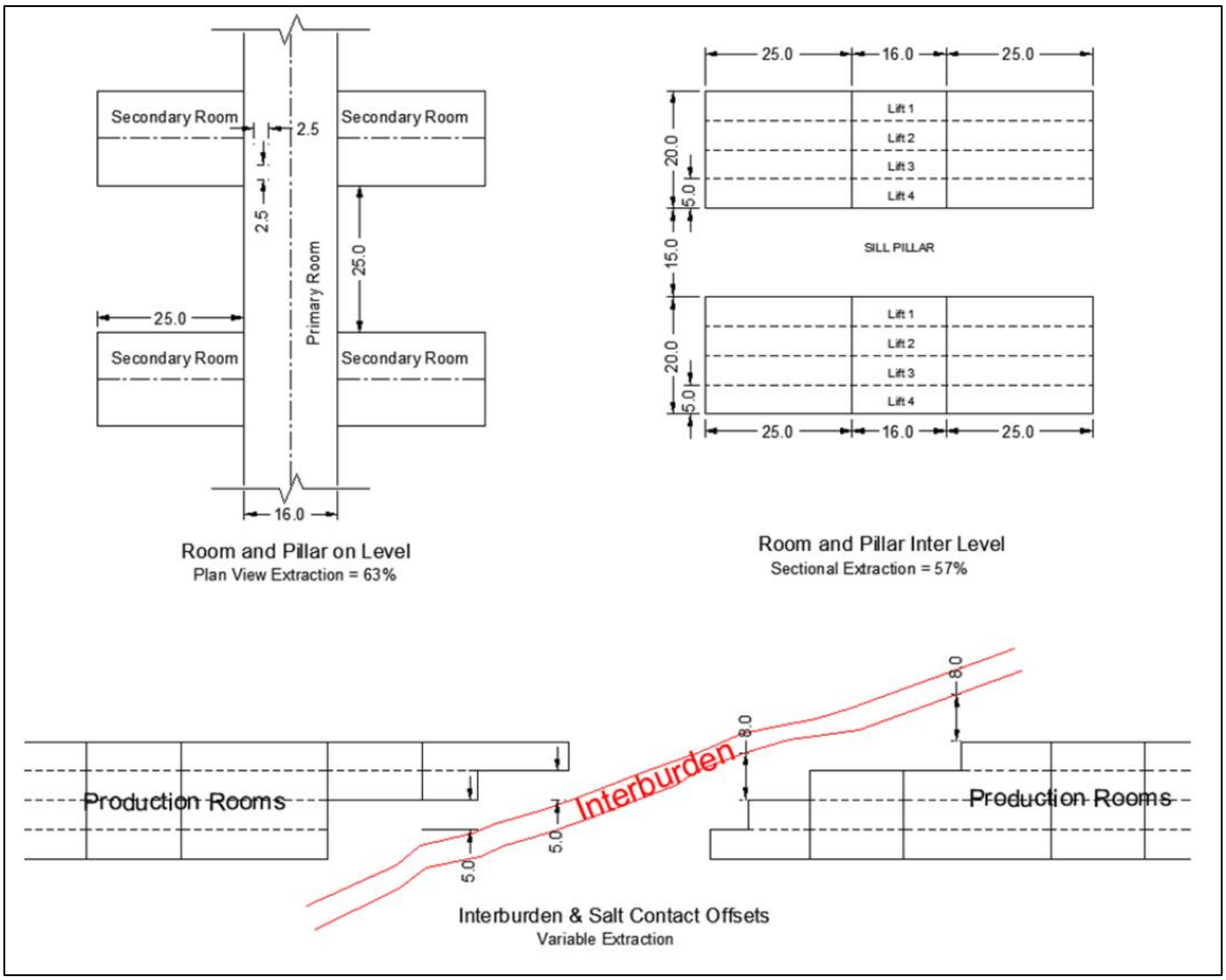



*Figure 2.30: Room and Pillar Underground Mining Offsets*

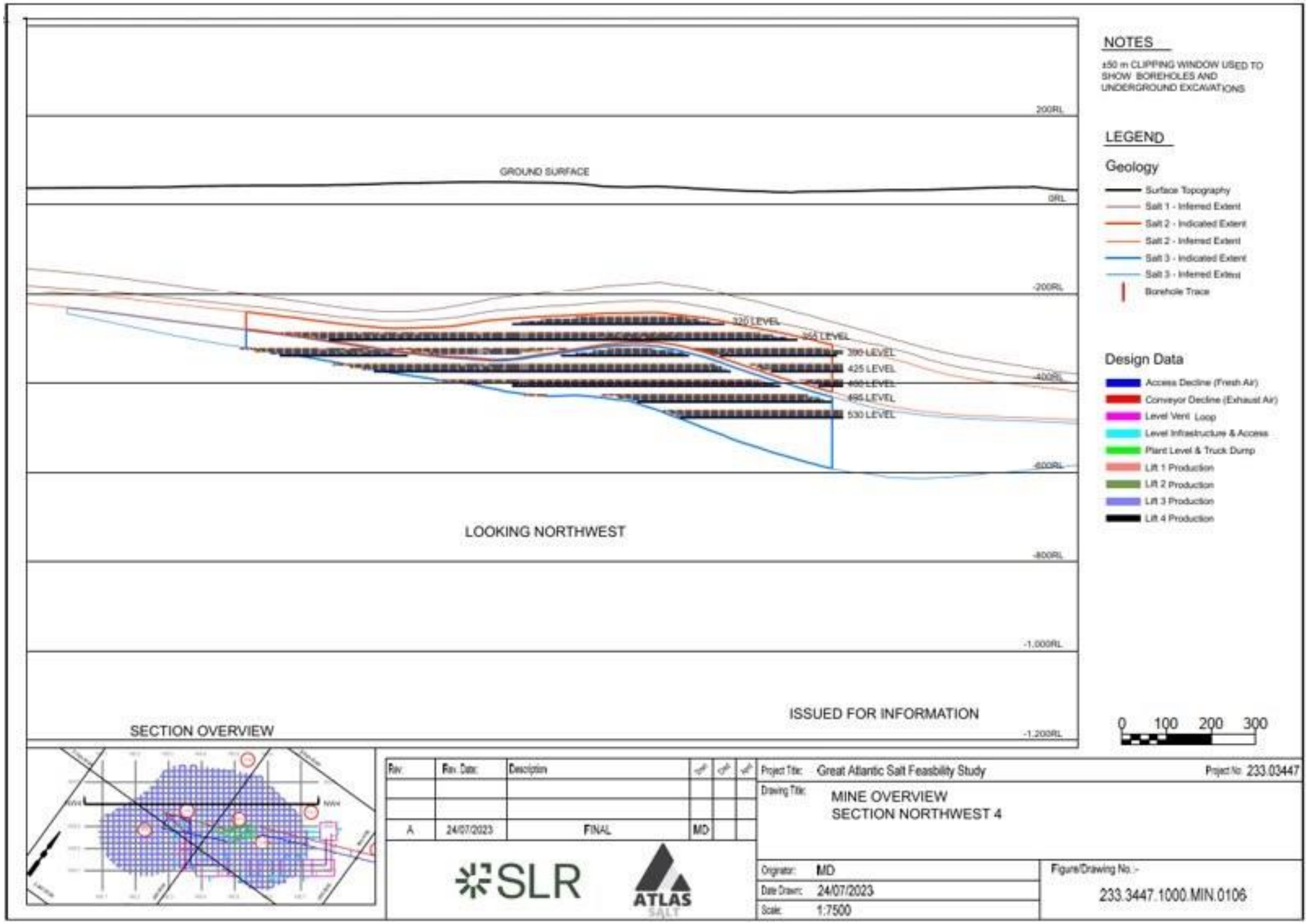



*Figure 2.31: Underground Mine Overview*

The mining equipment will include drum style continuous miners (CMs) (Figure 2.32) capable of developing a 6.7 m wide by 5 m high heading. Salt will be loaded directly into 50 t capacity haul trucks for transport to the infrastructure level, where a lump breaker will load the ROM material onto the transfer conveyor, or series of conveyors, that transports the material through the internal declines to the crushing and screening facilities at the processing plant (Level 240).

Initially, four haul trucks, two CMs, two rock bolt jumbos and a variety of service vehicles will be required. A third CM and an additional haul truck will be added in the first year of operations to support mine production and development. The mining mobile equipment will be mechanized using battery electric vehicles (BEV) to the extent possible.

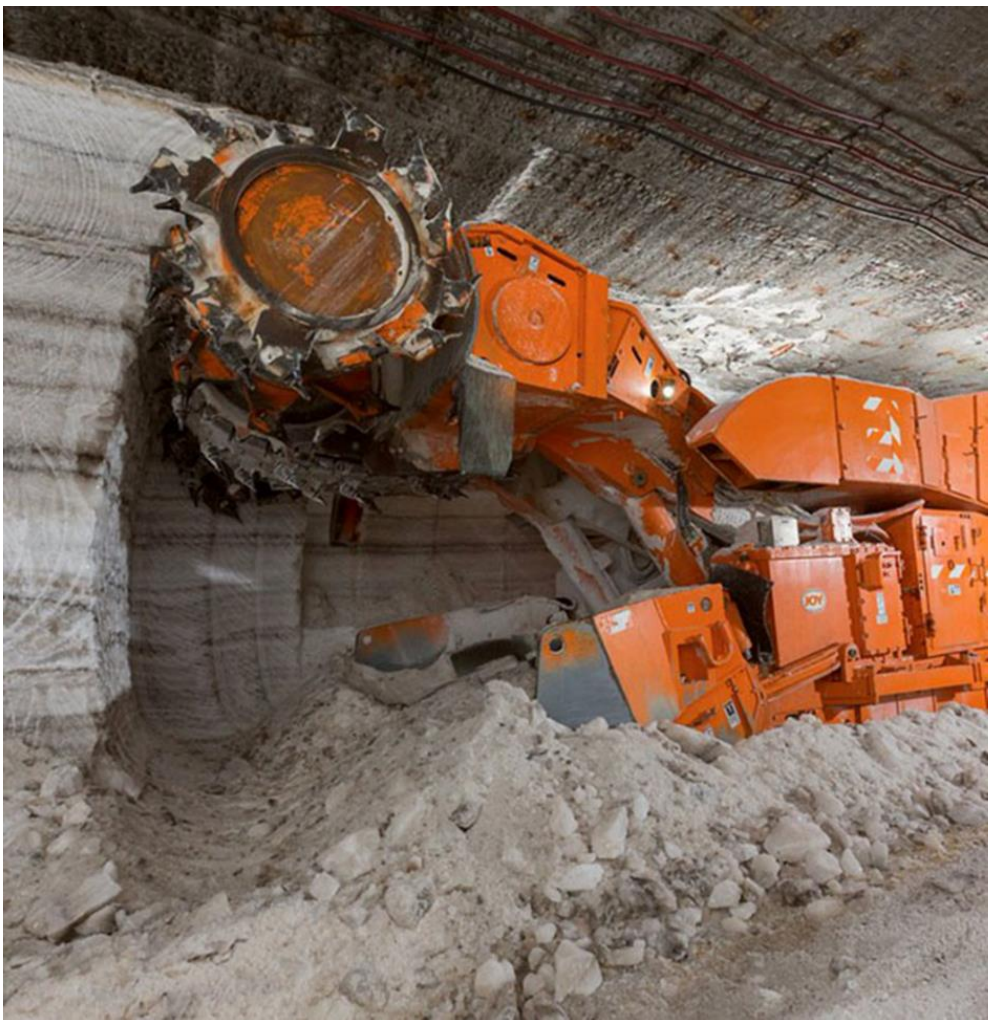


*Figure 2.32: Example of a Drum Style Continuous Miner*

The mobile equipment fleet will be maintained in a combination of two shop spaces, a surface shop located near the portal and an underground shop located between the processing plant and the first production level. The surface shop will be used for light vehicles and minor maintenance. The underground shop will be used for all the 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.

Electrical power will be supplied from a surface substation with feeds to the underground mine, underground plant, mine ventilation, surface offices, shops, and surface surge pile. Charging stations for the heavy equipment will be located near the main shops and then relocated at lower production levels as the mine is deepened.

The initial mine equipment list is presented in Table 2.3. The fleet is based upon the use of BEV equipment to the maximum extent possible. As noted, a third CM and a fifth haul truck will be added in the first year of operations to support mine production and development.

*Table 2.4: Estimated Initial Mine Equipment Fleet*

| **Equipment Type** | **Estimated Units** |
|---|---|
| Continuous Miner | 2 |
| Roadheader | 1 |
| Mine Truck | 4 |
| Load Haul Dump (LHD) Loaders | 2 |
| Scaler - Development | 1 |
| Scaler - High Back | 1 |
| Bolter | 2 |
| Supervisor and Tech Services Vehicle | 8 |
| Maintenance Truck | 6 |
| Boom Truck | 1 |
| Scissor Lift | 1 |
| Personnel Carrier | 1 |
| Cassette Carrier | 2 |
| Transmixer Cassette | 1 |
| Crane Deck Cassette | 1 |
| Personnel Carrier Cassette | 1 |
| Grader | 1 |
| Forklift | 1 |
| Skid Steer Loader | 1 |
| **Total** | **38** |

The production levels are anticipated to be dry and there is no evidence to indicate that there are any water bearing structures within these production levels. As such, there is no planned mine dewatering within the production levels. It is anticipated that the access declines within the near surface layers (red beds) will demonstrate some level of water seepage. Any ground water which enters the declines will be intercepted at its source and pumped (via four sumps each with two 1000 $m^3$/ day capacity pumps) from the mine to the surface.

### 2.7.2 Underground Processing

Salt from the mine will be processed to produce de-icing salt conforming to the American Society for Testing and Materials (ASTM) D632 specification for salt products used for road maintenance and construction. The standard provides specifications on delivery for salt content (minimum 95% NaCl ±0.5%) and size grading. 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. Customers typically expect a minimum concentration of 50 ppm in the case of the most commonly used anti-caking agent, yellow prussiate of soda (YPS). YPS is not considered toxic and is used as an anti-caking agent in food and beverages (Health Canada).

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. The plant and has been designed to process up to 4.0 Mtpa to allow for future expansions (requiring the addition only of a second tertiary crusher), although the initial production rate is 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. 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. The sodium chloride content of the finished salt product will be controlled by ensuring the blended material feeding the processing plant contains 95% or higher NaCl.

The salt will be transported to the receiving bin at the processing plant on the 240 Level. The receiving bin will have a capacity of approximately 80 tonnes. 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 (> 45 mm) 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) report to the fines screen. The final crushing stage (tertiary crushing) will be in a 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 will be no need 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 and if necessary 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 materials 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 number 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 incline conveyor that will carry the salt to the surface.

### 2.7.3 Salt Conveyor System

The incline conveyor system will transport rock salt from the processing plant to the surface site storage and transfer buildings. A small storage facility near the mine portals will allow for storage of approximately 11,700 t of salt which will be used to support production during downstream equipment maintenance, as well as for loading trucks by front-end loaders 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 conveyor system then carries the salt to port storage facilities and aboard ships for distribution. The system is designed to support the transportation of up to 4.0 Mtpa, with the initial plan of 2.5 Mtpa.

The overland conveyor will be approximately 2,665 m in length, extending from the mine site to the transfer station onto the port storage feed conveyor that carries the salt into the existing and new port storage buildings.

The conveyor system is highly automated, significantly reducing the necessity of continuous human presence along the conveyor. This automation not only decreases the risk of accidents but also mitigates noise and fugitive dust generation and other potential disruptions linked to manual operations.

### 2.7.4 Turf Point Operations

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 before shipping, and subsequently for gypsum storage, will be modified and upgraded to support conveyor delivery of salt.

Salt will arrive at Turf Point Port via the overland conveyor, and once it reaches the end will fall into one of two salt stockpiles within the existing storage building or new storage building (Figure 2.23). Once ready for shipment the salt from the stockpile will go through a series of reclaim feeders underneath the new building that will feed salt to the ship loader. While on these conveyors the salt will be sampled by an automatic cross-cut sampler, and then be discharged onto transfer conveyors carrying the salt to the ship loader. The existing 1,000 tph ship loader then loads the salt onto the bulk carriers, and shipment sizes may range from 25,000 t to 40,000 t.

### 2.7.5 Water Management

As discussed previously the proposed water management plan includes management of groundwater that seeps into the access declines, collection of water within the mine site, and the establishment and use of diversion ditches and a berm surrounding the mine site to ensure water in the areas adjacent to the mine site remain outside of the mine site (See previous figures 2.13 to 2.15). Additionally, it is important to note that there will be no processing water used for the Project.

Once the access decline construction has reached the salt horizon, the pump stations and sump pumps will be in place. Groundwater intake that occurs in the access declines will be pumped up the declines via the sump pumps. It is estimated that long term ground inflow of 500 $m^3$/day will be managed by the two sump pumps / pump stations with a maximum capacity of 2000 $m^3$/day at full capacity. At the surface the water pumped from the access declines will be directed to the settling pond.

Within the mine site, runoff will be diverted to the settling pond via the collection ditches around the various mine site components. The ditches will be designed to collect runoff from the waste stockpile and the pre-production stockpiles. The pre-production stockpile will also be covered by tarps to ensure runoff does not affect the pre-production salt pile. Additionally, the pre-production salt stockpile will have an HDPE liner over its foundation to manage seepage and runoff. Runoff from stockpiles and other mine site facilities will all be directed via the collection ditches into the settling pond. The terrace where the buildings and parking area are to be located will naturally cause runoff into one of the collection diversion ditches. All onsite water will divert to the settling pond.

The settling pond will retain the water for a 3-day period to allow for settling of sediments. The spillway will allow clean water to flow towards Man o'War Brook where it then flows into the ocean. Figure 2.33 shows a schematic representation of the water flows. It is estimated that approximately 0.0168 $m^3$/sec or 1,455 $m^3$/day (530,909 $m^3$ annually) will be released through the spillway towards Man o'War Brook. This represents an estimated 500 $m^3$/day from the access declines, 43 $m^3$/day from the waste rock stockpile, 105 $m^3$/day from the pre-production stockpile, 245 $m^3$/day from the mine site terrace and surrounding area of the mine, and 572 $m^3$/day from other mine site areas and the settling pond, with 11 $m^3$/day being evaporation loss (Appendix B).

No chemical or mechanical treatment of the discharge water is planned at this time. Additional geotechnical and hydrogeological drilling programs are planned for 2024 to support detailed engineering design. If further water quality investigation identifies the potential for other contaminates, such as dissolved solids and salinity that may negatively affect the receiving environment, additional controls and mitigation may be identified and proposed. Such controls and mitigation may include containment, water treatment before discharge, alternative use or recycling of mine water, or an alternative discharge (e.g. land discharge, or discharge to the marine environment).

The berm and diversion ditch that surrounds the mine site will ensure that water from outside the mine site does not flow onto the site. Offsite water will runoff around the mine site and follow the natural topography.

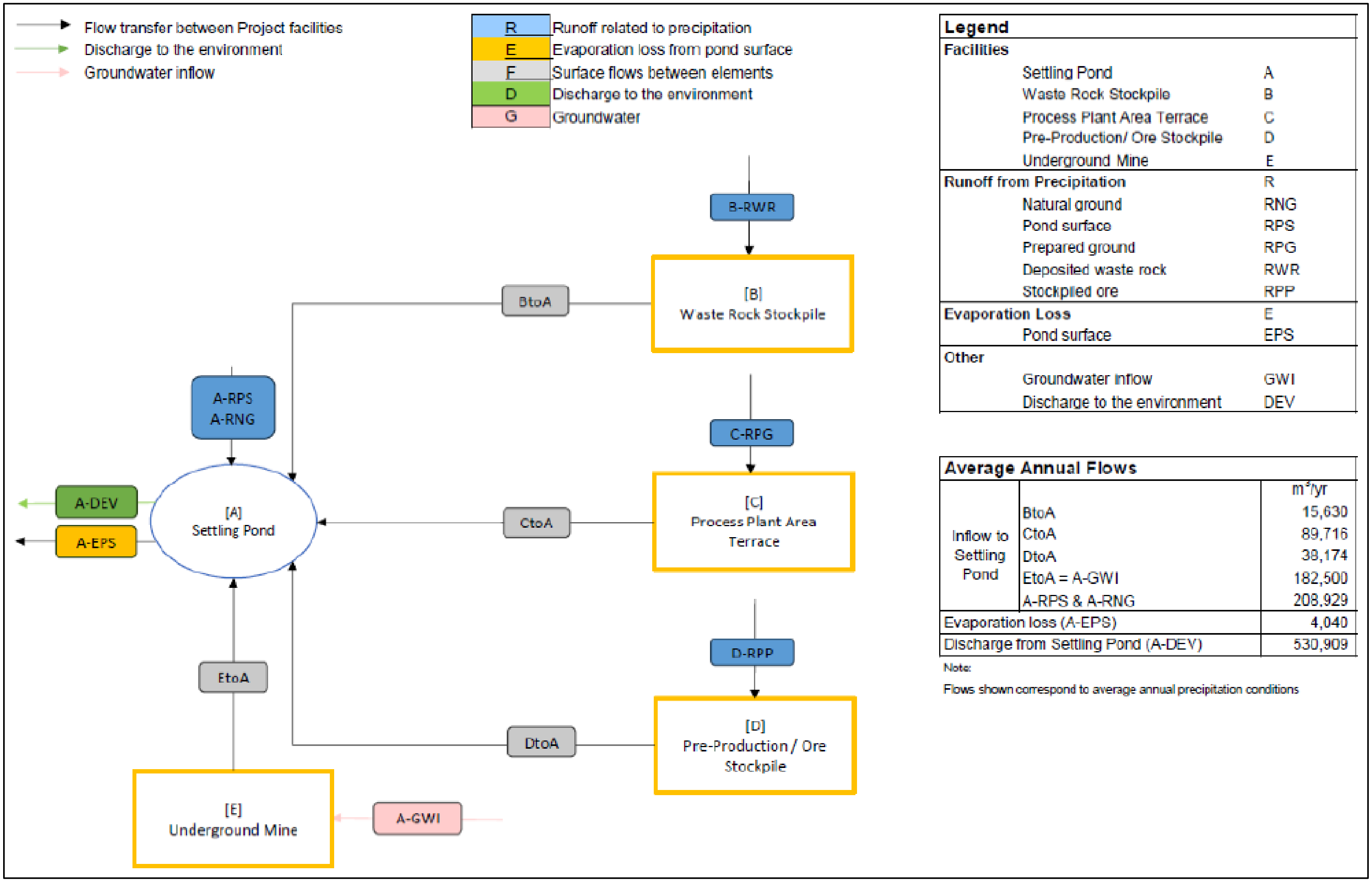



*Figure 2.33: Mine Site Water Flow (Appendix B)*

### 2.7.6 Water Quality and Effluent Characterization

While the Project will not produce tailings or use water for salt production it will need to manage natural water entering the site including:

- Groundwater entering the underground access declines; and
- Surface water including precipitation falling on the surface mine site.

The potential contaminants arising from salt mining that may affect natural water quality include the introduction of suspended solids (TSS) resulting from operational excavation and crushing activities, salt storage and transport. There is also the potential for dissolved solids (TDS) to occur in ground water associated with underground dewatering and water flow over excavated materials. There is no chemical leaching or thermal processing required nor planned for the Project and there is negligible potential for metal contamination associated with salt mining operations.

The approach to water management for the Project begins with a preventative strategy to reduce or eliminate the potential for surface water or groundwater to contact salt deposits including:

#### Surface Water Diversion

A series of ditches along the upslope perimeter of the mine site will divert natural surface water away from the mine site. These drainage ditches will utilize the natural topography of the area so that water collected in the perimeter ditches is redirected into adjacent wetlands and vegetation in the area.

#### Mine Site Surface Water Management

Surface water collection and storage of water runoff may have elevated TSS levels at certain times and may need to be treated prior to release. The Project may use a combination of some or all of following measures to address elevated TSS and lower the concentration prior to release:

- Settling within impoundments prior to release using length to width ratios that promote good settling and non-resuspension.
- To minimize TSS, engineered foundations will be used for each stockpile and blast rock will be used in the collection ditches to minimize any introduction of silt.
- Straw wattles and/or bales within ditches and release channels
- Flocculation to promote settling of smaller particles that tend to stay in suspension due to Brownian motion.
- Stormceptor style oil/grit separators to promote removal of TSS and separation of floatable contaminants.
- The site design has promoted concepts that will limit the amount or potential for runoff to contain elevated levels of TDS including:

- Enclosed or covered conveyor systems, thereby inhibiting rainfall from contacting mined salts on the transport conveyors.
- Enclosed conveyors will also inhibit the release of dust to the air which could settle throughout the site and promote elevated TDS levels in future runoff.

- The Temporary salt storage area at the surface mine site will be covered to reduce any salt contact with precipitation.
- The onsite and port salt storage building contain and enclose road salt product stockpiles to reduce any salt contact with precipitation.
- All dust mitigation measures in Section 2.7.7 that inhibit the release of dust to the air which could settle throughout the site and promote elevated TDS levels in future runoff.

All of these design interventions will prevent the elevation of TDS within the water management systems.

UNDERGROUND MINE GROUNDWATER

The design approach is to capture the groundwater inflow to the underground workings before it reaches the salt deposit. This inflow is expected to be low in TDS and within the guidelines for release to the environment. 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 any 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.

SETTLING POND DESIGN

The settling pond design considers both water quality and quantity with a three-day retention time, allowing particles to settle out of the water using gravity before release. The discharge from the settling pond is the only point of discharge to the receiving environment for the Project.

The typical approach to calculate the retention time of a settling pond requires an assumption of particle size in absence of actual data, which is the case here. The common assumption regarding particle size corresponds to a range of 5 to 10 microns, normally leading to retention times of around 24 hours. The assumption of a 3-day retention time is therefore on the conservative side. A larger pond volume offers more operational flexibility. The groundwater management strategy is to intercept groundwater entering the declines before any water contacts the salt deposit through separation of the capture of water above the salt body. As a result, the majority of the water is expected to have very low TDS levels (below 1,000 mg/L) and will be acceptable for discharge to fresh-water surface water bodies pursuant to NL Reg 65/03.

The surface water quality reviewed for the Project's feasibility study is taken from the Baseline Hydrology Study completed for Atlas Salt by Gemtec in 2023. This full report is included as Appendix E and further discussion on water quality may be found in Sections 3.1.4, 3.1.5 and 5.3. The analytical results indicate that pH and certain metal concentrations exceed the Atlantic Risk Based Corrective Action (ARBCA) guidelines. The pH values ranged from 5.65 to 7.05. Metals including iron and aluminum were high at all six sites. Other parameters including Total Dissolved Solids (calculated) (measured values ranging from <5 to 16 mg/L) and Total Suspended Solids (measured values ranging from 13 to 100 mg/L) were lower than the guidelines for all sample sites.

There is no groundwater quality data available for the Project area itself or immediately surrounding area. Available groundwater data for the St. George's region consists of a water supply study performed for the Town of St. George's in 2002 . 2003 (Fracflow Consultants, 2003) and baseline hydrogeological data collected by Gemtec for Atlas Salt Inc. The results of the water quality testing program indicate that groundwater quality is generally good, with all measured parameters less than their respective drinking water guideline levels. The concentrations of TDS ranged from 128 mg/L to 423 mg/L at wells near or within the water supply study area and the pH ranged from 7.9 to 8.7. The iron and manganese results suggest that there may be reducing conditions in the shallow aquifer. Depth-discrete water quality testing was performed at the Dribble Brook water supply wellfield located approximately three kilometers east of the Project. The depth-discrete testing indicated that TDS, sodium, and chloride concentrations increased with depth and the deeper groundwater was classified as sodium chloride type. TDS concentrations of the deeper groundwater (37 m to 55 m) ranged from 574 mg/L to 1,519 mg/L.

DETAILED ENGINEERING DESIGN

To support future detailed engineering design a geotechnical and hydrogeological study including a series of boreholes is planned to provide further information on ground water quantity and quality specifically within the proposed declines of the underground mine. Should the groundwater results indicate higher than expected TDS levels, additional proven treatment mitigations can be considered for the Project. Worley Consulting was engaged by Atlas to provide a review of mine water management and treatment options for the Project and the detailed technical memorandum is included as Appendix O. Additional water treatment options include:

1. If the site water management impoundment areas are large enough, the high TDS water can be sent there for storage. Since the expected highest TDS values are only anticipated to be approximately 1,500 mg/L, it is anticipated that release water from these storage areas would be below the 1,000 mg/L threshold for release.
2. There is the potential for a small tank to be established and dedicated to the storage of elevated TDS runoff. This approach can be investigated, with a local company providing emptying and removal services for disposal offsite to an approved location.
3. If impoundments are not large enough, portable water treatment units could be brought in on a rental basis to manage the release stream until the TDS is below guidelines again. Portable RO

and Desalination units are available within the industry and may be an effective short-term solution during TDS spikes (if any).

4. If the duration of the TDS spikes reaches the point where rental treatment options are not viable, Atlas can look at the potential for a small skid mounted RO treatment plant to be brought in more permanently.
5. If elevated TDS is expected to occur on an on-going basis, and concentrations are low enough to be discharged to the marine environment, there is an option of a pipeline to the coast with a diffuser in the coastal area.

Atlas Salt Inc. proposes to discharge treated water from its settling pond into a body of water (i.e. discharge to natural vegetation and wetlands leading to Man o'War Brook) and will ensure that the water quality is compliant with the NL Environmental Control Water and Sewer Regulations NLR 65/03 (NL W&S Regs) and specifically Section 6 and Schedule A. Atlas recognizes the permitting requirements pursuant to the Water Resources Act for work within 15m of a wetland or waterbody, water discharge and dam design (Appendix A) and will consult with Pollution Prevention Division and Water Resources Management Division during the detailed engineering phase of the Project prior to construction.

### 2.7.7 Dust Management

Atlas' approach to dust management is to reduce dust generation at source and then to use mechanical systems to contain any fugitive emissions. The main source of potential dust generation for the Project is the process of excavating the salt using the continuous miners. Excavation involves a mechanical process of boring the salt using a rotating drum cutting head with an array of bits as illustrated in Figure 2.32. The key mitigation to reducing dust during this excavation process is to supply a misting spray and by a flooded bed dust collection ventilation system. These key mitigations described below are designed into the Project and will significantly reduce at source the generation of underground fugitive dust emissions.

#### Continuous Miner Design

- Continuous Miner Dust Collection: Building on years of experience on continuous miners operating in coal mines, manufacturers now offer flooded bed dust collector systems for use in industrial mineral applications. As industrial mineral applications typically have larger entry sizes, these dust collector systems are designed with larger airflow options. Maintenance of the system is kept to a minimum by offering large access doors and water spray flushing systems.
- Continuous Miner Drum/Bit Design: Iterative Rock Lab testing, geological sampling, cutting and environmental observations and inspections inform drum and cutting designs to reduce fines and dust for improved worker environment.

TRANSFER POINTS/TOWERS

Transfer points, where salt is moved and deposited from one conveyor to another or from a hopper to a conveyor, are potential locations for the generation of particulate matter (dust). The proposed Project will include 28 transfer points from underground excavation to ship loading at the port. Each of these sites have inherent dust generation potential, and so a comprehensive approach to dust management is essential to maintain environmental compliance, operational efficiency and worker safety. This includes planned design and mitigation measures related to each of the Project components and activities that have the potential to result in dust generation, including:

**Conveyor System Design**

- Adjustable Skirt Edge Sealing: To limit spillage and dust at feed points, ensuring material containment within the conveyor belt.
- Skirt Board Design: Totally enclosed, with inspection door. Limits and confines material and stabilizes material load on the belt past the loading points to minimize fugitive dust. Includes a tail-gate sealing box before the loading point to reduce dust emissions and potential material roll-back.
- Dust Curtains: Designed as replaceable rubber dust curtains, provided at the belt exit and entry areas. Exit area will be equipped with dual dust curtains. The first curtain will be located close to the loading zone and will not be slit. A second slit curtain will be located at the skirtboard exit. Both curtains will be cut in field to match the material profile on the belt. Dust collection pick-up points will be provided on skirt enclosures.
- Dust Collection Flanges: Positioned at strategic locations to facilitate airborne dust particle removal, minimizing fugitive dust emissions. Located before and after the conveyor load points, head pulley and at every transfer point and transfer tower.
- Enclosed and Covered Conveyors: Reducing wind-induced dust dispersion, and contains the minimal vibration and motion induced dust emissions.
- Material Transfer Height: By minimizing the height between material transfer points between conveyors, the potential for dust generation is reduced as the material experiences less freefall, reducing the agitation and dispersion of fine particles.
- Material Transfer Chute Design: Chutes for material transfer between conveyors are designed to minimize dust generation by reducing the freefall of material, controlling the geometry of the material flow, and minimizing impact angle, changes in material trajectory, and abrasion. Chute drops will be kept to a minimum, and all material shall be discharged in the same direction with minimum variation in velocity.
- Chute Dust Collection: Chutes at conveyor loading and transfer points will have dust pick-up hoods with flanges for connection to dust ducts and dust curtains. All chute connections will be dust-tight, flanged, and bolted in sections to facilitate maintenance.
- Enclosed Transfer Points and Transfer Towers: In addition to localized dust collection equipment at each transfer point, all inter-conveyor transfer points will be enclosed within

transfer towers, salt storage buildings or underground. This allows for what limited dust emissions that are not captured by dust collection systems to settle out of suspension, and reduce wind-induced dust dispersion.

**Crushing System Design**

- Crusher Dust Collection: Flange connections for dust collection
- Crusher Design: 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.

**Crushing and Screening Equipment**

- Design and Equipment Integration: Crushers and screens are designed to integrate with dust management systems, focusing on containment strategies.
- Protective Measures: Includes guards and sealing devices against dust ingress and specifications for heavy-duty frame construction and abrasion-resistant protection systems to minimize wear and tear.

**Salt Stockpile Enclosures and Covers**

- Pre-Production Stockpile: Covered with high density polyethylene (HDPE) tarpaulins reducing wind-induced dust dispersion.
- Site & Port Salt Stockpile: Enclosed within salt storage buildings reducing wind-induced dust dispersion.

**Operational Practices**

- Belt Cleaners and Ploughs: Deployed to reduce carryback on the conveyor belt, which is a significant source of dust if not managed. Belt cleaners shall be equipped with dust-tight inspection doors at both side of the cleaners.
- High-Pressure Cleaning: Processing plant equipment is designed to accommodate high-pressure water clearing to manage dust accumulation on equipment.
- Continuous Miner Dust Collection Backflushing & Inspections: As part of routine maintenance, dust collection systems are backflushed and inspected as part of weekly and monthly inspections.
- Continual Monitoring and Maintenance: Regular monitoring of dust levels, dust collection system pressure drops and average fan amperage over time, and maintenance and record-keeping of dust control equipment to ensure effectiveness and compliance with health and safety regulations.
- Periodic Reviews and Technology Integration: To assess the effectiveness of dust mitigation measures and incorporate emerging technologies for improved dust control.

- Enclosed Processing Plant Offices and Refuge Station: The processing plant's operation team's offices, and refuge station will be enclosed buildings within the processing plant excavation area underground. Each will be equipped with their own dust collection/ventilation systems to further reduce the limited atmospheric dust within processing plant area for these areas.

PROCESSING PLANT DESIGN AND LOCATION

The Project's processing plant will be wholly located underground. While pertinent, engineered controls will be in place to capture and mitigate dust generation within the processing plant, its inherent location underground allows for the limited uncaptured dust emissions to settle out of atmosphere as part of the mine ventilation system's return air flow, further minimizing fugitive dust emissions.

A 2008 study (Hatch, 2008) characterized the sources of Total Particulate Matter Emissions in the Canadian Potash Mining Sector, including eight comparable conventional underground mines and two solution mines. In that study 80% of the particulate matter was generated from two processes: Dryers and Compaction (Table 2.5). The remaining 20% of particulate matter emissions were a result of Fugitive, Loadout and Mine Exhaust. The Project does not include any Dryers or Compaction thereby limiting emissions and the overall potential dust generation to fugitive emissions from excavation and crushing, loadout and transport and mine exhaust.

*Table 2.5: Characterization of Total Particulate Matter Emissions (Hatch, 2008)*

| **Source Category** | **Estimated Contribution to TPM Emissions (%)** |
|---|---|
| Dryers | 49% |
| Compaction | 31% |
| Fugitive | 8% |
| Loadout | 7% |
| Mine Exhaust | 5% |
| **Total** | **100%** |

In summary, the integrated dust mitigation strategy for the Project demonstrates a robust and comprehensive approach, addressing dust control through design, equipment selection, and operational practices. Ensuring the effectiveness of dust mitigation measures will be critical for achieving the project's environmental, safety, and operational objectives.

## 2.8 CLOSURE AND DECOMMISSIONING

As noted previously, an initial mining plan for the Project has been developed based upon probable mineral reserves for an initial 34-year mine life at a rate of 2.5 Mtpa of road salt product, with a potential future expansion to 4.0 Mtpa per year. It is also important to note that a significant amount of mineral resources remain after the initial mine life plan, so the actual mine life may be considerably longer. A salt deposit of this magnitude likely has decades-long production potential.

Once operations activities cease at the end of the eventual mine life, the closure and decommissioning phase of the Project will commence.

For all mining projects in Newfoundland and Labrador, a Rehabilitation and Closure Plan is a requirement under the provincial *Mining Act*, which defines it as a plan that describes the process of rehabilitation of a project at any stage of the project up to and including closure. Rehabilitation is defined as measures taken to restore a property as close as is reasonably possible to its former use or condition or to an alternate use or condition that is considered appropriate and acceptable by the Province. 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.

Three key stages of rehabilitation activity occur over the life of a mine:

1) Progressive rehabilitation;
2) Closure rehabilitation; and,
3) Post-closure monitoring and treatment.

Progressive rehabilitation involves restoration activities that are completed, where possible or practical, throughout the mine operation stage and before closure. This would include activities that would contribute to the rehabilitation effort that would otherwise necessarily be carried out upon cessation of mining operations (closure rehabilitation).

Closure rehabilitation involves measures undertaken after mining operations, to restore or reclaim the property as close as reasonably possible to its pre-mining condition. This could include demolition and removal of site infrastructure, re-vegetation, and any other activities required to achieve the requirements and goals detailed in the Rehabilitation and Closure Plan.

During decommissioning of underground water and sewer infrastructure the following options will be considered:

- Water and sewer lines are to be left in a benign way or if feasible removed;
- If on site sewage treatment occurs all tanks and any distribution boxes will be pumped out, and if feasible removed or filled with gravel or similar material.

Upon completion of the closure rehabilitation activities, a period of “post-closure monitoring” is then often required to ensure that the rehabilitation activities have been successful in achieving the prescribed goals.

The Rehabilitation and Closure Plan is directly linked to mine development and operation over the life of a mine and must therefore be considered a “live” document. It is common practice in the industry to review and revise the Rehabilitation and Closure Plan throughout the development and operational stages of a project. The final review of the Rehabilitation and Closure Plan generally occurs once the mine closure schedule is known (typically 12 months or more before the end of mining). This final review forms a "Closure Plan" which defines in detail the actions necessary to achieve the Rehabilitation and Closure objectives and requirements.

The overall objectives of the Rehabilitation and Closure Plan for the Project will include the:

- Restoration of the land to as close to its original, undeveloped, natural state as possible;
- Creation of a landscape which is compatible with surrounding terrain and land use;
- Mitigation and control to within acceptable levels, the potential sources of pollution, fire risk, and public liability; and,
- Providing an environment and landscape that is suitable for long term public access and use.

The Rehabilitation and Closure Plan will outline the mine site development and operational characteristics for the Project, will detail the steps and procedures to be taken to progressively rehabilitate the site during operations, and provide steps for final rehabilitation upon closure of the mine. The approach to rehabilitation will involve advanced progressive and closure rehabilitation techniques through integrated development, operational and closure technology, and design.

On-going and future Project planning and design activities will include the proactive consideration of future closure issues and requirements. The site design will follow the concept of "designing for closure" for all site structures. Steps to promote the overall rehabilitation process will include the following:

Terrain, soil and vegetation disturbances should be limited to that which is absolutely necessary to complete the work within the defined Project boundaries;

- Wherever possible, organic soils, pre-production salt, and excavated waste rock will be stockpiled separately and protected for later rehabilitation work;
- Surface disturbances will be stabilized to limit erosion and promote natural re-vegetation; and
- Natural re-vegetation of surface disturbances will be encouraged.

All aspects of the mine development (engineering and construction phases), including mine design, infrastructure locations, construction planning and implementation, and operations planning, will be conducted with full consideration of available progressive rehabilitation opportunities and closure rehabilitation requirements. The Project will be planned and designed to minimize the disturbed area of the site, where possible, and to avoid or reduce environmental effects.

Once the mine advances from the development (construction) stage to the operational phase, progressive rehabilitation activities can commence. Progressive rehabilitation opportunities for the site during the operational stage may include:

- Rehabilitation of temporary construction-related buildings and lay down areas;
- Stabilization of waste rock stockpile;

- Development and implementation of an integrated Waste Management Plan;
- Installing barricades and signage where required; and,
- Completing re-vegetation studies and trials.

An environmental monitoring program will be conducted as part of the mining operations and this data utilized to evaluate the progressive rehabilitation program on an ongoing basis.

Final closure rehabilitation activities are anticipated to require one or two years and will generally include:

- Removal of hazardous chemicals, reagents and other such materials for re-sale or disposal at an approved facility;
- Equipment will be disconnected, drained and cleaned, disassembled and sold for reuse or scrap;
- Any equipment or materials deemed potentially hazardous will be removed from the site and disposed of in accordance with appropriate regulations;
- Dismantling and removal / disposal of all buildings and surface infrastructure;
- Materials with salvage value will be removed and sold. Demolition debris with no marketable value will be disposed of in a manner consistent with the disposal of other building demolition waste;
- Demolishing all concrete foundations to below surface grade and burial in place if possible or disposal in an appropriate landfill off-site;
- Removal and rehabilitation of fuel storage and dispensing facilities;
- Assessing soil and groundwater conditions in areas that warrant assessment (such as fuel dispensing facilities, storage areas) and implementing remedial measures where necessary;
- The settling pond and associated decant structures will be removed and the area re-graded and stabilized against erosion;
- Elimination of open areas where possible with Installation of barricades and signage around any remaining open areas, as necessary;
- Re-establishment of general site drainage patterns as near as practical to natural, pre-development conditions;
- Grading and/or scarification of disturbed areas to promote natural re-vegetation, or the placement and grading of overburden (from organic stockpile) for re-vegetation in areas where natural re-vegetation is not sufficiently rapid to control erosion and sedimentation; and
- Any additional or special rehabilitation requirements associated with the site such as removal of culverts and power lines, and infilling of any drainage or diversion ditches which are no longer required.

The post-closure monitoring program will continue after final closure activities are completed or earlier should Atlas and the appropriate regulatory authorities be satisfied that all physical and chemical characteristics are acceptable and stable. When the site is considered physically and chemically stable, the land would typically be relinquished to the Crown.

Table 2.6 below provides an initial and illustrative overview of the potential approaches and measures that may be associated with closure and decommissioning for the various aspects of the Project. As ongoing efforts, development and operation of the site are executed detailed plans will be developed and presented as part of the above-described regulatory requirements.

*Table 2.6: Conceptual Closure Plan (For Illustrative Purposes)*

| Project Area / Phase | Component | Potential Approach / Activities |
|---|---|---|
| **Mining and Processing** | Access to underground – portal area | The surface area will be sloped to prevent ponding, maintain natural drainage pathways, and to re-establish pre-mining topography as is practical, based on pre-mining LiDAR of the area<br>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.<br>Corrugated steel culverts will be removed along with the associated excavation and backfilling necessary to return the portal/surface interface back to original topography. |
| | Underground void<br>- 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.<br>Any hazardous waste will be disposed of at a permitted facility.<br>Dewatering will cease and the void will flood. |
| **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.<br>Topsoil will be placed on the top and slide slopes, and these will be re-vegetated with an appropriate endemic seed mix.<br>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.<br>The water will be tested to ensure compliance with relevant quality limits before being released into the environment. |

| Project Area / Phase | Component | Potential Approach / Activities |
|---|---|---|
| | | Sludge will be removed and disposed of off-site or onto the waste stockpile.<br>Any hazardous waste will be disposed of at a permitted facility.<br>The retaining walls will be removed.<br>The surface area will be sloped to prevent ponding, maintain natural drainage pathways, and to re-establish pre-mining topography as is practical.<br>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.<br>The surface area will be sloped to prevent ponding, maintain natural drainage pathways, and to re-establish pre-mining topography as is practical.<br>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.<br>The tunnel section will be filled in.<br>The surface area will be sloped to prevent ponding, maintain natural drainage pathways, and to re-establish pre-mining topography as is practical.<br>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 and site roads Underground water and sewer infrastructure | The roads will be removed. Water and sewer infrastructure will be decommissioned as per the approach referenced at the beginning of this section.<br>The surface area will be sloped to prevent ponding, maintain natural drainage pathways, and to re-establish pre-mining topography as is practical.<br>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.<br>The surface area will be sloped to prevent ponding, maintain natural drainage pathways, and to re-establish pre-mining topography as is practical.<br>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. |

| Project Area / Phase | Component | Potential Approach / Activities |
|---|---|---|
| | Fire protection water tank | The water will be tested and if it complies with relevant quality limits it will be released into the environment.<br>The tank will be removed.<br>The surface area will be sloped to prevent ponding, maintain natural drainage pathways, and to re-establish pre-mining topography as is practical.<br>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.<br>Any hazardous waste will be disposed of at a permitted facility.<br>Inert waste may be disposed of onto the waste rock stockpile.<br>The surface area will be sloped to prevent ponding, maintain natural drainage pathways, and to re-establish pre-mining topography as is practical.<br>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.<br>All utility connections will be sealed. |

## 2.9 Labour Force

Atlas has completed preliminary labour force estimates for each of the phases of the Project.

Atlas will ensure that activities associated with the Project, including construction and operation, are conducted in full compliance with the *Occupational Health and Safety Act* and its Regulations.

### 2.9.1 Construction Workforce

The construction phase of the Project will take place over an approximately four and a half year period, which will generate substantial employment and associated economic benefits. Worker shift lengths and duration/rotation arrangements will be defined at a later stage of Project planning and development, and will likely vary somewhat between occupations and employers. In general, however, it is expected that most on-site construction will occur 24 hours per day, 365 days per year. Details on crews, shifts, and rotations have yet to be finalized, and will be part of the future engineering design phase.

Given the number and diversity of occupations and associated skills that will be required during the construction phase and the timelines involved, the construction workforce will be comprised of a mixture of Western Newfoundland residents and non-residents. Workers that are residents of the local area will reside at their homes and commute daily to the Project site, and non-resident workers will be housed at existing local accommodations and/or at a temporary camp located within the Project site (See Section 2.4.2). There will be ample parking to accommodate any of the local workers that wish to commute to the site.

Project construction will be carried out on a contractual basis, with workers hired at the discretion of the contractor(s) and according to their hiring practices and policies. Once construction is completed, the facility will be operated using Atlas' workforce (Section 2.9). Atlas supports employment and gender equity in its hiring and contracting practices.

The construction of the Project will result in approximately 250 full time equivalent (FTE) positions of employment and is expected to occur over an approximately four and a half year period from Q2-2025 to Q4-2029. Table 2.4 provides a summary of the estimated construction workforce by position (occupation and associated National Occupational Classification (NOC 2021) code), time period involved, estimated total person-hours and the resulting number of employees (average number of persons on site, per month). As illustrated, the construction workforce will include a wide and varied range of occupations. All of the positions listed in the table below will be contractors, and most if not all of these will be full-time in nature.

*Table 2.7: Summary of Estimated Construction Phase Employment (2024-2028)*

| Position | NOC 2011 Code | Average Number of Persons per Month on Site | Time Period On-site (months) | Estimated Person-Hours |
|---|---|---|---|---|
| Project Director | 00015 | 1 | 56 | 13888 |
| Project Manager | 00015 | 1 | 56 | 13888 |
| Project Manager - Admin Support | 13100 | 1 | 56 | 13888 |
| Project Service Manager | 10029 | 1 | 56 | 13888 |
| Project Services & Controls | 12013 | 1 | 56 | 13888 |
| Project Commercial Manager | 10010 | 1 | 56 | 13888 |
| Contracts / Procurement Administrator | 12102 | 1 | 56 | 13888 |
| Project Engineering Manager | 20010 | 1 | 56 | 13888 |
| Engineering Manager | 20010 | 1 | 52 | 12896 |
| Lead Mining Engineer | 21330 | 1 | 52 | 12896 |
| Information System Manager | 20012 | 1 | 52 | 12896 |
| Project Service / Controls Manager | 12013 | 1 | 52 | 12896 |
| Cost Controls / Engineer | 22303 | 2 | 52 | 25792 |
| Planning / Scheduling | 14405 | 2 | 52 | 25792 |
| Doc Control / Information Management | 10019 | 1 | 56 | 13888 |
| Proc / Contracts Manager | 10019 | 1 | 56 | 13888 |
| Contracts Admin | 12013 | 2 | 56 | 27776 |
| QA/QC Inspections | 22233 | 2 | 52 | 25792 |
| Expediting / Logistics | 14403 | 1 | 52 | 12896 |
| Warehouse Manager (Execution) | 12013 | 1 | 52 | 12896 |
| Construction Manager | 70010 | 1 | 52 | 12896 |
| Site Lead Engineer | 20010 | 1 | 36 | 13392 |
| Site Engineers (Civil / Structural) | 21300 | 2 | 36 | 26784 |
| Site Engineers (Mechanical) | 21301 | 2 | 36 | 26784 |
| Site Engineers (E&I) | 21310 | 2 | 36 | 26784 |
| HS&E Manager | 21120 | 1 | 36 | 13392 |
| Commissioning Manager | 00015 | 01 | 36 | 2390 |
| Mine GM / Operations Manager | 80010 | 3 | 52 | 59791 |
| Executive Assistant and Receptionist | 12100 | 3 | 52 | 39860 |
| Logistics Coordinator | 12013 | 3 | 52 | 38688 |
| Purchasing Agent | 12102 | 3 | 52 | 39680 |
| Warehouse Supervisor | 14401 | 3 | 36 | 40176 |
| Warehouse Attendants | 14400 | 5 | 36 | 66960 |
| Finance & Accounting Manager | 10010 | 3 | 36 | 26784 |

| Position | NOC 2011 Code | Average Number of Persons per Month on Site | Time Period On-site (months) | Estimated Person-Hours |
|---|---|---|---|---|
| Payroll Coordinator | 13102 | 3 | 36 | 26784 |
| Acc. Payable/Receivable Coordinator | 14200 | 6 | 36 | 53568 |
| Facilities Attendant | 94100 | 4 | 36 | 53568 |
| HSE Superintendent | 21120 | 3 | 36 | 40176 |
| Mining Engineer | 21330 | 3 | 36 | 40176 |
| Geotechnical Engineer | 21331 | 2 | 36 | 26784 |
| Surveyor | 21203 | 2 | 36 | 26784 |
| Site Supervisor | 82020 | 8 | 36 | 107136 |
| Heavy Equipment Operator (surface) | 73400 | 16 | 36 | 214272 |
| Truck Operator | 73300 | 24 | 36 | 321408 |
| Bolter Operator | 84100 | 8 | 36 | 107136 |
| Mechanical Scaler Operator | 84100 | 1 | 36 | 17856 |
| Service Personnel | 84100 | 8 | 36 | 107136 |
| Heavy Equipment Mechanic | 72401 | 165 | 36 | 214272 |
| Welder | 72106 | 4 | 36 | 53568 |
| Electrician | 72201 | 8 | 36 | 107136 |
| Heavy Equipment Operator (underground) | 73400 | 8 | 36 | 107136 |
| Third Party Contractor Positions | Various | 70 | 36 | 925027 |

In addition to the positions presented above, it is expected that subcontractors may employ an additional 50-70 support staff across various occupations. These are additional staff required by the subcontracted companies to ensure service delivery and manage their own staff and work. In total, the Project is estimated to produce a total of 3.3 million person-hours of work over its construction phase.

Construction activity by the contractor(s) will be overseen by a number of existing and future Atlas employees, including the company's executive (NOCs 00012, 00015), engineering and planning (NOCs 20010, 12013, 10010) and administrative (NOC 13100) personnel.

### 2.9.2 Operations Workforce

Once operational, it is expected that the mine will operate 24-hours per day on a full 365-day year basis and will be operated by company employees on a 12-hour shift basis. As described above, the underground processing plant and conveyor transport to the port are relatively simple operations and will be largely automated requiring minimal operator intervention.

The total personnel roll during operations is estimated to be 169 persons as summarized in Table 2.8. The estimated numbers of personnel required for Project operations by discipline is presented in Table 2.9. It is expected that most if not all of these positions will be in place for the duration of the operations phase of the Project.

*Table 2.8: Estimated Operations Personnel*

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

*Table 2.9: Estimated Operations Personnel by Occupation*

| Position | NOC 2021 Code | Estimated Number of Personnel |
|---|---|---|
| Underground Miners / Operators | 83100 | 20 |
| Haul Truck Operator | 73300 | 12 |
| Underground Mine Support and Service Personnel | 84100 | 20 |
| Grader Operator | 73400 | 1 |
| Water Truck Operator / Snow Plough / Sanding | 73400 | 3 |
| Other Auxiliary Equipment Operators | 73400 | 14 |
| General Labour | 75119 | 15 |
| Field Welder | 72106 | 2 |
| Shop Mechanic | 72401 | 19 |
| Shop Electrician | 72201 | 8 |
| Small Truck Operators | 74203 | 4 |
| Millwright | 72400 | 3 |
| Electronics Technician | 22310 | 6 |
| Mine Superintendent | 80010 | 4 |
| Mine Foreman | 82020 | 5 |
| Maintenance | 70012 | 2 |
| Production / Mine Clerk | 14402 | 12 |
| Secretary | 13110 | 1 |
| Maintenance Superintendent | 70012 | 1 |
| Maintenance General Foreman | 82020 | 1 |
| Maintenance Planner | 70012 | 1 |
| Mine Maintenance Foreman | 72020 | 1 |
| Maintenance Clerk | 14100 | 4 |

| Position | NOC 2021 Code | Estimated Number of Personnel |
|---|---|---|
| Chief Engineer | 20010 | 1 |
| Mine Planning Engineer | 21330 | 3 |
| Geotechnical Engineer | 21331 | 1 |
| Mine Surveyor | 21203 | 1 |
| Assistant Surveyor | 21203 | 1 |
| Geologist | 21331 | 2 |
| Security Manager | 64410 | 1 |
| **Total** | | 169 |

It is anticipated that salt storage, reclaim, and ship loading at Turf Point will be carried out by the Turf Point Marine Terminal owner on a contractual basis.

Estimates regarding the labour force requirements that may be associated with eventual Project rehabilitation and closure will be developed and progressively updated as new information is available over the life of the mine. These details will be finalized prior to closure. Currently, this detailed information cannot be known or provided at this time, given that these activities are in the distant future (34 or more years), and because the specific labour numbers and occupations involved will be determined by the nature and characteristics of the decommissioning activities, for which detailed plans will be developed later.

## 2.10 Diversity, Inclusion, Equity Commitments

Atlas is committed to ensuring full and fair opportunity for participation in the various phases of the Project, and will set policies for diversity, inclusion, and equity in its direct employment, procurement, contracting, and subcontracting processes.

Atlas will ensure that appropriate and effective policies and practices are in place to provide a work environment that is free from discrimination and harassment, and which supports women, Indigenous people, persons with disabilities, racialized minorities, and members of the Two-Spirit, Lesbian, Gay, Bisexual, Transgender, Queer or Questioning communities.

Hiring and procurement protocols will be established throughout all phases of the Project. Where available and competitively priced, Indigenous and Bay St. George residents and suppliers of goods and services will receive preference. All hiring processes will adhere to the standards outlined in the Canadian Charter of Human Rights and Freedoms and the terms and conditions specified in any future EA approval for the Project. Joint bidding partnerships will be encouraged with suppliers and subject matter experts available outside the region. As outlined above, these protocols give first consideration for employment and procurement based on adjacency to the Project, if available and qualified.

Information on upcoming employment opportunities will be shared with residents through the company's website, job fairs, and advertisements through available traditional and social media channels.

Qualifications for employment on the Project will include academic and skills training, relevant work experience, and other factors and considerations. Collaborating with government and other organizations responsible for education, training, and skills development will allow local solutions to be pursued to resolve any identified skilled trades gaps or labor shortages. Some of these solutions may include incorporating microlearning and varied on-the-job training with traditional course training and education or employing apprentices. Atlas is committed to dedicating attention and resources to education and training to ensure a ready and realizable workforce for the mine.

Workplace policies will be designed to prevent and discourage behavior or language that is considered offensive or not respectful of others. Employees will complete Intercultural Awareness and other training, including that provided by the Mining Industry Human Resources Council. Employees will be encouraged to participate in sessions, conferences, training, and other initiatives provided in the province and others. Additionally, managers and supervisors will receive training to increase awareness of insensitive, harassing, or discriminating behaviors and practices in the workplace.

## 2.11 Project Schedule

The anticipated Project schedule is summarized in Figure 2.34, and is based on the current stage of planning.

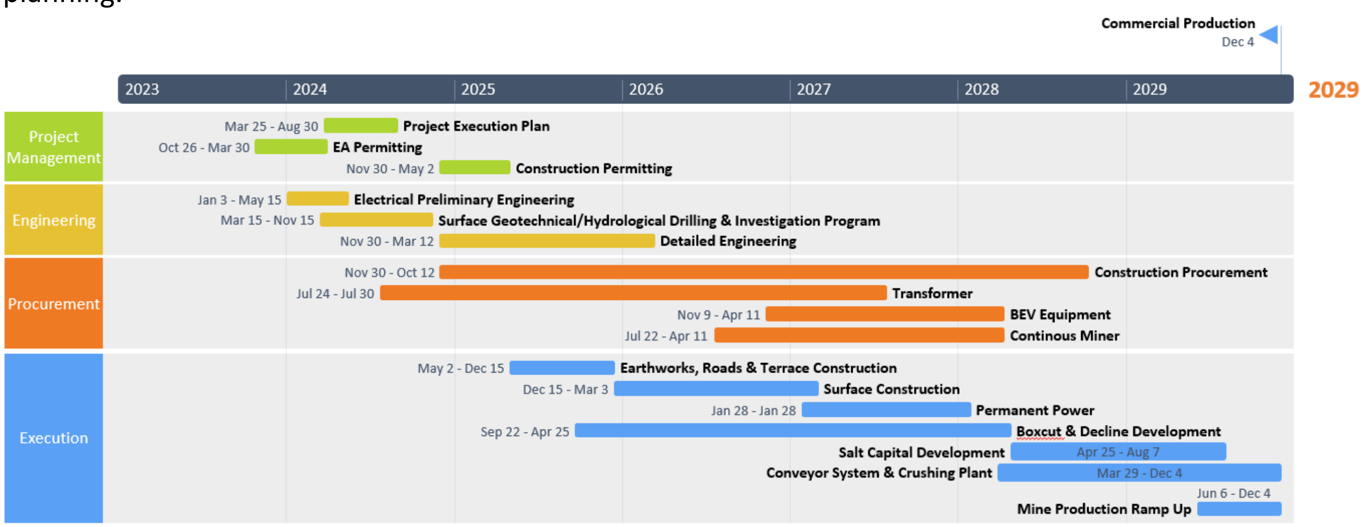



*Figure 2.34: Preliminary Project Schedule*

Commencing in Q4 2024 with construction permitting, detailed engineering and construction procurement, the current Project schedule would see earthworks, road & terrace construction activity in the field beginning in Q2 2025 and continuing until Q4 2025.

The underground development and construction will commence with Boxcut & Decline Development commencing in Q3 2025 and extending until Q2 2028. This will be followed by the Salt Capital

Development and installation of underground conveyor systems & processing plant, after which Mine Production Ramp Up will begin in Q2 2029 achieving commercial production levels in Q4 2029 and extend for an operational period of at least 34 years.

## 2.12 Project Costs

The estimated escalated pre-production capital cost of the Project, based on the current stage of engineering design and planning is approximately $480 million, which includes engineering, construction activities (labour and materials) and other components and activities.

## 2.13 Potential Accidental Events

In the construction, operation or decommissioning of any project or activity, an accidental or other unplanned event is an unlikely, but unfortunately possible, outcome. Some of the potential accidental events or malfunctions that may be associated with this Project, and which are relevant for EA purposes include:

- An accidental spill of fuels or other deleterious substances into the environment (terrestrial, marine, aquatic), and
- A fire at the Project site, potentially extending into adjacent areas

The resulting environmental effects of such an incident would clearly depend upon the nature, magnitude, location and timing of any such event.

In order to undertake this Project in a safe and environmentally responsible manner, various environmental protection and emergency response plans will be developed and implemented throughout the various phases, including contingency plans and a mine rescue plan related to potential accidental and emergency events, each of which will be implemented, adhered to, and regularly reviewed and updated throughout the life of the Project (see Appendix C for outlines of these plans). All on-site Project personnel, including Atlas employees, contractors and visitors, will be required to understand and adhere to the provisions of these documents.

While it is the intention of the proponent to take all reasonable measures to prevent spills from occurring, there exists the unlikely possibility that an unforeseen event may occur resulting in a spill. Atlas' plans for spill response will be discussed in detail in the company's Spill Response Plan, which is to be finalized prior to the commencement of construction of the Project.

Generally, in the unlikely event of an oil spill, the response strategy will be as follows:

- Immediately take steps to control the spill at, or as close to, the source as possible, with safety of personnel being the number one priority;
- Contain the spill and intercept / recover the spilled material to prevent it from flowing unabated to the environment;

- Recover as much of the spilled material as possible; and
- Remediate contaminated areas.

In the event of a fuel spill, spilled material that is either contained within the bermed area or has seeped into the subsurface will be recovered as soon as it is safe to do so using onsite equipment. If necessary, additional equipment will be mobilized to the site. The spill response equipment at site will be similar to that utilized during previous mining operations in Western Newfoundland, and will likely include a combination of the following:

- Containment booms;
- Spill kits; and
- If required, assistance and additional equipment from a qualified and experienced spill response contractor.

Furthermore, any soil that has been contaminated in exceedance of applicable regulatory specifications will be removed for offsite treatment. Spills that meet minimum regulatory thresholds for their respective environments will be reported to the relevant agencies and follow required protocols and practices.

It is the intent of Atlas to ensure all applicable measures to prevent fire. This will include normal practices, procedures and training related to fire prevention. A fire water protection system will be installed at the site to respond in the unlikely event of a fire. This includes a central fire water storage tank fed from the Town's potable water supply that 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.

The Town of St. George's has a fire hall that is located approximately 3 km away from the mine site, via the main access and Steel Mountain Road. A mine rescue program and the associated training will be implemented that will provide trained personnel to respond to fire and non-fire emergencies.

## 2.14 Effects of the Environment on the Project

The proposed Project has been planned, and will be further designed and implemented, with due consideration of the local environmental conditions in and around the Project site. Geological characteristics, topographic features, oceanographic conditions, climate and weather conditions (including the current and future influences of climate change) existing infrastructure, and other environmental factors (see Chapter 3) have, to varying degrees, influenced the placement and design of the Project and its associated components and activities. Weather conditions and other environmental influences may also influence the conduct and timing of some activities.

No additional or specific mitigation measures are required or proposed in relation to the possible effects of the environment on the Project. The results of future, detailed design for the various proposed Project components and activities will be reflected in Atlas' future (post-EA) applications for the various permits, authorizations and approvals that will be required for the Project (see Appendix A).

## 2.15 Environmental Permits and Approvals

In addition to approval under the provincial EA process, the Project will also require a number of other provincial, federal and municipal permits and authorizations. Atlas is committed to obtaining, and complying with the conditions of, these required permits and approvals during the various phases of the Project, and will require the same of any and all contractors that are involved in this Project.

Some of the key environmental permits and approvals that may be required in relation to the Project include those listed in Appendix A.

## 2.16 Project Documents

Apart from this EA Registration (and the various environmental studies and other documents included in it as appendices), no other EA-related documents have been produced by Atlas in relation to this Project.

# 3.0 EXISTING ENVIRONMENT

This section provides an overview of the existing biophysical and socioeconomic environments in the vicinity of the Project. The Project itself will be located wholly within the Town of St. George's municipal boundary, on a combination of undisturbed lands and previously developed industrial areas.

The general area is rich in mineral resources and has a history of mining activity. Exploration within the Port au Port / Bay St. George region extends back to 1946 when the Newfoundland Geological Survey completed field studies in the area. Gypsum has been mined in Flat Bay, approximately 6 km southwest of the Project, since the 1950s. Certain infrastructure built for that early mine, including the Flintkote Road which has been used as the transportation route and the Turf Point marine terminal, are still being used today. This Project will use much of this existing infrastructure, thereby reducing the area of new land disturbance that will be required to develop the mine and its associated components and activities.

This region of the west coast within St. George's Bay is also well known for its natural resources including scheduled salmon rivers, a marine environment that supports commercial and recreational fisheries, and terrestrial habitat that supports diverse vegetation and wildlife populations and associated commercial, recreational and traditional land uses.

The overview of the existing environmental setting that follows focuses on the following biophysical and socioeconomic components:

**Biophysical Environment**

- Atmospheric Environment
- Geology and Topography
- Vegetation and Soils
- Water Resources (ground and surface water)
- Freshwater Fish and Fish Habitat
- Wildlife
- Listed and Rare Species
- Protected and Special Areas
- Marine Environment

**Socioeconomic Environment**

- People and Communities
- Community Services and Infrastructure
- Economy, Employment and Business
- Land and Resource Use
- Historic Resources
- Fisheries and Other Ocean Uses

The information presented in this section is based on existing and available information sources, which have been supplemented by several environmental baseline studies undertaken by Atlas which are included as Appendices D, E, and F.

# 3.1 Biophysical Environment

## 3.1.1 Atmospheric Environment

### 3.1.1.1 Climate

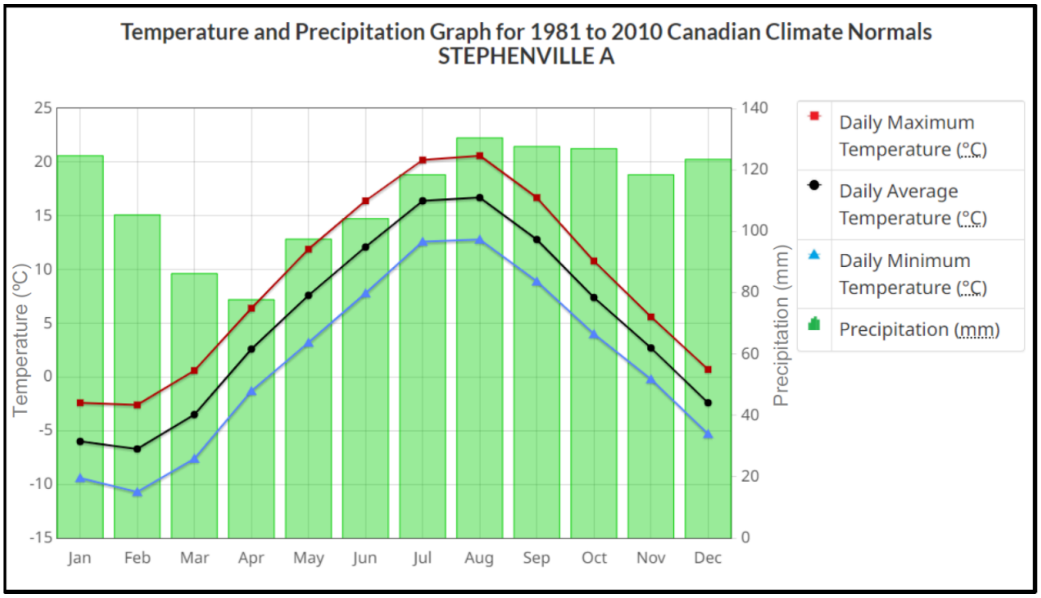
The climate of the Project area is strongly influenced by its proximity to Bay St. George's and the larger Gulf of St. Lawrence. The mine site is approximately 1,000 m from the ocean at an elevation of approximately 40 meters above sea level (ASL), with the proposed conveyor route travelling to and then along the coast on an existing industrial road. This proximity of the ocean moderates the temperatures in the area, and generally results in relatively high rainfall amounts, as winds off the Gulf of St. Lawrence drop their moisture when they ascend the inland slopes. The Long-Range Mountains also provide protection from cold northeasterly winds, giving this ecoregion the longest frost-free periods on the Island of Newfoundland.

St. George's Bay area experiences cool, wet summers, and relatively cold winters with annual temperatures ranging from -10 °C to 21 °C and rarely below -17 °C or above 24 °C (PAANL 2008). Annual rainfall is approximately 1,200 mm with an annual snowfall from approximately 2 to 4 meters (PAANL 2008). Climate normals are presented below in Figure 3.35. Mean annual runoff is estimated at 1,200 mm (Figure 3.36).

Prevailing winds are from south and southwest during the summer and west to northwest in the winter and tend to average between 10 and 30 km/hour, with extreme wind events of over 100 km/hour occurring regularly (LGL 2007).

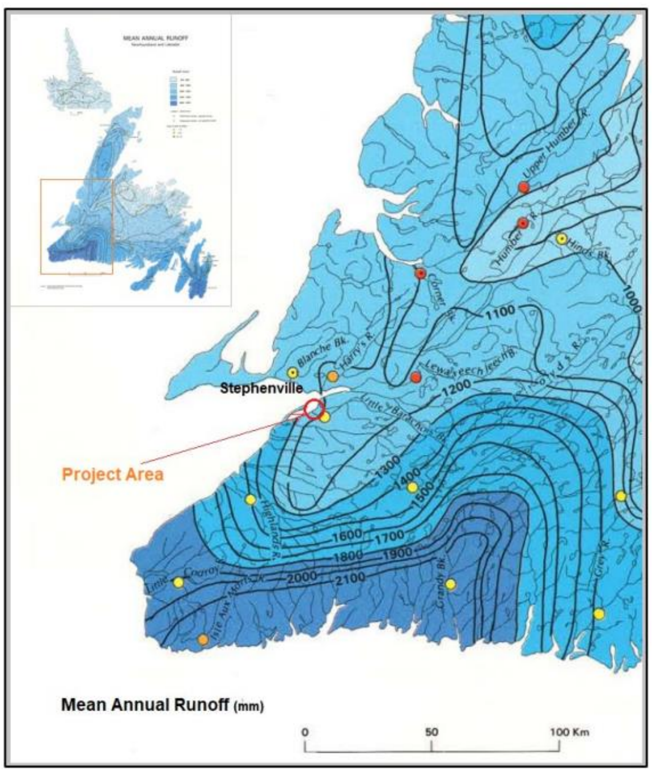
### 3.1.1.2 Air Quality

Mineral extraction has been a major economic driver of the St. George's Bay area since the 1950s when the Flat Bay mine was first developed. The Flat Bay mine ceased operations in 1990 and gypsum mining began once again 2018 when Red Moon Resources began mining the same gypsum source deposit. Red Moon Resources used existing mining infrastructure including the Flintkote road for ore transport using haul trucks, and the marine terminal for shipment of product. Gypsum mining and related transport operations within the Town of St. George's are the primary sources of industrial noise and air emissions that would affect the local atmospheric environment. Existing releases of air contaminants are generally classified into criteria air contaminants (CACs) and greenhouse gases (GHGs). Criteria air contaminants, a set of criteria pollutants that cause smog, acid rain and other health hazards, include particulate matter (PM), sulfur dioxide (SO2), nitrogen oxides (NOX), and carbon monoxide (CO).




Source: Environment Canada (1981-2010)

*Figure 3.35: Climate Normals from Stephenville Airport (Station ID8403800)*




Source: NLDMAE (1992)

*Figure 3.36: Mean Annual Runoff*

Newfoundland and Labrador's GHG emissions are a relatively small portion of Canada's national emissions, accounting for approximately 1.5% of Canada's national GHG emissions each year from 2015 to 2018 (ECCC 2023). There are no significant sources of GHG emissions within the St. George's Bay area. Within the western region of the province the largest current source of GHG emissions is from the Corner Brook Pulp and Paper Mill, which is approximately 72 km to the northeast.

According to the 2021 Ambient Air Monitoring Report (NLDECC 2022), air quality in communities across the Island of Newfoundland is generally considered to be good, as ambient air quality standards are rarely exceeded for the various pollutants being measured. Corner Brook is the nearest designated National Air Pollution Surveillance Network site, continually monitoring ambient levels of sulphur dioxide, nitrogen oxides, nitrogen dioxide, nitric oxide, carbon monoxide, ozone, and particulate matter (less than or equal to 2.5 microns and less than or equal to 10 microns). None of the pollutants exceeded ambient air standards in 2021, except for 10-micron particulate matter (once) and ozone (17 times) (NLDECC 2022).

#### 3.1.1.3 Noise and Vibration

The Project site is located within the Town of St. George's, which is a small, rural community (population of 1,139 residents in 2021) adjacent to the ocean. The acoustic environment is therefore largely dominated by the sound of nature – birds, wind in trees, running brooks/streams, and ocean waves with low amounts of industrial and commercial activity within and around the Town of St. George's.

There are approximately 16 quarry operations within 10 km of the Project mine site and several farm operations in the region. The town centre, approximately one km from the mine site, contains commercial (including several garages) and residential operations with associated traffic that contributes to the ambient noise in the area. There is main road through the Town of St. George's, and a main artery from the Trans-Canada Highway that contributes traffic to the area.

A recent study conducted sound quality monitoring in the region (Stantec 2023) and collected measurements of sound pressure at 16 sites in the region surrounding Bay St. George's. Noise levels were found to be highest for locations close to major roadways or nearer to urban areas close to Stephenville. Rural areas experienced less noise. Daytime sound levels ranged from 39 dBA to 53 dBA. Nighttime sound levels were lower, ranging from 36 dBA to 49 dBA.

This same study (Stantec 2023) placed seismographs to measure peak particle velocity (PPV) at each of seven locations around Bay St. George's. Baseline vibration levels were found to be low at most locations. Currently, there are no known regulations or guideline exposure limits for vibration in Newfoundland and Labrador. Guidelines related to public nuisance from vibration have been developed by the American National Standards Institute through ANSI/ASA S.39-1983. These guidelines have been adopted by regulatory agencies such as the United States Federal Transit Administration and are often used in jurisdictions across Canada for assessing vibration. The ANSI guidance gives threshold values for different types of land use. For land uses associated with residential areas or in areas where sleeping occurs, the recommended ANSI threshold is 0.1 mm/s RMS.

One location adjacent to a quarry on the Port aux Port Peninsula had one occurrence of vibration levels above 0.1 mm/s RMS. A second location in Stephenville Crossing also experienced one event with an

RMS level above 0.1 mm/s. In both cases, the elevated vibration levels were likely due to a vehicle pass-by. The remaining measurements at each location were well below 0.1 mm/s (Stantec 2023).

### 3.1.2 Geology and Topography

Information presented in Section 3.1.2.1 is modified from APEX, 2016.

#### 3.1.2.1 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. During Sub-basin formation, differential extension and deformation have 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 based on its wide lateral extent and overall stratigraphy. Sedimentary strata from a range of depositional environments including marine, shallow marine, salina, to fluvial and deltaic facies are included.

The Codroy Formation of the Codroy Group represents the dominant stratigraphic unit within the Project Area. Bedrock exposures may be observed across the region, including the workings of the Flat Bay Gypsum Quarry, located approximately six kilometers to the southwest of the Project.

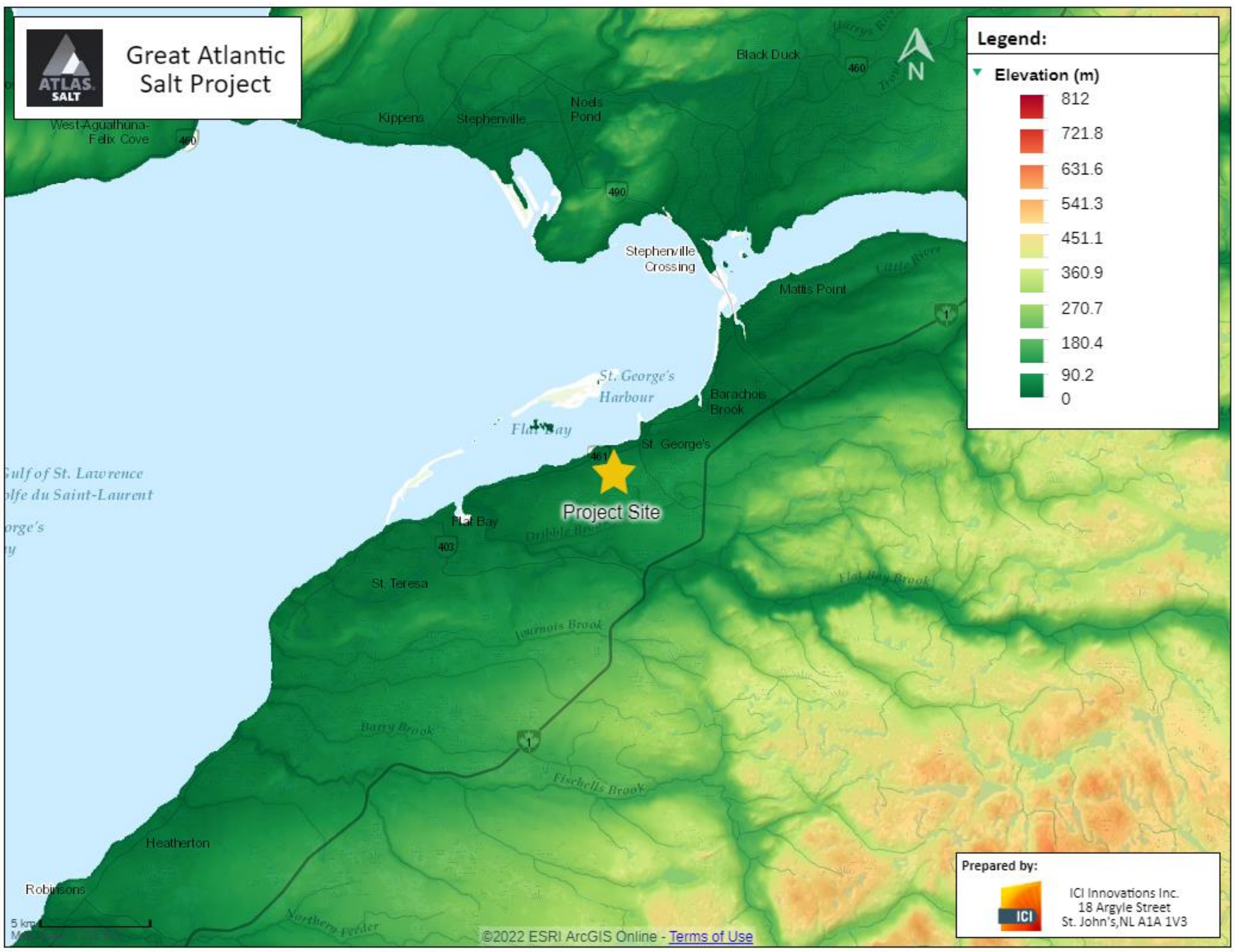
#### 3.1.2.2 Topography

Generally, the region around the Project site is characterized by relatively low elevations (< 50 m) near the coast, rising to higher mountainous elevations (300 m+) at around 10 km from the coast (Figure 3.37). The proposed Project site is in the lower coastal areas within 3 km of the coast, with elevation ranging from a few meters above sea level along the planned overland conveyor route to maximum of 88 m at its highest elevation where the planned access road meets Steel Mountain Road. The Project site is characterized by a continuous low slope with very little undulation across the area (Figure 3.38). The elevation ranges from 64 m at its highest point (Point E in Figure 3.38). The mine site slopes from all areas of the site to the northwest corner, with a range of slopes across the mine site ranging from 3.5% (D to A and C to A in Figure 3.38) to 4.5% (E to A in Figure 3.38).

Directly to the east of the Project site there is a higher elevation area (F: 80m in Figure 3.38) that separates the residential areas on Muises Lane from the mine site. There is a ridge line (See Ridge Line marked in Figure 3.38) that runs east to west through the potential construction camp area and then to the west. The area to the north of this ridge line faces north and generally slopes towards the ocean and across the mine site. The area to the south of the ridge line generally slopes to the south to an apparent intermittent stream that slopes to the south through a flat section of land that drains into Dribble Brook.

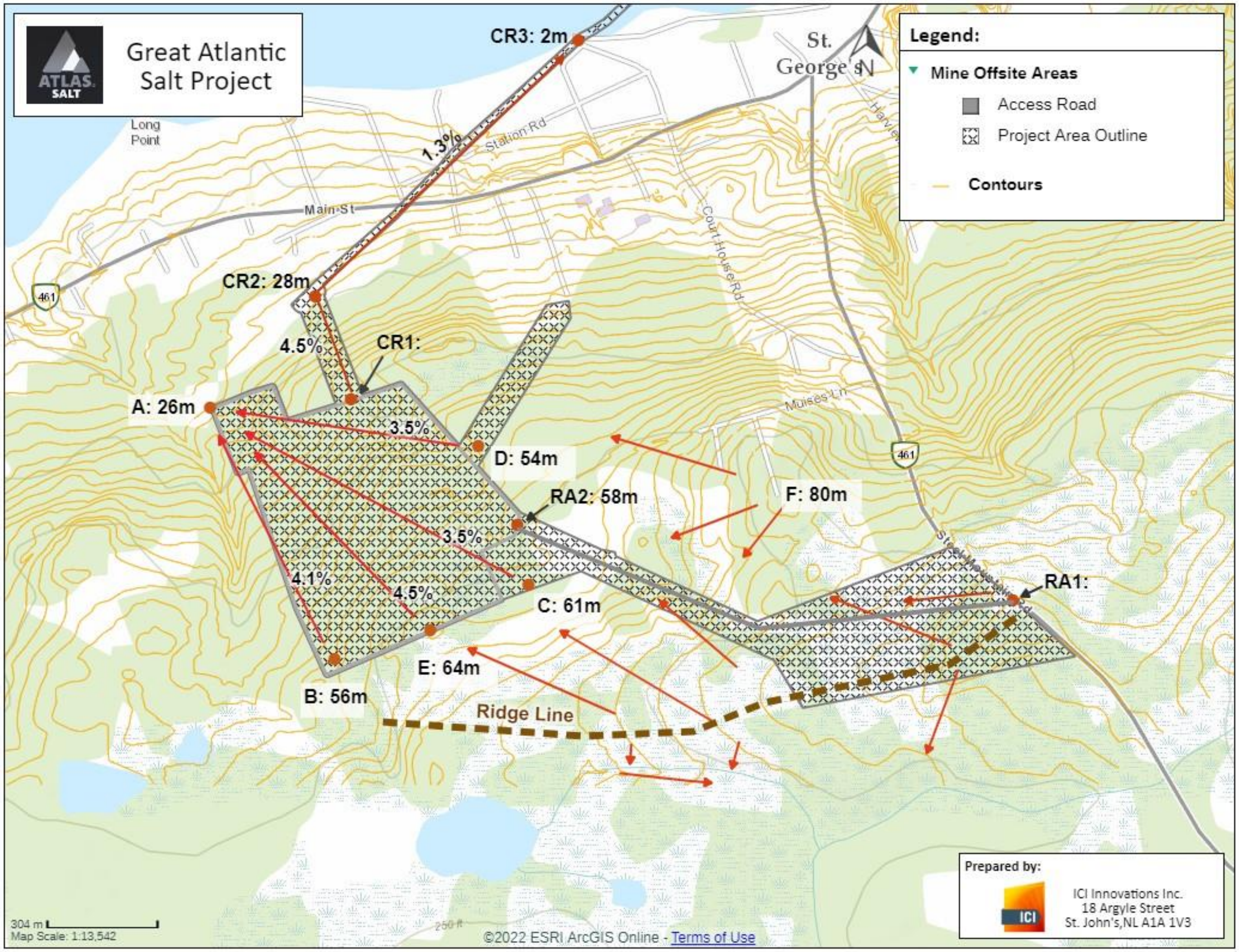
The main access road to the site will extend from 88 m elevation at Steel Mountain Road to 58 m elevation at the entrance to the mine site at a slope of approximately 2.3% (Figure 3.38). The slope of the land runs generally along the access road toward the mine site.

The proposed conveyor route travels from the edge of the mine site (CR1 on Figure 3.38) at an elevation of 42 m to the haul road (CR2) at 28 m at a slope of 4.6% and then to 2 m asl over an approximately 2 km route (1.3% slope), and on to the existing Turf Point marine terminal at just above sea level.




Source: NLFFA (2023)

*Figure 3.37: Regional Topography*




Source: NLFFA (2023)
*Figure 3.38: Project Mine Site Topography*

### 3.1.3 Vegetation and Soils

#### 3.1.3.1 Ecoregion

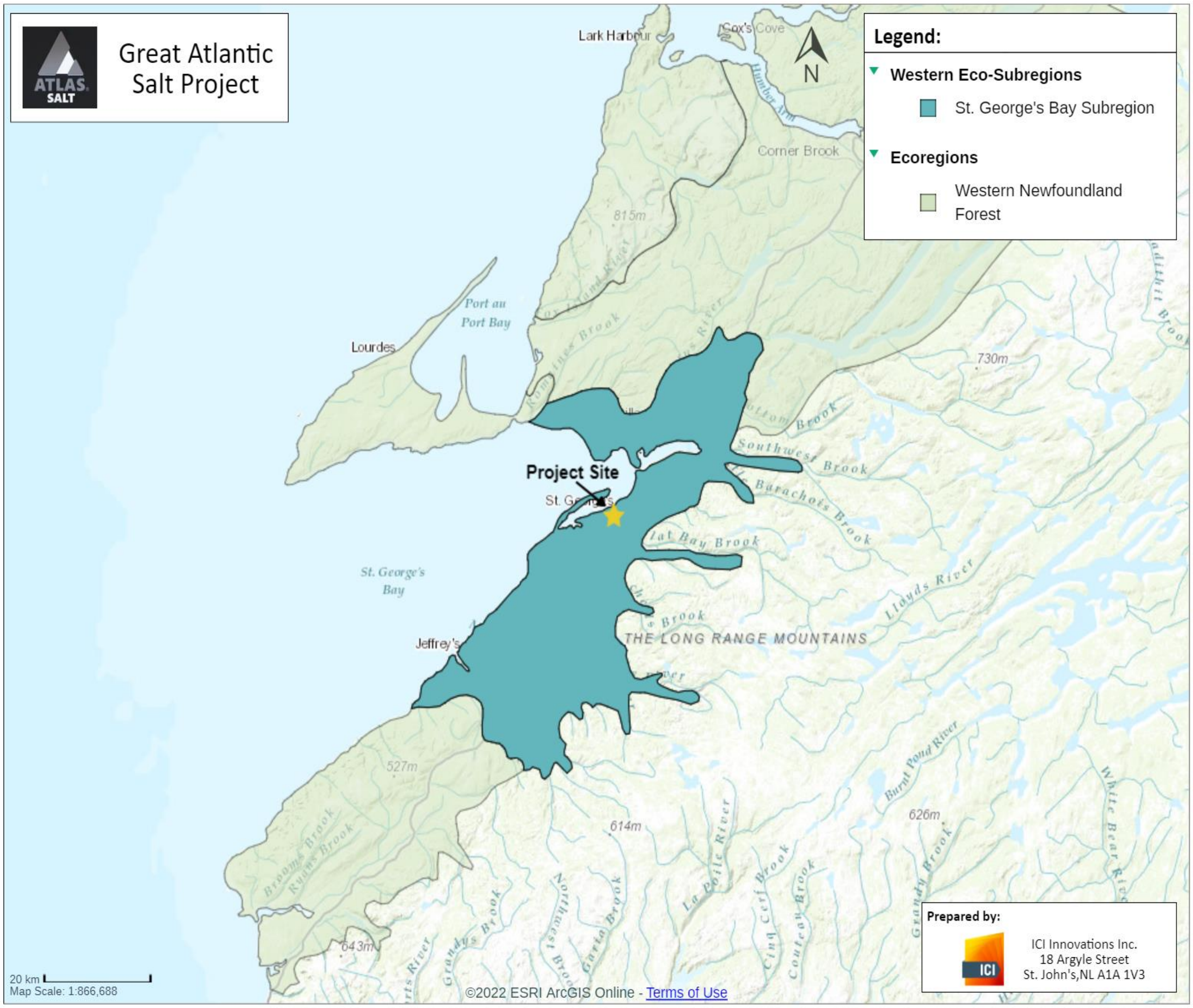
The Project area is located with the Western Newfoundland Forest Ecoregion (Damman 1983) which includes the coastal lands from the Codroy River in the southwest to Bonne Bay in the north. This ecoregion supports large areas of favourable balsam fir forest habitat as a result of its proximity to the ocean which moderates air temperatures and is a source of precipitation and humidity.

The Western Newfoundland Forest Ecoregion is divided into several subregions including the St. George's Bay subregion (Figure 3.39). This subregion covers the area east and south of Stephenville, extending inland from the coast of St. George's Bay to the borders of the Central Newfoundland Forest and Southern Long Range Barrens. The St. George's Bay Subregion is marked by flat to rolling terrain and contains extensive plateau bogs. This subregion is characterized by forests of balsam fir with an understory of mostly wood ferns on sloping lands with flatter areas of plateau bogs and alder thickets. Balsam fir forests with a feathermoss floor are generally on the steeper slopes farther inland. Closer to the coast on the gentle slopes leading to the coastline, bogs and larger wetland complexes become more prevalent. The lands in and around the Town of St. George's are characterized by a rocky coastal habitat that transition to wetland complexes inland with intermittent black spruce and balsam fir forests (Appendix D).

Given the relatively high rates of precipitation in the area, black spruce fire stands are rare. Two types of alder swamps that are uncommon in other areas of the province are found in the St. George's Bay Subregion: golden rod/alder and bracken fern/alder. Both are found where the soil is waterlogged or poorly drained. The northern limit of a number of deciduous forests occur in the region.

#### 3.1.3.2 Information Sources and Methods

Information on vegetation and soil conditions within the Project area was obtained from existing and available data and a number of baseline surveys undertaken by Atlas. The study area for the baseline surveys completed in 2022, as shown in Figure 3.40, was based on a preliminary mine site location which has since expanded to include additional lands to the south and southeast. The baseline survey data were used to define vegetation classes for ecological land classification. Three surveys were conducted: 1) early summer (June 3–5, 2022), 2) mid-summer (July 9-16, 2022) and 3) late summer (August 13-14, 2022) to provide comprehensive seasonal coverage for vegetation in the survey area. Dominant tree, shrub, and herbaceous species were identified, and photos of the vegetation communities present were taken. The data have been used to delineate classifications of vegetation communities in the area. The complete Ecological Baseline Report completed by Gemtec for Atlas is included as Appendix D. Subsequent to the work completed by Gemtec in 2022/2023, the vegetation classification was augmented using updated high resolution (40cm) imagery obtained from Maxar. The higher resolution imagery data combined with the field work completed by Gemtec and Atlas was used to define the vegetation classification of the full Project Area and is shown in Figure 3.41.




Source: https://www.gov.nl.ca/ecc/files/natural-areas-maps-ecoregion-subregion-nl.pdf

*Figure 3.39: Western Newfoundland Forest Ecoregion and St. George's Bay Sub-Region*

Desktop information sources reviewed include:

- Available aerial photography (Bing and Google Earth 2022);
- Historical vegetation and species at risk (SAR) Records as managed by Atlantic Canada Conservation Data (AC CDC, 2022 and included in Appendix D);
- Forestry Habitat Data (NL GMD, 2022); and
- Topographic Data of Canada - CanVec Series (Natural Resources Canada, Canada 2022).
- High resolution 40cm imagery collected in June 2023 and purchased by Atlas from Maxar Imagery


*Figure 3.40: Ecological Land Classification on Mine Site (GemTec Study Area)*

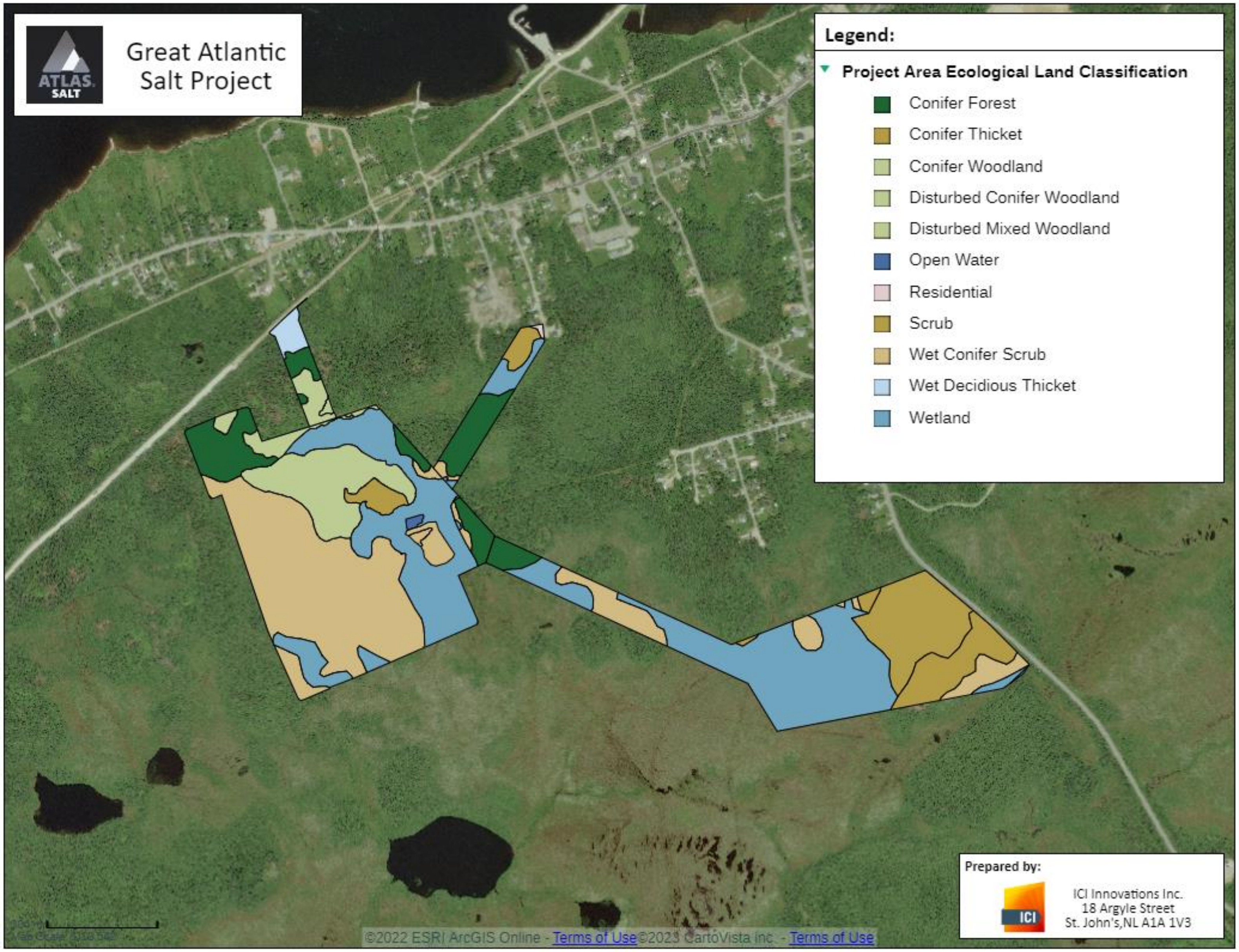



*Figure 3.41: Ecological Land Classification of Mine Surface Site and Ancillary Facilities*

#### 3.1.3.3 Soils

The Project mine site and surrounding area are characterized by till and organic material. Within the area of the mine site the soil cover is primarily glacial till veneer with patches of thicker till. The south and southeast extents of the mine site are organic as the topography levels out in the open bogs. The conveyor route to the existing Turf Point marine terminal is primarily a veneer of marine till. The soils in the area are typically humo ferric podzols (brown soils containing mostly inorganic material) in the till areas, and ferro humic podzols (dark soils with high organic content and high amounts of iron and aluminum) in the organic material areas. The glacial tills in the mine site area would be characterized by the organic material from land based vegetation, while the marine tills are more affected by marine organics. The glacial tills in the mine site area tend to lend themselves well to construction activities.

#### 3.1.3.4 Vegetation Classification

Field vegetation surveys led to a total of 150 flora species being documented in its study area. These species are generally considered common and widespread in the region. No flora Species of Risk (SAR) or Species of Conservation Concern (SOCC) were observed during field surveys. A complete inventory of plant species encountered is presented in Appendix D.

An ecological land classification of the survey area completed in 2022 by Gemtec (Appendix D) combined with the classification extracted from high resolution imagery by Atlas in 2023 is presented in Figure 3.41 above and in Table 3.10 below.

*Table 3.10: Land Classes within the Surface Mine Site and Ancillary Facilities Area*

| **Land Classification** | **Hectares** | **Percent** |
|---|---|---|
| Open Water | 0.12 | 0% |
| Disturbed Mixed Woodland | 0.17 | 0% |
| Wet Deciduous Thicket | 0.71 | 1% |
| Disturbed Conifer Woodland | 1.84 | 3% |
| Conifer Thicket | 4.70 | 7% |
| Scrub | 5.43 | 8% |
| Conifer Woodland | 5.50 | 8% |
| Conifer Forest | 6.73 | 10% |
| Wet Conifer Scrub | 20.63 | 29% |
| Wetland | 24.63 | 35% |
| **Total** | **70.46** | |

The land classification of the surface mine and ancillary infrastructure areas represents approximately 70 hectares of land. Wetland and wet conifer scrub are the two most abundant land classes encountered with 35% and 29% respectively. The wetland class represents 24.63 hectares (ha) of the Project Area and the wet conifer scrub occupies 20.6 ha.

The wetland occupies a large portion of the area to the southeast of, and partially overlaps, the surface mine site (Figure 3.41). Other classes included conifer forests and woodlands, scrub (barren), coniferous thicket and to a smaller extent disturbed woodlands, wet deciduous woodland, and shoreline.

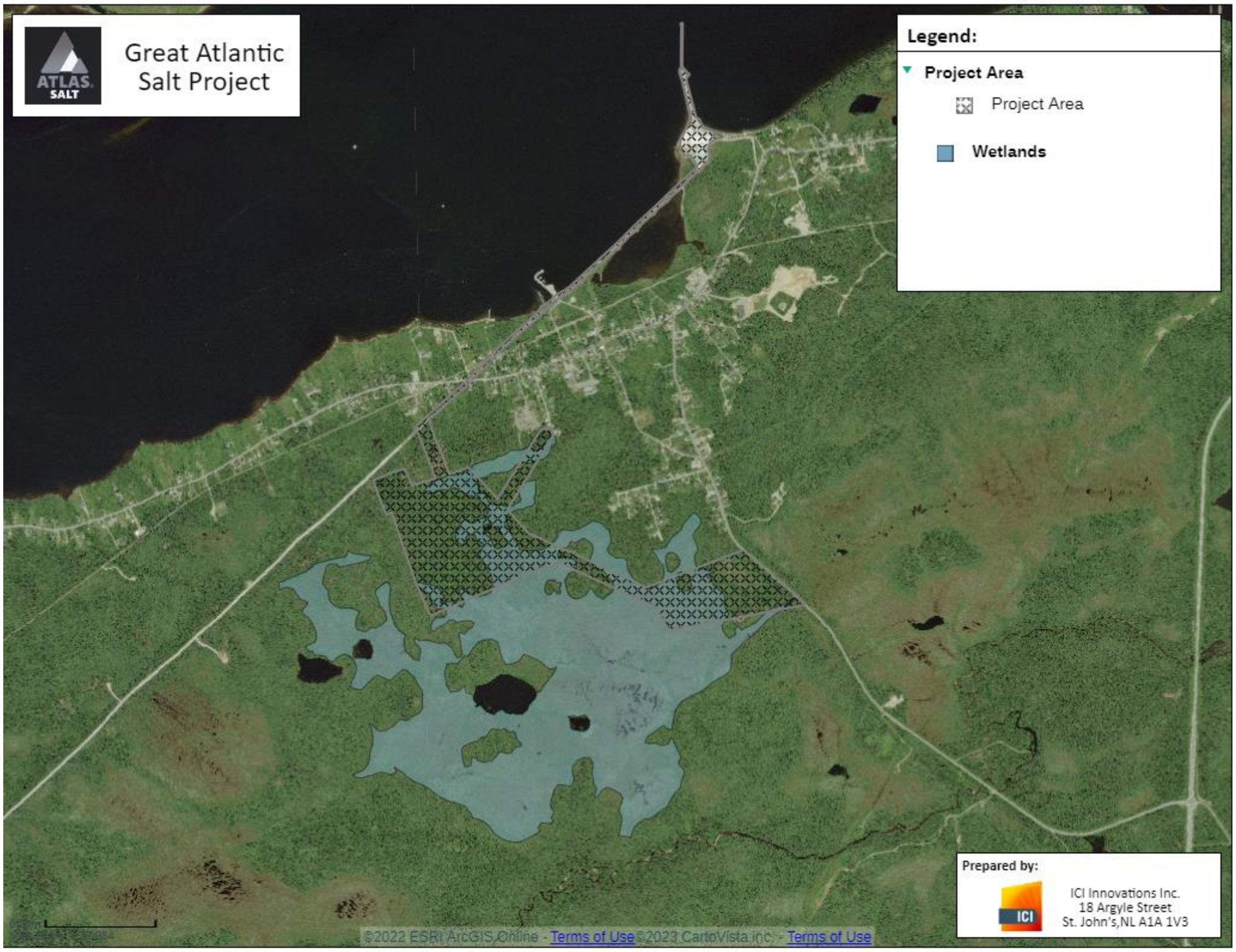



*Figure 3.42: Wetlands in Vicinity of Project Area*

Wetlands within the Study Area are characteristic of plateau bogs and have a high abundance of graminoid species. The wetlands are generally in depressed bowl features within the bedrock which has allowed for sediment and water to collect, giving way to the dominant sphagnum layer. Other species within the features include Pitcher Plant (*Nepenthes* sp.), various Cottongrass sp. (E*riophorum* sp.), Tufted Rush (*Trichophorum cespitosum*), White-beaked Rush (*Rhynchospora alba*), Few Flowered Sedge (*Carex pauciflora*), Poor Sedge (*Carex magellanica*), Bog Laurel (*Kalmia polifolia*), and Bog Aster (*Oclemena nemoralis*). Ericaceous shrubs are also present in these habitats in moderate quantities, typically dominated by Leatherleaf (*Chamaedaphne calyculata*), Labrador Tea (*Rhododendron groenlandicum*), and Sweet Gale (*Myrica gale*).

The AC CDC Data indicated within the AC CDC study area, defined as a 5 km buffer around the centre of the Project area, a total of 29 location-sensitive plant species of conservation concern were recorded, one of which, Boreal Felt Lichen (*Erioderma pedicellatum*), is a Species at Risk (Appendix D). Further information on habitat present within AC CDC study area indicates that Boreal Felt Lichen preferred habitat, namely mature forest sites with exposed forested slopes, is absent within the study area, but potential habitat exists within the region. The full AC CDC report can be found in Appendix D. Further discussion on listed and rare species is presented in Section 3.1.7.

### 3.1.4 Water Resources - Groundwater

#### 3.1.4.1 Information Sources and Methods

Initial information on baseline groundwater conditions in and around the proposed Project site was presented in GEMTEC's Preliminary Baseline Hydrogeology Study (Appendix E) and was primarily based on two reports:

- Exploratory Well Drilling Program for the Town of St. George's, NL (Fracflow, 2003), and the
- Factual Summary Report of Geotechnical Logging, Packer Testing and Downhole Geophysical Surveys, Salt Drilling Program, Great Atlantic Salt Deposit, St. George's, NL (Appendix F).

GEMTEC's preliminary baseline study area was focussed on the identified Project mine site itself, and the adjacent conveyor route northeast to the coast. While hydrogeologic characterization of the Turf Point storage and port facility site was not specifically addressed in the preliminary study, this baseline discussion includes the Turf Point site based on the various regional scale published information sources noted below. The preliminary baseline hydrogeology borehole and testing locations are shown in Figure 3.39.

**Exploratory Well Drilling Program for the Town of St. George's, NL (Fracflow, 2003)**

From 2002 to 2003, Fracflow carried out several borehole and exploratory water well drilling programs with hydrogeological testing and water sampling to evaluate an alternative public water supply for the Town of St. George's. A portion of the drilling program was located along Flintkote Road along the northern limits of the proposed mine site. The following investigations were conducted, and the drill locations are shown on Figure 3.43:

- Three NQ (47.6 mm inside diameter) diamond drill holes were completed along or close to Flintkote Road, including: boreholes FR1 and FR2, which were inclined approximately 78 degrees and had along hole depths of approximately 61 m and 38 m, respectively, and borehole FR3, which was a vertical hole with a depth of approximately 46 m. Packer testing was carried out during bedrock drilling in boreholes FR1 and FR2. Artesian conditions were encountered in boreholes FR1 and FR3, and depth discrete water quality samples were collected in these two boreholes.

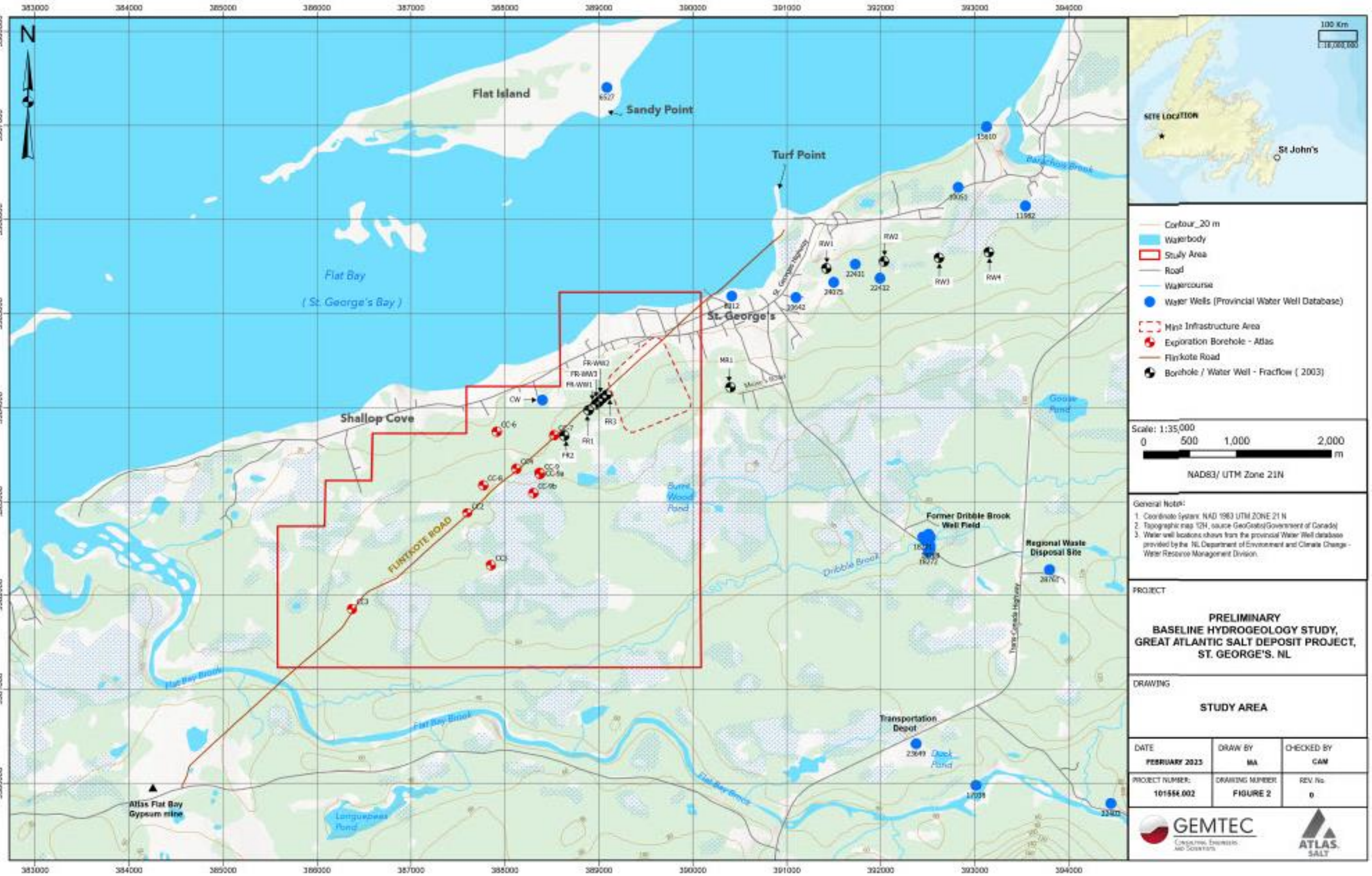



*Figure 3.43: Study Area Borehole and Testing Locations*

- A follow-up program in 2003 involved the drilling of two 200 mm (8 in) diameter exploratory water wells (FR-WW1 and FR-WW2) and one 150 mm (6 in) diameter exploratory water well (FR-WW3) to depths of 50.3 m, 46 m, and 47.8 m, respectively. Step-drawdown tests were completed on all three wells, and a 72-hour pumping test and a second 42-hour pumping test was conducted on FR-WW2. Artesian conditions were encountered in FR-WW1 and FR-WW2, and depth discrete water quality samples were collected in both wells.
- One NQ diamond drill hole, MW1, was completed to a depth of 44.5 m on Muise's Lane (located approximately 250 m east of the proposed mine site area) in 2022. Packer testing was completed during drilling of bedrock. No monitoring well was installed in this hole.
- Four boreholes (RW1, RW2, RW3 and RW4) were augured to a depth of 15 m along the former Canadian National (CN) railway track, located approximately 2 km northeast of the proposed main site area in 2002. This location is also the site of the current Town of St. George's groundwater supply well field. Split-spoon samples were submitted for grainsize sieve analysis, and results were used to calculate hydraulic conductivity values for the sand and gravel deposits underlying this area.
- In 2003, a follow up 30-day pumping test was carried out utilizing a purposely drilled 200 mm (8 inch) diameter, 15.2 m deep water well (RL-WW1). One NQ diamond drill hole (RW-DD1) was also drilled to a depth of 26.5 m for observation monitoring. Both the test well and observation hole were completed in the unconsolidated material.
- Groundwater quality samples were collected from five wells as part of Fracflow's 2002 – 2003 programs. These samples were analyzed for general chemistry and total metals. Five of the water quality samples collected were from wells located along Flintkote Road (FR1, FR3, FR-WW1, FR-WW2 and FR-WW3), and one sample was collected from a pre-existing well at the Shallop Cove cemetery (CW-1), located approximately 500 m northwest of the Project's mine site area.

**Factual Summary Report of Geotechnical Logging, Packer Testing and Downhole Geophysical Surveys, Salt Drilling Program (Appendix F)**

GEMTEC, in partnership with Terrane Geoscience Inc. (Terrane), carried out geotechnical logging and conducted packer testing, and televiewer and natural gamma ray surveys as part of exploration drilling programs in 2022 and 2023. This program included geotechnical logging of the siliciclastic sedimentary bedrock sequence (above the salt horizon) in five boreholes (CC-22-6, CC-22-7, CC-22-8, CC-22-9, CC-22-9b) down to depths ranging from 146 m to 257 m. The program also involved the geotechnical logging of the siliciclastic sediments in historical borehole CC-4. Packer testing was carried out during drilling in boreholes CC-22-6 and CC-22-7 but could only be successfully completed in five intervals (three in CC-22-6 and two in CC-22-7) due to poor ground conditions and packer seating. Packer testing was carried out over depths ranging from 99 m to 296.1 m in CC-22-6, and from 87.3 to 144.9 m in CC-22-7.

**Other Existing Information and Data Sources**

In addition to these primary sources, various publicly available information and Project-specific information were also used to inform baseline hydrogeologic conditions described below. These include more recent drilling lithologic logging and packer testing results obtained from one HQ diameter, vertical borehole (D-1) drilled through the proposed decline alignment provided in Decline Drilling Program Support – Factual Summary Report (Appendix G); and lithologic logging and groundwater level measurements obtained during drilling of boreholes in the box cut area (Appendix F). Public data sources included the provincial online Geoscience Atlas (NLIET-Geoscience Atlas) and the Water Resources Portal (NLECC-Water Resources Atlas), as well as regional records from the Provincial Water Well Database (NLECC-Well Water Database), and the AMEC (2013) western regional hydrogeological study report.

The review and compilation of these published and Project-specific data form the basis for developing a first generation hydrogeologic Conceptual Site Model (CSM) to describe the key components of the Project's hydrogeologic system with respect to groundwater quantity and quality under baseline conditions. Using the hydrogeologic CSM, SLR developed a pre-feasibility level 3D numerical groundwater flow model to represent baseline Project conditions (Appendix H). This model was used to predict the effects of Project dewatering activities during operation on the local groundwater regime and to quantify groundwater inflow into the underground excavations.

#### 3.1.4.2 Groundwater Quantity

##### Hydrostratigraphy

The geology in the proposed mine site area is classified into five hydrostratigraphic units according to their hydrogeological properties:

1) Till Deposits
2) Upper Siliciclastic Sedimentary Bedrock Sequence
3) Evaporite Sequences – Salt/Anhydrite
4) Limestone
5) Basement Granitoid Rocks

Given that the proposed Project will involve the development of the evaporite sequences, and the overlying siliciclastic sedimentary sequence and surficial till deposits will be intersected to exploit the salt resources, the baseline discussion focuses on these three upper hydrostratigraphic units.

##### Till Deposits

The surficial till is generally continuous, occurring as thin veneer (less than 1 m thick) in the northwestern portion of the site transitioning to thicker blanket deposits up to 34.5 m thick to the southeast, and with an average thickness of 15 m. Recent boreholes completed in the proposed mine decline and box cut area (Appendix I) describe the till as ranging from silty sand with gravel and trace clay to sandy silt - silty sand with trace clay and gravel. The permeability of this unit is through its primary intergranular porosity and is expected to be generally low to moderate but may be higher based on its localized sand and gravel content. No hydraulic conductivity (K) testing has been completed on the site's till deposits. The typical range of values in the literature for similar silty sand material is $10^{-7}$ m/s to $10^{-3}$ meters/second (m/s) (Freeze and Cherry, 1979).

The till deposits are locally exploited for private water supplies in the region. Based on 39 well records, AMEC (2013) reported well yields ranging from 0 L/min to 232 L/min, with an average of 48 L/min for till Unit A. Well depths supporting these yields range from 9 m to 40 m, and with an average of 21 m.

#### SILICICLASTIC SEDIMENTARY BEDROCK SEQUENCE

The siliciclastic sedimentary sequence extends from beneath the surficial till deposits to a maximum depth of 370 m and comprises an interbedded sequence of predominantly conglomerate, sandstone, and mudstone having bedding thicknesses ranging from less than 5 m up to tens of meters. While this sequence is comprised of several lithologically and hydraulically distinct sedimentary beds, there is insufficient drilling data for these to be separated into discrete hydrostratigraphic units at this time. As a result, the entire siliciclastic sedimentary bedrock sequence is grouped into one hydrostratigraphic unit for this initial baseline description. Groundwater flow within this hydrostratigraphic unit is mainly due to primary intergranular porosity and is expected to be most pronounced within the more permeable sandstone and conglomerate beds, while the mudstone has a lower permeability. Secondary porosity associated with fracture networks and fault and rubble zones will locally enhance the permeability of the various sedimentary lithologies within this hydrostratigraphic unit.

Hydraulic conductivity data for this unit was obtained from two rounds of packer tests completed in exploration holes (Appendix F and G). The first round of packer testing, completed in 2022 in CC6 and CC7, included five tests focused primarily on the coarser grained sandstone and conglomerate lithologies. The second round of testing was completed in 2023 in hole D-1 and included a total of four tests in the mudstone, sandstone and conglomerate. A summary of the test results is presented in Table 3.11.

*Table 3.11: Packer Test Summary*

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

Packer test results for the two programs are in general agreement and reported Ks of approximately $10^{-6}$ to $10^{-7}$ m/s for sandstone, 10-7 m/s to $10^{-8}$ m/s for conglomerate, and $10^{-8}$ m/s for mudstone. It is noted that tests conducted in D-1 were impacted by leakage and, as a result, reported Ks may be lower, especially values for low conductivity units such as the mudstone. Further, historical packer testing by Fracflow (2003) reported a slightly higher K of $10^{-6}$ m/s for coarse conglomerate and slightly lower Ks of $10^{-7}$ m/s to $10^{-6}$ m/s for sandstone.

The siliciclastic sedimentary hydrostratigraphic unit corresponds to regional hydrostratigraphic Unit 4 in the AMEC (2013) regional hydrogeological study. These rocks are locally exploited for private water supplies in the region. Based on 586 well records, AMEC (2013) reports well yields ranging from 0.5 L/min to 1,530 L/min, and an average of 72.6 L/min for this unit. Well depths supporting these yields range from 6 m to 131.1 m, and average of 41 m. Of the 586 wells that define this regional hydrostratigraphic unit, none are in the Project area. Pumping tests carried out by Fracflow (2003) in three Flintkote Road exploratory water wells (FR-WW1, FR-WW2, FR-WW3) had yields ranging from 50 L/min to 80 L/min and fall within the regional dataset.

EVAPORITE SEQUENCES – SALT (HALITE)

No K testing has been completed on the halite in the mine site area; however, literature values for this unit show a range from $10^{-12}$ m/s to $10^{-10}$ m/s (Domenico and Schwartz, 1998). This K range reflects a very low permeability for the Project's salt deposit, and any groundwater movement through this unit is expected to be limited to secondary porosity along bedding plane fractures with interbedded sedimentary and carbonate units. SLR (2023a) report that exploration drilling is completed using a saturated brine solution to prevent salt dissolution into the drill water and water head has not been measured while drilling through this unit. Further no structures have been identified that connect the overlying red beds to the halite so permeabilities are expected to be very low (SLR, 2023a).

In the proposed mine site area, the surficial till and underlying sedimentary sequence are interpreted to constitute an unconfined aquifer system above the salt, with localized confined groundwater flow conditions identified at depth within the sedimentary bedrock sequence.

HYDROSTRATIGRAPHY (TURF POINT SITE)

Based on published geological mapping, native surficial overburden at the Turf Point site comprises a thin veneer (less than 1 m thick) of marine silt, clay, sand, gravel and diamiction with minor glaciofluvial sand and gravel and is underlain by siliciclastic sedimentary bedrock like that found in the main site area. There is no public record of K testing of overburden and bedrock at the Turf Point site. The conductivity of the surficial marine and glaciofluvial deposits will be widely variable depending on grain size and sorting, possibly ranging from $10^{-12}$ m/s for marine clay to 1 m/s for gravel (Freeze and Cherry, 1979). K values for the sedimentary bedrock are expected to be similar to that determined for these rocks in the proposed mine site area.

### 3.1.4.3 Groundwater Levels and Flow Directions

Groundwater table level data for the proposed mine site area is limited to several measurements collected during recent drilling in the decline area by GEMTEC (Appendix G and Appendix I) that indicate water levels ranging from approximately 0.4 metres below ground surface (mbgs) to 4.1 mbgs, as well as a water level of 4 mbgs measured in nearby historical exploratory water well FR-WW3 by Fracflow (2003). Outside the mine site area, regional groundwater table data for St. George's indicates a broad range in water levels from 1 mbgs to 30 mbgs, and a mean of 12 mbgs. In addition, Fracflow (2003) reported a water level of 14 mbgs for exploratory water well MR-1 along Muise Road, approximately 250 m east of the site.

A number of recent exploration boreholes (CC-6, CC-7, CC-9 and CC-9a), and several exploratory wells and boreholes completed by Fracflow (2003) (FR-WW1, FR-WW2, FR-1, and FR-3) encountered flowing artesian conditions (i.e., groundwater levels above ground surface) at depth. Artesian conditions in the bedrock suggest confining layers within the interbedded bedrock sequences or till overburden.

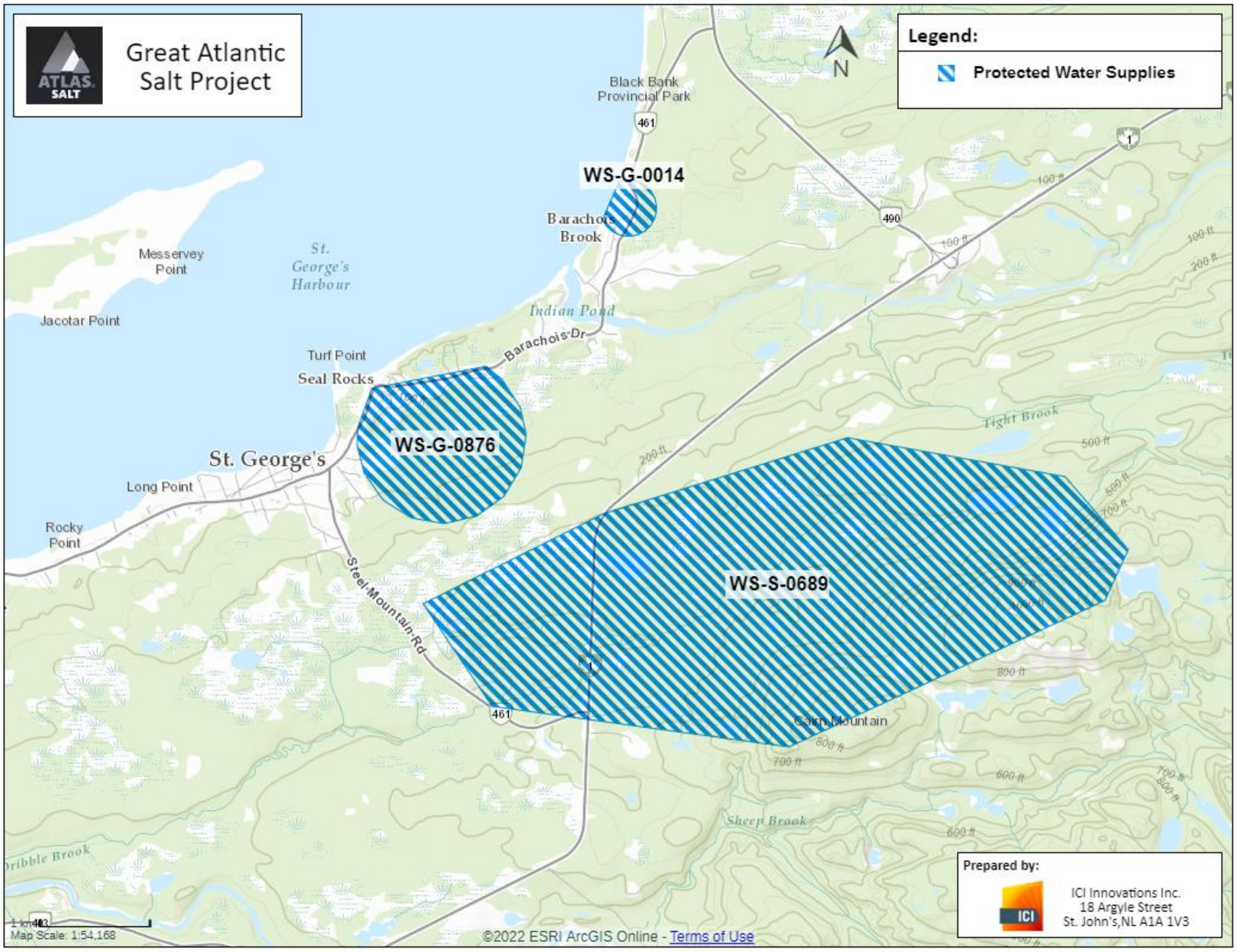
Shallow groundwater flow in the proposed mine site area is inferred to mimic topography and surface water drainage and overall flow in a northwest direction. Groundwater recharge is thought to be largely controlled by surface runoff and local recharge, while at moderate depths the flow system may be influenced by lateral inflow of groundwater from the upgradient Long Range Mountains to the southeast. Fracflow (2003) note the occurrence of peat bogs characterized by a groundwater table that is several meters to ten meters or more below ground surface along areas of relatively higher ground in the southeast portion of the Project (Dribble Brook area). The importance of these bogs and associated small ponds to groundwater recharge is not known at this time. The Project area is inferred to be situated in a regional groundwater discharge area with discharge to various ponds and brooks that underlie the site, as well as along the coast at Flat Bay.

#### Local Water Users

Two Protected Public Water Supply Areas (PPWSAs) are located near the Project that service the Town of St. George's. These include a protected groundwater well field (PPWSA ID WS-G-0876) located approximately 1.5 km northeast of the proposed mine site, and a protected surface water source from the upper reaches of Dribble Brook (PPWSA ID WS-S-0689) located approximately 2.5 km east of the proposed mine site (Figure 3.44).

The St. George's groundwater supply wellfield comprises four production wells (RW-WW1, RW-WW2, RW-WW3 and RL-WW4) completed to depths ranging from 25.6 m to 50.3 m within an overburden sand and gravel aquifer. Further discussion of this groundwater supply as it relates to the Project is provided in Chapter 5 of this document.

The proposed mine site area is situated downstream from the Dribble Brook PPWSA surface water supply, and as such run-off and drainage from the mine site area is not expected to interact with this protected water source.




Source*:* NLFFA *(*2023)

*Figure 3.44: Protected Water Supplies*

Based on information obtained in the Provincial Water Well Database, 56 water wells for domestic, municipal, commercial, and industrial uses are located within the Town of St. George's (Average Well Depth and Yield by Community - Environment and Climate Change (gov.nl.ca), [https://www.gov.nl.ca/ecc/waterres/cycle/groundwater/well/community/)](https://www.gov.nl.ca/ecc/waterres/cycle/groundwater/well/community/). Of these, two are domestic supply wells located at Barachois Brook (4 km away from the mine site), and nine are domestic supply wells located at Sandy Point on Flat Island located appropriately 2.5 km offshore from St. George's. In addition, two non-domestic wells, one belonging to the local transportation depot, and the other located at the regional waste disposal facility, are present along the Trans-Canada Highway, approximately 3 km east of the site. Given the substantial distances and intervening topographic and hydraulic drainage divides, these wells are not considered to be hydraulically connected to the Project. The remaining 40 wells listed in the database for the Town of St. George's have the same generic geographic coordinates, and actual well locations are not provided. It is not known if any of these wells are located in the vicinity of the proposed mine site, the adjacent conveyor route, or at the Turf Point facility. These wells range in depth from 7 m to 91 m with a mean of 28 m, and are a mixture of overburden and bedrock wells. There are no registered water rights holders near the Project.

To predict potential groundwater quantity effects from Project operations, SLR (2023a and 2023b) developed a pre-feasibility-level numerical groundwater model of the Project and surrounding area, including modelling domain, hydrostratigraphy, recharge and discharge areas, groundwater flow paths, hydraulic connections between formations, and boundary conditions. The numerical model was used to simulate the effects of the Project dewatering activities during operation on groundwater levels and flow and to quantify groundwater inflow into the underground excavations. The results of this groundwater modeling are further discussed in Chapter 5 of this document.

#### 3.1.4.4 Groundwater Quality

Fracflow (2003) presents groundwater quality results for five of its exploration water wells completed in the mine site area (FR-1, FR-3, FR-WW1, FR-WW2, and FR-WW3). Based on these results, shallow groundwater appears to be of calcium bicarbonate to sodium bicarbonate type, and the concentration of several metals parameters, aluminum, iron and manganese were noted as exceeding the Canadian Drinking Water Quality Guidelines applicable at the time of writing. Groundwater quality data is also available for one sample (CW-1) collected by Fracflow (2003) taken from the Shallop Cove cemetery well, located approximately 500 m north of the site. The results for this sample also indicated concentrations of iron and manganese that exceeded Canadian Drinking Water Guidelines.

A trend of increasing groundwater salinity concentrations with depth attributed to formational brines was identified by Fracflow (2003) based on depth discrete water sampling carried out in several of the RW series exploration water wells northeast of the Project site, as well as at several wells in the former Dribble Brook potable supply well field. Given the occurrence of halite and anhydrite units at depth in the mine site area, a similar trend of increasing salinity with depth may also occur at that location.

### 3.1.5 Water Resources - Surface Water

#### 3.1.5.1 Information Sources

The information sources used here consist of publicly available climate and hydrologic data, topographic data, soil mapping and land use information (as listed below) and a Project-specific hydrology field program carried out from April 8, 2022 to November 28, 2022. Information on baseline hydrologic conditions is presented in the Preliminary Baseline Hydrology Study completed by GemTec for Atlas Salt, included as Appendix J.

The primary sources of climate and hydrological data used to characterize the local hydrology near the Project site are listed below.

Historical weather and Canadian climate normals data were obtained from Environment and Climate Change Canada. This includes detailed records of temperature, precipitation, and climate normals for meteorological stations in the region. The 1981-2010 normals data for Stephenville Airport (Station ID:

8403800) were used to describe climate, as the station is nearest the Project area and thus most representative of local conditions. IDF statistics were obtained for the Stephenville RCS climate station (8403820) as these data are not available for the airport station.

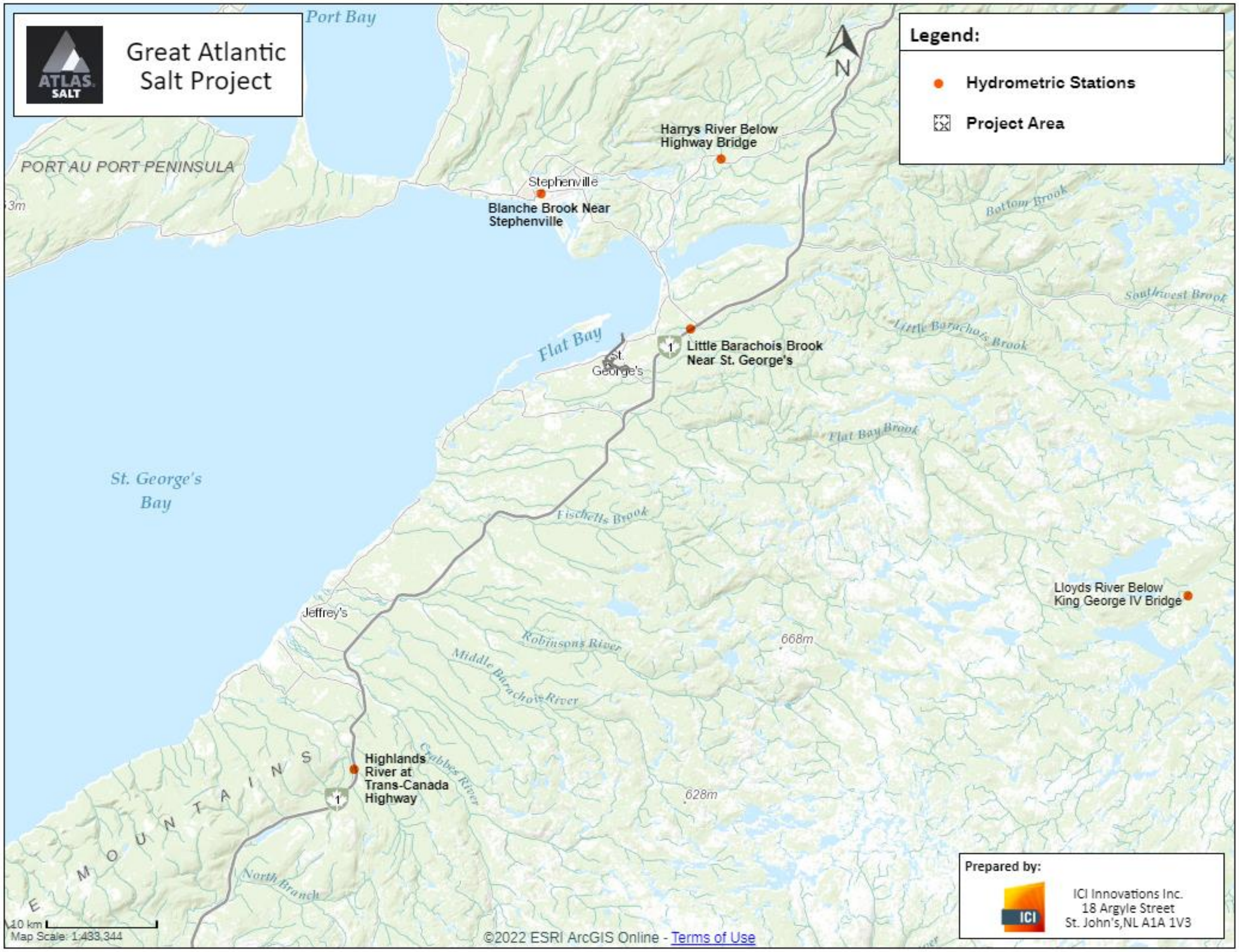
Hydrometric data available through Environment and Climate Change Canada (wateroffice.ec.gc.ca) for several streamflow gauging stations in the region. The hydrometric data includes historical and real-time water level and flow. The data were analyzed for the four hydrometric stations identified in Figure 3.45 and Table 3.12.

The Water Resources Atlas of Newfoundland (NLDMAE, 1992) provides mean annual estimates of various climatic parameters, including temperature, precipitation, runoff, evaporation, etc. Although this is not a recent study, it is considered to provide reasonable estimates of various climatic parameters for the purposes of this EA Registration.

*Table 3.12: Hydrometric Station Summary*

| Hydrometric Station | Lat (N) | Long (W) | Drainage Area ($km^2$) | Period of Record | Record Length (years) |
|---|---|---|---|---|---|
| 02YJ001 - Harry's River below Highway Bridge | 48° 34' 33" | 58° 21' 45" | 640 | 1968-2023 | 56 |
| 02YJ002 – Blanche Brook near Stephenville | 48° 32' 56" | 58° 34' 11" | 120 | 1978-1996 | 19 |
| 02ZA001 - Little Barachois Brook near St. George's | 48° 26' 44" | 58° 23' 55" | 343 | 1978-1997 | 20 |
| 02ZA002 – Highlands River at Trans-Canada Highway | 48° 06' 30" | 58° 47' 00" | 72 | 1982-2023 | 42 |

A field program carried out from April 8 to November 28, 2022 by Gemtec for Atlas Salt included collecting flow measurements and surface water and sediment quality testing (Appendix J). The six field data collection locations are presented on Figure 3.46 and are further detailed below in Table 3.13.




Source: NLFFA (2023)

*Figure 3.45: Hydrometric Stations*


*Figure 3.46: Field Data Collection Locations*

*Table 3.13: Hydrology Program Field Data Collection*

| Station | Drainage Area (ha) | Spot Flow Measurement | Continuous Flow Measurement | Water Quality Samples | Sediment Quality Samples |
|---|---|---|---|---|---|
| SW/SED-001 Man o' War Brook at Flintkote Rd | 183 | Y (4) | Y | Y | Y |
| SW/SED-002 Man o' War Brook at Main St | 214 | Y (1) | N | Y | Y |
| SW/SED-003 Blanchard's Brook upstream of Flintkote Rd | -- | Y (1) | N | Y | Y |
| SW/SED-004 Blanchard's Brook downstream of Flintkote Rd | 60 | Y (1) | N | Y | Y |
| SW/SED-005 Blanchard's Brook at Main St | 116 | Y (1) | N | Y | Y |
| SW/SED-006 Dribble Brook near confluence with Flat Brook | 3886 | N | N | Y | Y |

### 3.1.5.2 Surface Water Quantity

Information regarding the surface water quantity at the Project site is summarized below. A full analysis is presented in the Preliminary Baseline Hydrology Study completed by GemTec for Atlas Salt (Appendix J).

- Average annual total precipitation for the Project area is 1,340.4 mm.
- Monthly precipitation ranges from 97.4 mm to 130.4 mm between May and October, and from 77.7 mm to 124.6 mm between November and April.
- Monthly average snowfall ranges between 26.2 cm and 113.3 cm during the winter months of November to April.

Intensity-Duration-Frequency (IDF) statistics for the Stephenville RCS climate station (8403820) are summarized in Table 3.14.

*Table 3.14: IDF Data for Stephenville RCS (Station 8403820)*

| Duration | Return Period (years) | | | | | |
|---|---|---|---|---|---|---|
| | 2 | 5 | 10 | 25 | 50 | 100 |
| 5 min | 4.5 | 6.2 | 7.3 | 8.7 | 9.8 | 10.8 |
| 10 min | 6.7 | 9.3 | 11.0 | 13.1 | 14.7 | 16.3 |
| 15 min | 8.5 | 11.5 | 13.5 | 16.0 | 17.9 | 19.8 |

| Duration | Return Period (years) | | | | | |
|---|---|---|---|---|---|---|
| | 2 | 5 | 10 | 25 | 50 | 100 |
| 30 min | 12.0 | 16.5 | 19.4 | 23.1 | 25.9 | 28.6 |
| 1 hour | 16.8 | 22.4 | 26.0 | 30.6 | 34.0 | 37.4 |
| 2 hour | 23.0 | 29.9 | 34.5 | 40.3 | 44.6 | 48.8 |
| 6 hour | 38.3 | 50.0 | 57.8 | 67.6 | 74.9 | 82.1 |
| 12 hour | 47.5 | 61.3 | 70.5 | 82.0 | 90.6 | 99.1 |
| 24 hour | 58.9 | 77.5 | 89.8 | 105.3 | 116.9 | 128.3 |

Mean Annual Runoff from the Project area, as obtained from the Water Resources Atlas of Newfoundland (NLDMAE 1992), is between 1,200 and 1,300 mm, while the values obtained from the four nearby hydrometric stations range from 1,012 mm to 1,312 mm.

Average annual potential and actual evapotranspiration values obtained from Stephenville Airport climate station are 522 and 515 mm, respectively.

Water quantity measurements collected during the field program performed during 2022 indicated the hydrologic response in Man O' War Brook was similar to those of hydrometric stations 02YJ001 - Harry's River below Highway Bridge and 02ZA002 – Highlands River at Trans-Canada Highway. The estimated runoff depth obtained from averaging these data from these two hydrometric stations (Appendix J) is presented below in Table 3.15.

*Table 3.15: Runoff Depth Estimates for the Project*

| Estimated Runoff Depth (mm) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** | **Oct** | **Nov** | **Dec** | **Annual** |
| 0 | 0 | 72.6 | 186.8 | 270.4 | 82.2 | 49.0 | 48.0 | 76.0 | 104.8 | 138.0 | 107.5 | 1135 |

#### 3.1.5.3 Surface Water Quality

Surface water quality measurements and surface water quality samples and sediment quality samples were collected at six locations during the 2022 field program on April 8, July 9, October 17 and November 28. The field water quality measurements consisted of temperature, pH, dissolved oxygen, conductivity and oxidation reduction potential. The water quality samples (24 samples plus 4 duplicates) were analyzed for inorganic parameters and total metals, while the sediment samples (23 samples, sampling location SW/SED 06 was inaccessible on April 08 due to high flows, plus 4 duplicates) were analyzed for available metals.

The general surface water chemistry indicated low pH (down to 5.63 units) and exceedances of the Atlantic Risk Based Corrective Action (ARBCA) - Ecological Tier I Environmental Quality Standards (EQS) for Surface Water [Freshwater] (V4 2021) for the following parameters:

- Aluminum (up to 901 micrograms/litre),
- Iron (up to 1650 micrograms/litre),
- Copper (up to 5.00 micrograms/litre),
- Lead (up to 1.00 micrograms/litre), and
- Zinc (up to 10.00 micrograms/litre).

The general sediment chemistry indicated exceedances of the Atlantic Risk Based Corrective Action (ARBCA) - Ecological Tier I Environmental Quality Standards (EQS) for Sediment [Freshwater Sediment] (V4 2021) for the following parameters:

- Arsenic (up to 27.0 milligrams/kilogram),
- Iron (up to 53,600 milligrams/kilogram),
- Manganese (up to 3,900 milligrams/kilogram), and
- Nickel (up to 95.00 milligram/kilogram).

Full analytical results and laboratory certificates are presented in GEMTEC's Preliminary Baseline Hydrology Study (Appendix J).

### 3.1.6 FRESHWATER FISH AND FISH HABITAT

Within the Town of St. George's Municipal Planning Area there is one salmon river, Flat Bay Brook, and its main tributary, Dribble Brook, which are located 2.8 km and 1.6 km respectively, to the south of the Project area (Figure 3.47). There are no identifiable waterbodies or watercourses containing fish habitat located directly within the mine surface site footprint itself (Figure 3.47 and Figure 3.49).

An analysis of existing, publicly available information was undertaken, including mapping of known or potential waterbodies and watercourses in the area, as well as data received from the Atlantic Canada Conservation Data Centre (AC CDC). Following the desktop assessment, a field study program was developed and implemented to further describe the aquatic environment (See sample locations in Figure 3.48) in the area. This included a fisheries habitat assessment survey, documenting fish species presence through backpack electrofishing, and quantitative population assessment of Man o' War Brook and eDNA collection within Barachois Pond. The results of this work are summarized below, and the full report is included as Appendix D.

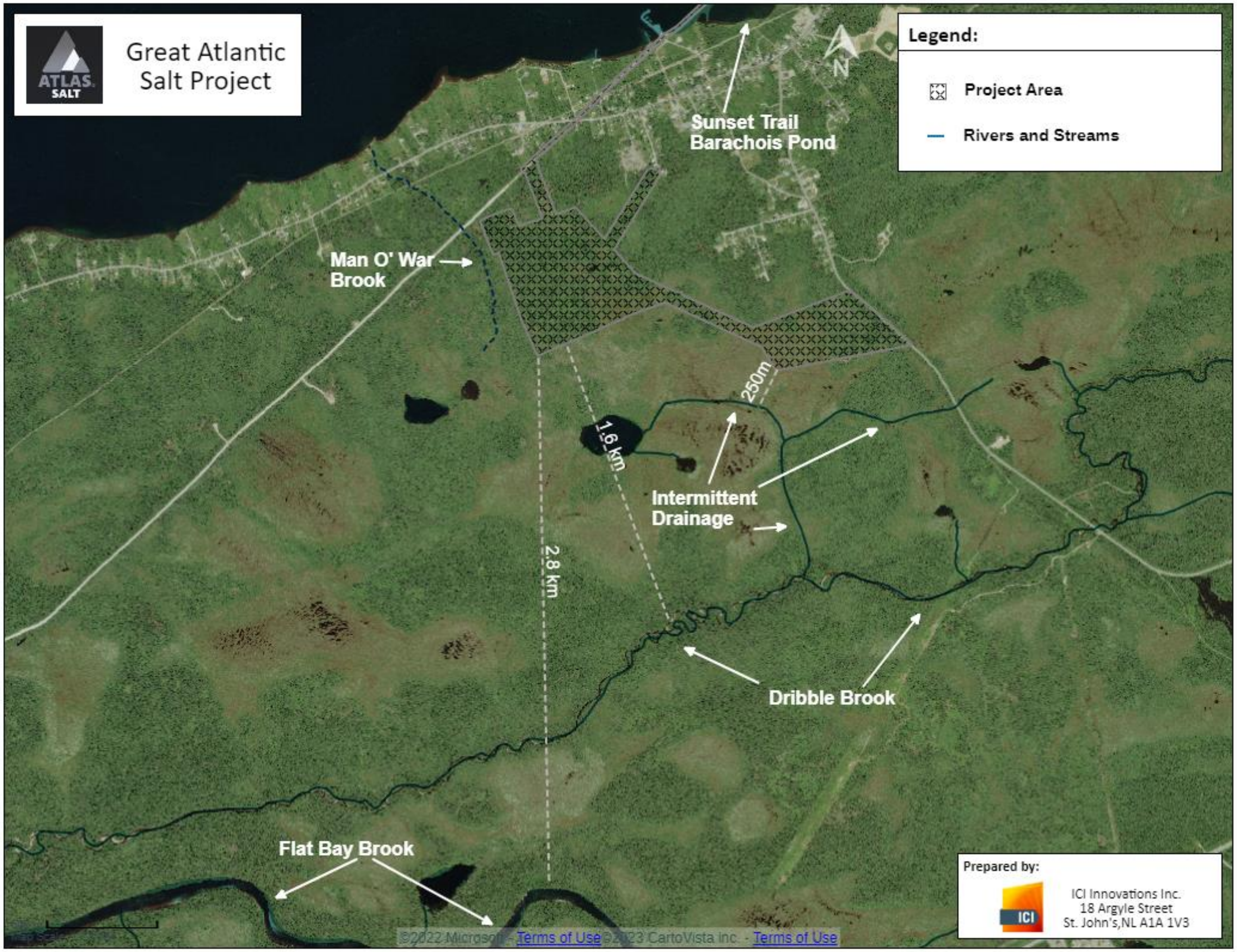



*Figure 3.47: Rivers, Streams and Intermittent Drainage in Proximity to the Project*

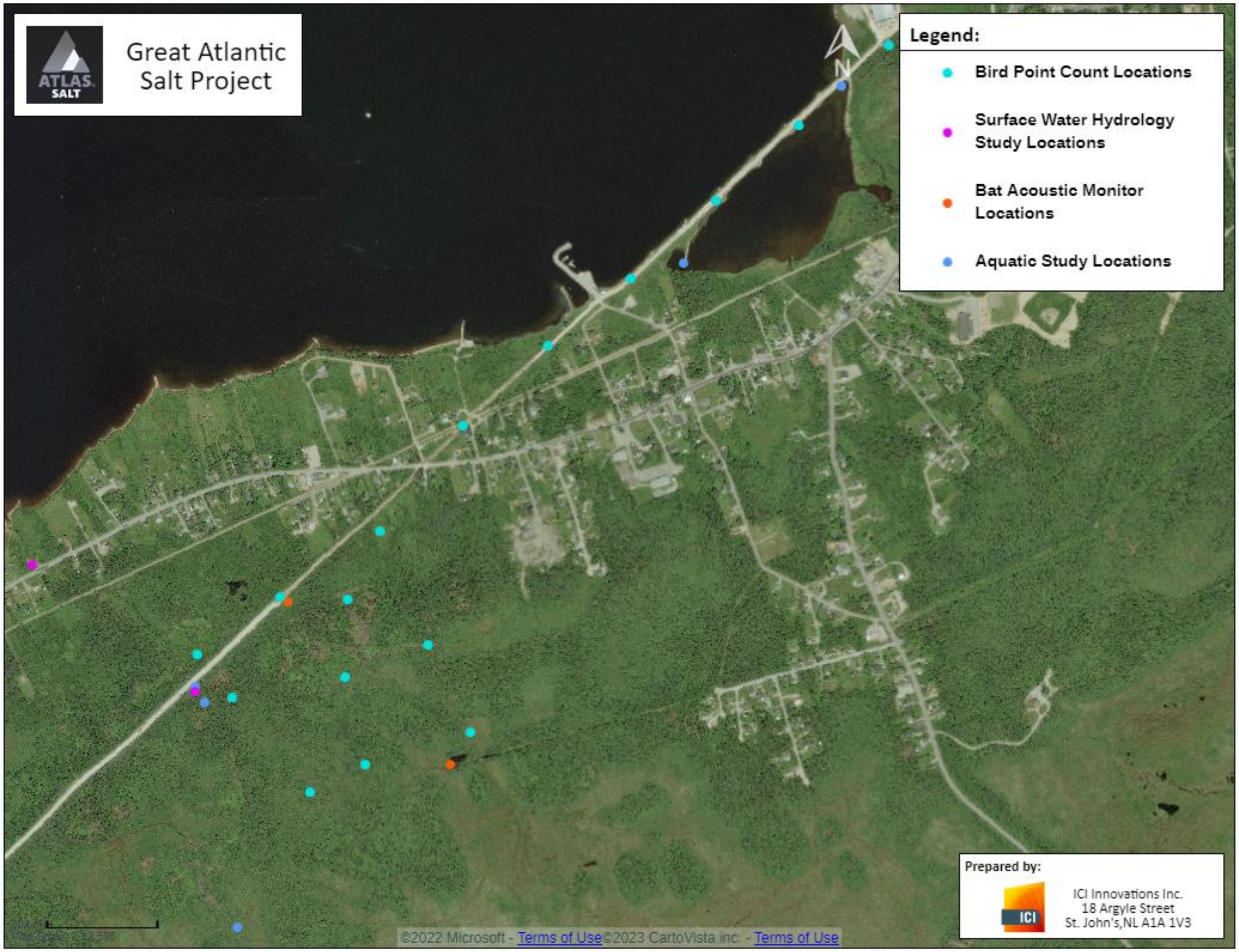



*Figure 3.48: Fieldwork Sample Locations*

### 3.1.6.1 Flat Bay Brook and Dribble Brook Tributary

Flat Bay Brook is a scheduled salmon river with a watershed of 635 km$^2$ that begins in the Long-Range Mountains and flows west to the ocean at Flat Bay, approximately 6 km away from the Project area. The river is characterized by a series of natural obstructions that limit salmon access to primarily riverine habitat and almost no lacustrine habitat (Bourgeois et al, 1995). It was one of several salmon rivers in Newfoundland and Labrador to participate in a salmon stock enhancement project in the 1990s. Further enhancement was completed on this river in 2019 to eliminate natural obstructions and improve fish passage (Bay St. George South Area Development Association 2019). Fish species that reside in the Flat Bay watershed include Atlantic Salmon (*Salmo salar*), Brook Trout (*Salvelinus fontinalis*), American Eel (*Anguilla rostrata*), Rainbow Smelt (*Osmerus mordax*), and Stickleback (*Gasterosteidae spp*.) (APPENDIX D). Dribble Brook, a tributary of Flat Bay Brook, is located approximately 1.6 km south of the Project area.

### 3.1.6.2 Man o' War Brook

The desktop analysis identified one watercourse located approximately 150 m west of the Project site, which was further investigated during the field studies. This small watercourse has an estimated length of 900 m and watershed area of 2.14 km$^2$. It is an unnamed tributary which flows intermittently from the wetlands west of the Project northward to the ocean at Flat Bay. The watercourse is locally known as "Man o' War Brook" but does not appear on 1:50,000 topographic mapping. High resolution satellite imagery combined with a field assessment was used to map the approximate route of the brook (previous Figure 3.47 and Figure 3.49 below).

Man o' War Brook begins as intermittent drainage from the wetlands located to the west of the Project area. It then flows north, passing through a culvert on Flintkote Road. The section of the stream closest to Flintkote road runs through forested areas and is highly shaded, and the dominant bank vegetation is shrub and alder thicket with some secondary grasses. The brook continues to flow north and passes through a second culvert at Main Street, St. George's before emptying into the sea.

Water flow measurements were taken at two locations on Man o'War Brook during hydrology studies completed for Atlas Salt (Figure 3.44). At the culvert (sample site SW-001) located where Man o'War Brook crosses Flintkote road a discharge of 0.071 m$^3$/s was determined, and at the lower culvert (sample site SW-002) where the brook crosses Main Road close to where the brook enters the ocean a discharge of 0.268 m$^3$/s was determined (Appendix D).

A fish habitat assessment survey, including fish sampling and fish habitat determination at two sites, was completed at Man o' War Brook during the 2022 fieldwork (Appendix D). Brook Trout were captured, including multiple age classes spanning young of year to adult specimens. Further to the standard fish sampling activities, a quantitative estimate of fish population was completed using standardized procedures. The results of the fish population assessment determined that the mean population of Brook Trout (entire length of the watercourse) was estimated at approximately 350 individuals, across the various age classes documented. It should be noted that the population number presented is an initial estimate based on collected data within a small sample size.

The water quality within Man o' War brook is considered generally good, with sufficient dissolved oxygen and water temperatures to support fish. The substrate within the assessed reach consists of rock, rubble, gravel and sand, with rock being the dominant substrate type. As noted, water depths ranged from 10 cm to 30 cm, with shallower depths recorded within the wetland habitat that is west southwest of the aquatic baseline Study Area. The riparian area is mostly forested and highly shaded in the lower reaches of the study area, while the upstream reaches were typical of the observed wetland habitats.

#### 3.1.6.3 Intermittent Drainage

Two seasonal drainage features were documented within the proposed mine site during the fieldwork (Figure 3.43). These features are not likely to support fish populations due to the presence of migration barriers, intermittent flows, and a lack of connection to fish-bearing waterbodies (Appendix D). As such, these seasonal drainages are not likely to contribute to fish habitat.

#### 3.1.6.4 Barachois Pond

Barachois Pond (which is known locally as Sunset Trail Barachois Pond) is located on the shore below the T'Railway between Station Road and Turf Point. The eastern bank and surrounding terrestrial habitat of the pond has been designated as an Environmental Protection (EP) area by the Town of St. George's to protect its rare plant and animal species, which include the Banded Killifish and piping plover (Appendix D).

The results of the data request to the AC CDC confirmed that Banded Killifish (*Fundulus diaphanous*) have been documented within five kilometres of the aquatic assessment Study Area. Banded Killifish are listed as "Vulnerable" under the Newfoundland and Labrador *Endangered Species Act* and are listed as "Special Concern" on Schedule 1 of the federal *Species at Risk Act* (SARA).

Barachois Pond is tidally influenced and outlets via a large (2 m diameter) culvert into Flat Bay at the northeastern limit of the causeway, adjacent to Turf Point. The southern and eastern shorelines of the pond are vegetated with a mix of trees and shrubs with sandy shores, while the northwest shoreline is characterized by imported cobble and boulder as part of the causeway construction.

Two eDNA samples were collected in Barachois Pond in 2022 and submitted to a qualified laboratory to determine taxonomic groups using metabarcoding laboratory analysis. The results of the analysis determined that a total of 12 taxa, of which two are listed species (Mummichog [*Fundulus heteroclitus macrolepidotus*] and American Eel [*Anguilla rostrata*]), were likely to frequent Barachois Pond, with Atlantic Silverside (*Menidia menidia*). Species at risk including Mummichog and American Eel are discussed further in a later section.

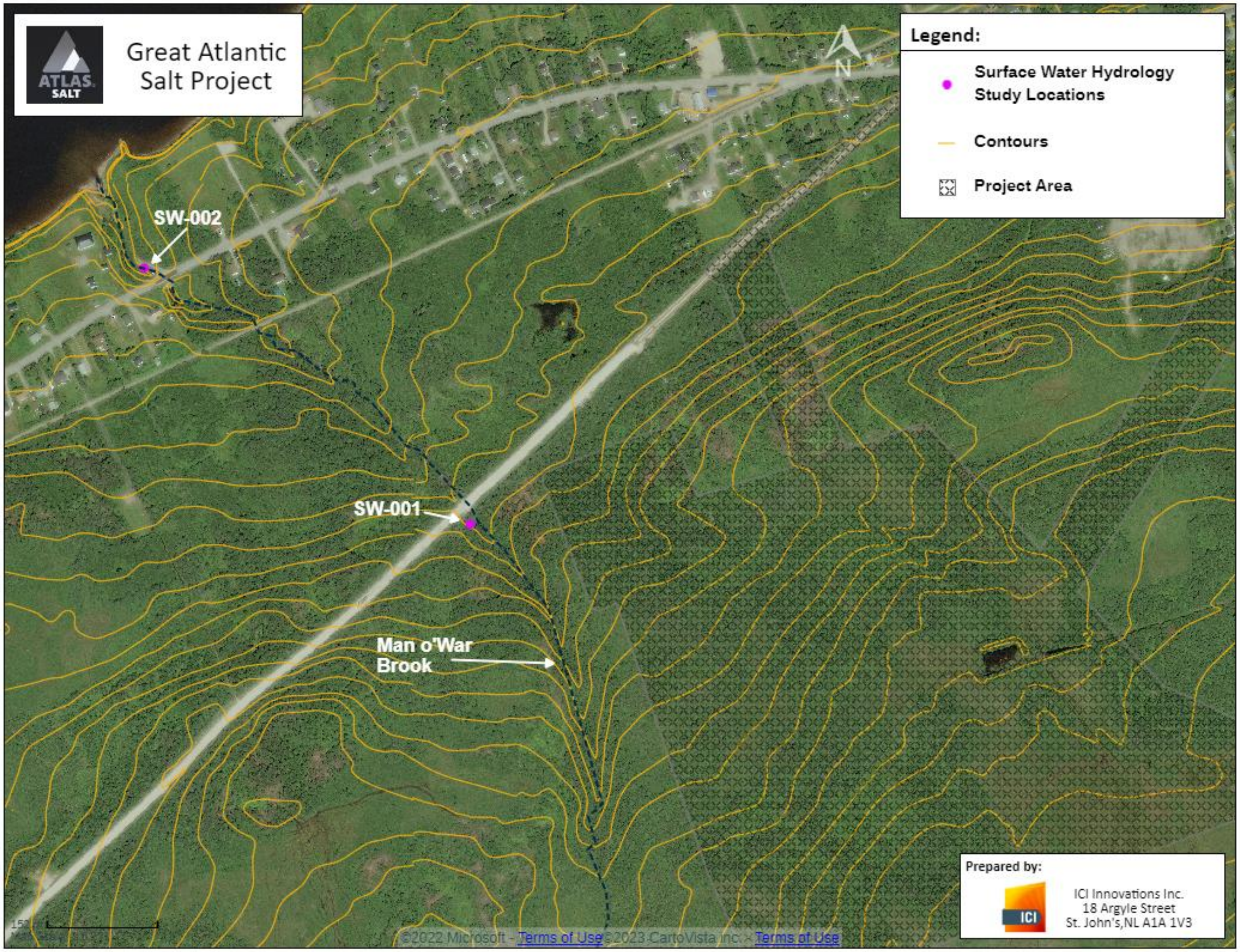



*Figure 3.49: Location of Man o'War Brook Relative to Surface Mine Site*

### 3.1.7 WILDLIFE

The following sections provide an overview of avifauna and large and small mammals that do or may occur within or near the proposed Project Area.

The proposed mine site is located on lands that are within a municipal area and adjacent to an existing industrial mine. The area has seen mineral exploration work completed over the last number of years, including drilling, and there is human activity such as ATV and snowmobile use within the mine site. As such, the Project Area can be characterized as partially disturbed and proximal to a number of existing and on-going industrial and commercial activities.

The overview presented below is based a desktop analysis of existing and available information as well as a number of field studies undertaken by Atlas to characterize wildlife resources in the Project Area. Acoustic monitoring for bat species was conducted at the recommendation of NL Wildlife Division.

#### 3.1.7.1 AVIFAUNA

Avifauna within the Project area and elsewhere within the Town of St. George's were investigated using both baseline field data and information from existing sources, including data from the Newfoundland Breeding Bird Atlas (NBBA) (Square 21TUP86) and an AC CDC report. Breeding bird surveys were conducted as per methods outlined by Bird Studies Canada (Appendix D). To ensure representation of habitat types, preliminary site selection for the point count locations were identified based on forest and vegetation species composition, and the development stage within the Study Area. Point count surveys (Figure 3.47) were conducted on the mornings of June 4th and 5th, 2022, a period that encompasses the nesting season for breeding birds in this area. The full ecological baseline report is included as Appendix D.

The NBBA contains 64 records of birds within the Project area including songbirds, shorebirds, waterfowl, raptors and upland birds. Atlas' baseline field studies found a total of 52 species (49 identified to species level, 3 identified to genus) of avifauna comprising 168 individual records, which were documented over sixteen-point count locations during the 2022 breeding bird studies (Figure 3.47). Based on the field observations, 155 individuals were determined to be Possible, Probable or Confirmed breeders on the Study Area. Considering avifauna habitat use, the highest species richness was recorded in Wetland (n=23), Shoreline (n=23), Residential (n=19), Open Field (n=14), Wet Deciduous Thicket (n=14) and Conifer Forest (n=13). Breeding behaviours were observed during the surveys; however, no nests were identified.

Most of these species are considered common throughout NL (i.e., S-Rank 3 or greater), with one of the recorded species - Barn Swallow (*Hirundo rustica*) - being considered a Species at Risk (SAR). No raptor nests were encountered during the breeding bird surveys. The most numerous species recorded overall, in descending order, were:

- White Throated Sparrow *(Zonotrichia albicollis)*;
- Ruby Crowned Kinglet *(Regulus calendula*);Black and White Warbler (*M*niotilta varia); and

- Yellow Warbler (*Dendroica petechial*).

Incidental avifauna observations were also noted during other field work and these incidental observations are listed in Table 3.16.

*Table 3.16:Avifauna Incidentally Observed within the Study Area*

| Common Name | Scientific Name | Evidence |
|---|---|---|
| Ruffed Grouse | *Bonasa umbellus* | Audio/Visual |
| Willet | *Tringa semipalmata* | Visual |
| Arctic Tern | *Sterna paradisaea* | Visual |
| Great Blue Heron | *Ardea herodias* | Visual |
| Semipalmated Sandpiper | *Calidris pusilla* | Visual |
| Canada Goose | *Branta canadensis* | Visual Fly over |
| Ring-billed Gull | *Larus delawarensis* | Visual |
| Great Black-backed Gull | *Larus marinus* | Visual |
| Osprey | *Pandion haliaetus* | Visual (Soaring) |

One SAR and three SOCC were identified within the Study Area during field investigations, including:

- Barn Swallow (Threatened),
- Willet (S1B, SUM),
- Great Blue Heron (S2B, SUM), and
- Yellow-bellied Sapsucker (S2B,SUM).

These species are discussed further in Section 3.1.8.

#### 3.1.7.2 Large and Small Mammals

Mammals which could be expected to typically occupy this type of region include: moose (*Alces alces*), mink (*Neovision vision*), snowshoe hare *(Lepus americanus*), beaver (*Castor canadensis*), masked shrew (*Sorex cinereus*), ermine (*Mustela erminea*), otter (*Lontra canadensis*) meadow vole (*Microtus pennsylvanicus*), southern red-backed vole (Clethrionomys gapperi), masked shrew (Sorex cinereus), red squirrel (Tamiasciurus hudsonicus), American mink (Mustela vison), and red fox (Vulpes vulpes) (PAANL, 2008). Table 3.17 lists the small mammals that were observed during the Ecological Baseline Report within the Project Area.

*Table 3.17:Small Mammals Recorded within the Study Area*

| Common Name | Scientific Name | S-Rank* | Evidence |
|---|---|---|---|
| Red Squirrel | *Tamiasciurus hudsonicus* | SNA (Exotic) | Audio/Visual/Middens |
| Snowshoe Hare | *Lepus americanus* | SNA (Exotic) | Visual/Scat |

Less common species or those that have larger territorial requirements and may occasionally overlap with the Project Area include eastern coyote (*Canis latrans*), Canada lynx (*Lynx canadensis*), black bear (*Ursus americanus*), and muskrat (*Ondatra zibethicus*). Arctic hare (*Lepus articus*) are found in rocky, high-elevation barrens of western Newfoundland but are not expected to occur along the low coastal plain of the St. George's region (Species Status Advisory Committee, 2012). Based on the proximity to the Town and other human activity, the Project Area is not likely to be preferred habitat for these species.

Woodland Caribou (*Rangifer tarandus*), an important game species for recreational hunters, is discussed separately below. Newfoundland Marten (*Martes americana atrata*), a species subject to the SARA in NL, with recognized areas of protected habitat in western NL is also discussed separately below along with various bat species.

WOODLAND CARIBOU

Woodland caribou are a native species that are thought to have recolonized the island of Newfoundland during the early post-glacial period by crossing the Strait of Belle Isle (Wilkerson et al. 2018). Their importance to Indigenous peoples including the Maritime Archaic Indians, Groswater and Paleo-Eskimos, and more recent cultures (i.e. Beothuck and Mi'kmaq) is well documented (Millais 1907, Mahoney 2000) and persists to this day for contemporary First Nations and the descendants of European settlers.

Regarding the current distribution of caribou on the Island of Newfoundland, long-term telemetry data and analyses of mitochondrial DNA have led to delineation of seasonally relevant 'herds', which are further nested within four unique subpopulations (Northern Peninsula, South-western, Middle Ridge and Avalon) (Figure 3.51). Although caribou are relatively abundant and well distributed across western Newfoundland, there is no indication of either current or historic use of the proposed Project area. The location of the Project is within the coastal municipality of St. George's which is approximately 10 km west of the Lapoile Caribou Management Area 61, the closest area utilized by this south-western population.

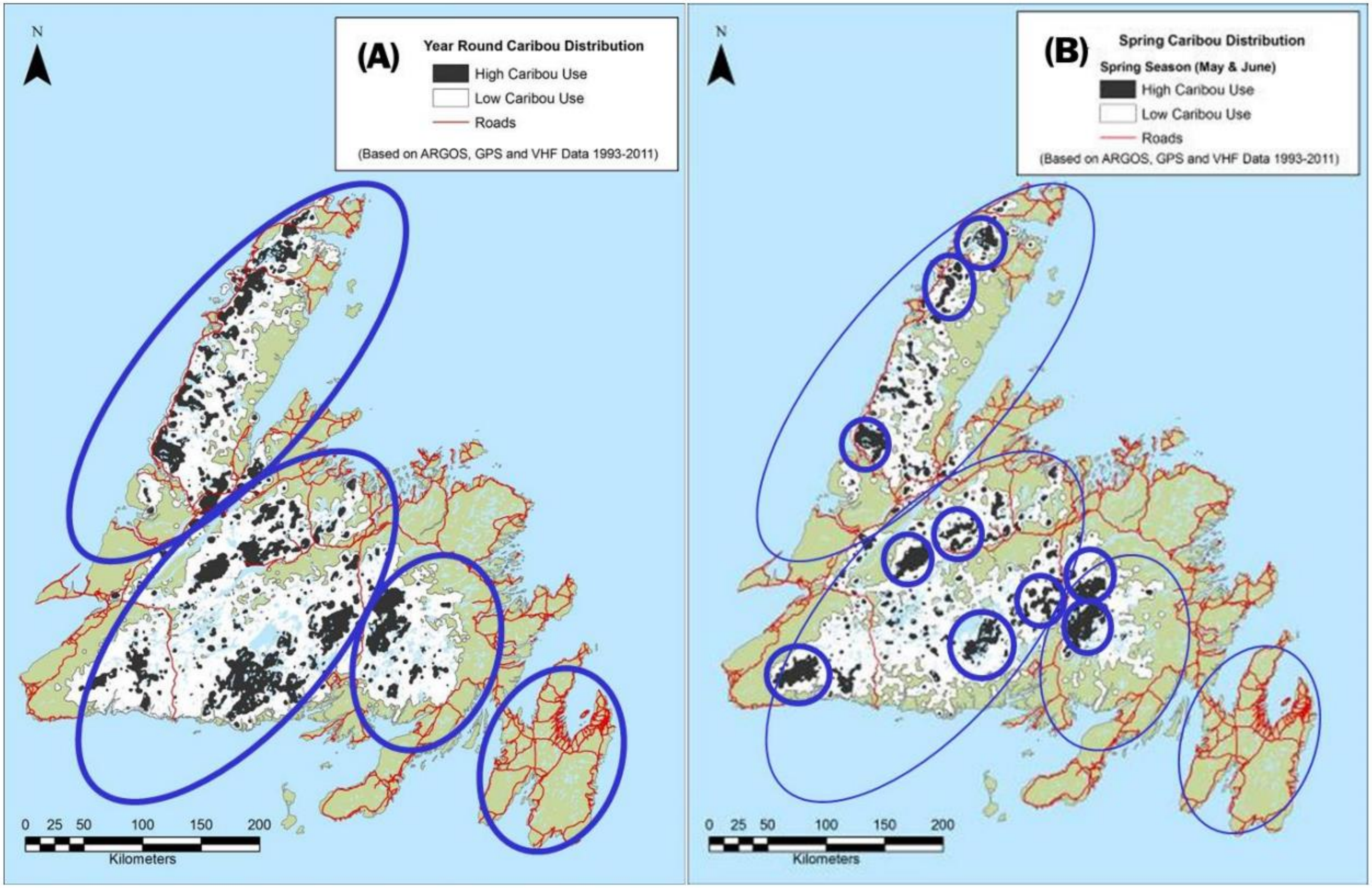
NEWFOUNDLAND MARTEN

Newfoundland marten (*Martes Americana atrata*) were historically distributed throughout most forested areas of insular Newfoundland (Bergerud 1969), including the Bay St. George region. Throughout most of the 20th century, habitat loss and incidental mortality from trapping and snaring contributed to population declines and extirpation from much of their historical range (Forsey et al. 1995). This eventually led to their designation as 'Endangered' under both the SARA (2002) and the provincial *Endangered Species Act* (ESA, 2001). However, improving trends in both the percent of occupied range has recently led to the re-designation as 'Vulnerable' under the ESA. Newfoundland marten were once thought to be restricted to 'old-growth' forest (Thompson 1991); however, subsequent studies re-evaluated this contention and concluded that in addition to using late old-growth, marten utilize a range of forest types and age-classes including recent clear-cuts, regenerating forest (< 6.5 m), coniferous scrub, and pre-commercially thinned stands (Gosse et al. 2005, Hearn 2007, Hearn et al. 2010).

Figure 3.52 illustrates an index of occupancy of Newfoundland Marten on the Island of Newfoundland. The area of occupancy represents the number of 2x2-km cells with recorded occurrence of marten. Occurrences of marten were recorded between 1970–2018 (n=7,592). Marten habitat with ≥ 60% probability of occupancy is indicated in green (COSEWIC 2022). Figure 3.53 shows the distribution of marten occurrences along with an indication (based on modeling) of the probability of occurrence of marten.

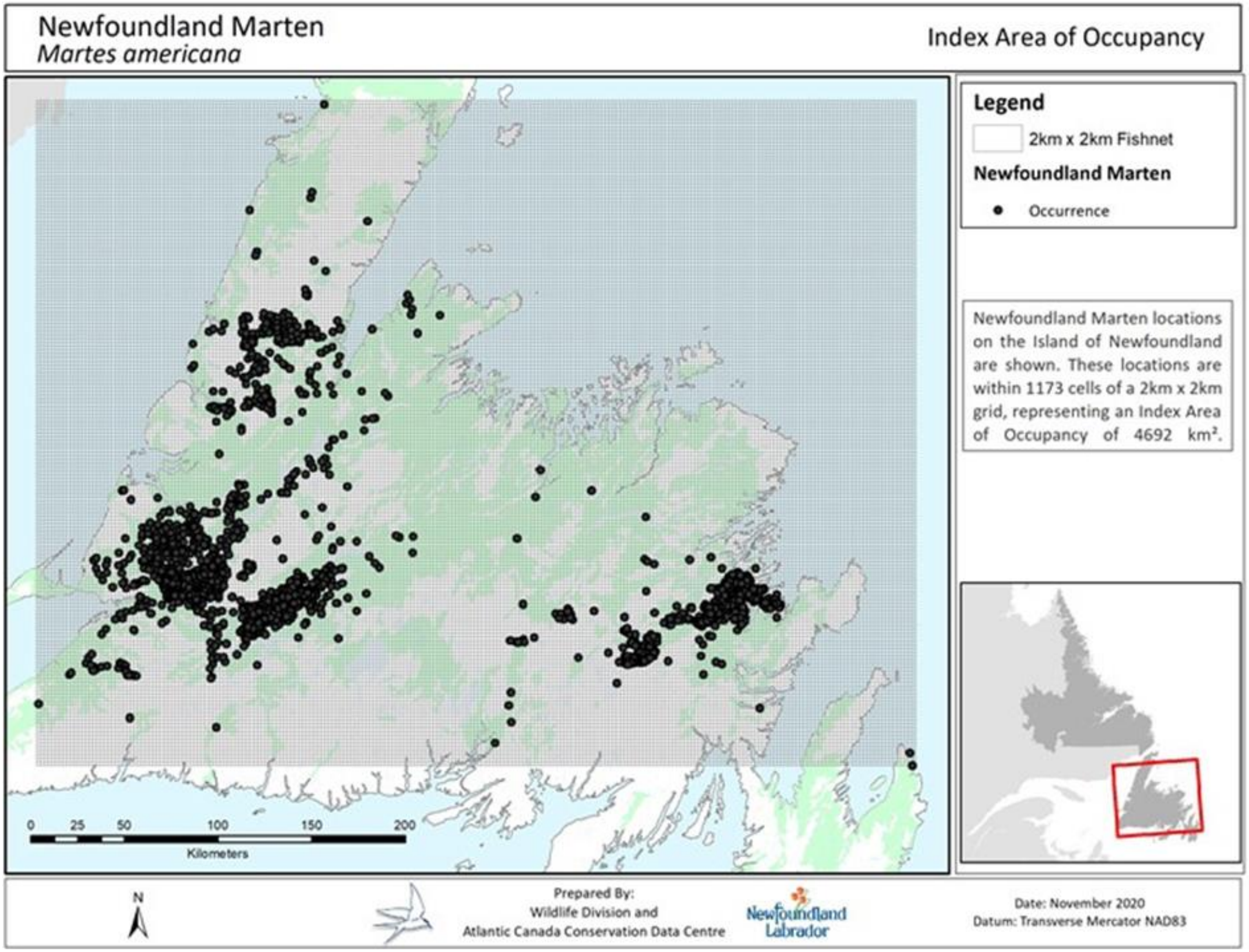
The Project area does not overlap with known marten habitat on the Island of Newfoundland. Critical habitat for the Newfoundland Marten has been identified by the Newfoundland Marten Recovery Team (NMRT 2010) and was adapted by Environment and Climate Change Canada to identify critical habitat for protection under SARA (EC 2013). The Study Area does not contain identified critical habitat for Newfoundland Marten, the nearest area of which is found near Highway 490 approximately 6 km north-east of the Project area (Figure 3.54). The AC CDC report indicates one record of Newfoundland Marten within a 5 km search radius of the Project location.


*Figure 3.50: Ecological Baseline Report - Birds Count Locations*



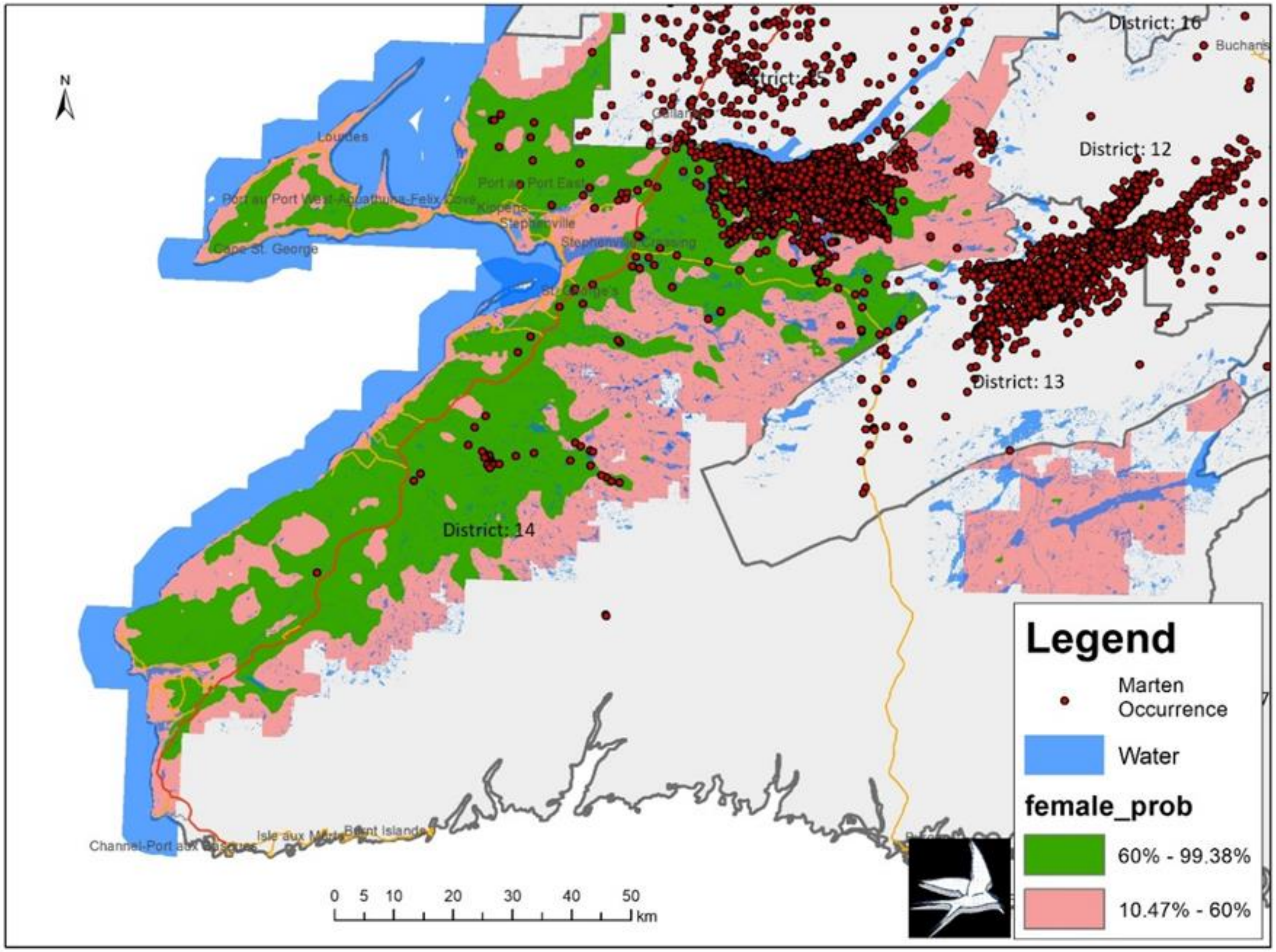

Source: https://www.gov.nl.ca/ffa/files/wildlife-pdf-caribou-complete.pdf

*Figure 3.51: Distribution of Woodland Caribou in Newfoundland*



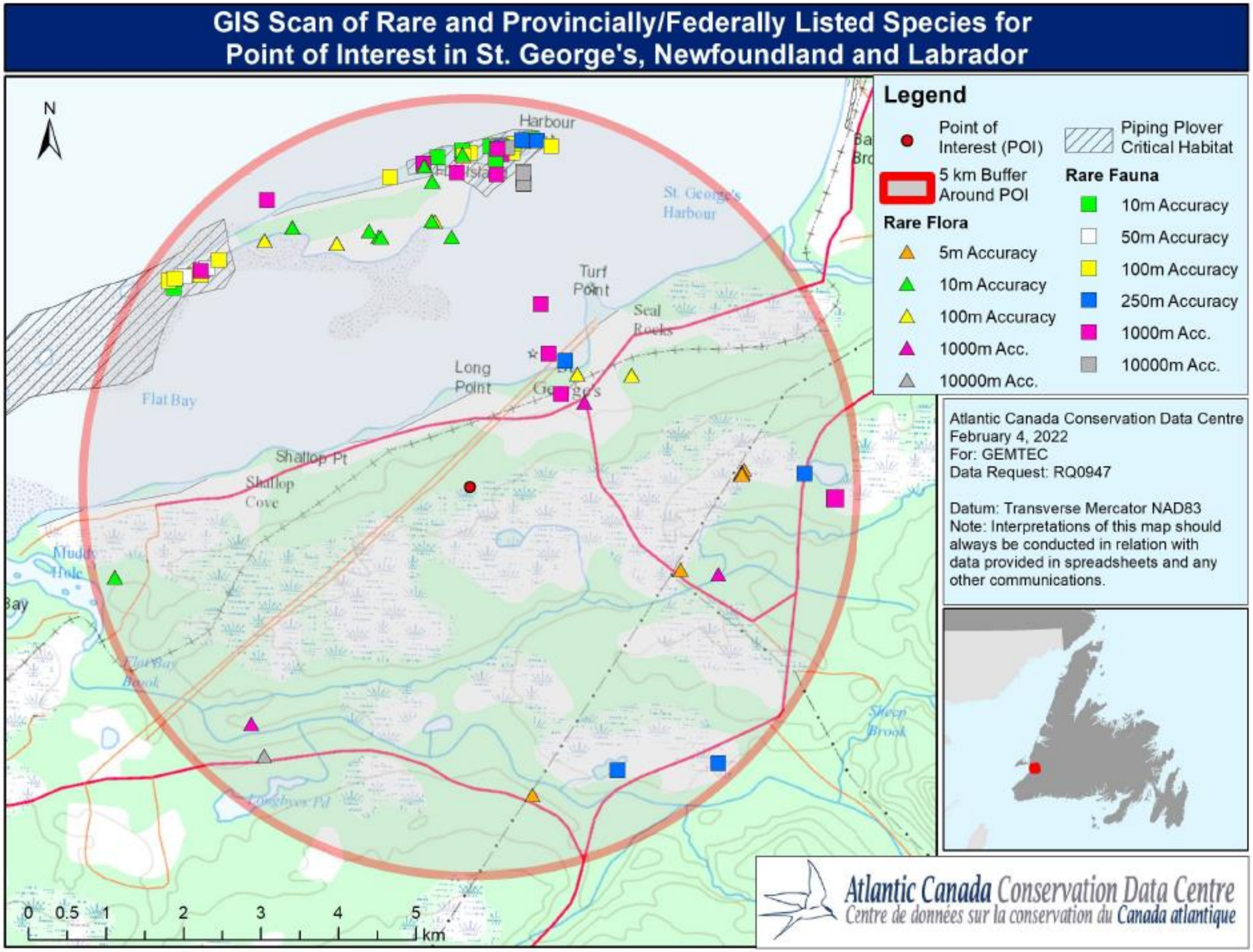

Source: AC CDC (2020)

*Figure 3.52: Index of Area of Occupancy of the Newfoundland Population of American Marten*




Source: Hearn Consulting Inc. (2021)

*Figure 3.53: Distribution of Marten Occurrences and the Probability of Occupancy in Southwestern Newfoundland (Forest Management District 13)*




Source: AC CDC, 2022

*Figure 3.54:Important Wildlife Habitat in the Region*

#### BAT SPECIES

Acoustic monitoring was conducted in 2022 to identify the presence of bat species in and around the Project Area (Figure 3.46). A stationary point count acoustic survey was used to identify the presence /absence of bats within the Project area by recording their echolocation calls. A Wildlife Acoustics Song Meter SM4BAT FS bioacoustics recorder, equipped with an SMM-U2 Microphone attached to an elevated telescopic pole capable of detecting high-frequency sounds was utilized for receiving and recording bat acoustics.

The acoustic monitoring surveys were carried out from July 9th until October 17th, 2022, to allow for species detection throughout the rearing and migratory stages of the bat's lifecycle. Two stationary monitoring locations were chosen to assess the Study Area (Figure 3.44). These locations provided analysis of varying habitat types and were chosen based upon optimal bat detection. Areas with an open canopy and near foraging habitat were chosen to be optimal locations. Monitors were set to record data 45 minutes before dusk and continue recording 45 minutes post dawn daily to capture peak activity levels. Microphones were calibrated and placed in an elevated position above the sub-canopy approximately 2.4 m above the ground with open canopy optimizing the potential for bat acoustic recording while minimizing background natural noise from below the subcanopy (i.e., small mammal and insect noise).

Three bat species were detected, including two Endangered species of myotis, Northern Myotis (*Myotis septentrionalis*) and Little Brown Myotis (*Myotis lucifugus*), as well as the Hoary Bat (*Lasiurus cinereus*). The acoustic monitoring study report is included in Appendix D. As of the time of writing, the Hoary Bat has not been added to Schedule 1 of the SARA or listed under the NL ESA despite COSEWIC's recent 2023 assessment of the species as Endangered. Both of the Endangered myotis species are non-migratory and typically hibernate in caves, mines, and occasionally in basements while their roosting habitat is cavities in large trees (McBurney and Segers, 2021). The AC CDC report did not identify any known records of these species.

### 3.1.8 LISTED AND RARE SPECIES

The NL Dept of Fisheries, Forestry and Agriculture Wildlife Division coordinates the assessment and listing of species at risk, and develops recovery and management plans, monitoring programs, and research projects to promote their conservation. Newfoundland and Labrador's Endangered Species Act (NL ESA) provides special protection for plant and animal species considered to be endangered, threatened, or vulnerable in the province.

The Government of Canada's *Species at Risk Act* (SARA) was established to protect wildlife species from extinction by providing legal protection and promoting recovery actions. Designation under SARA follows recommendations from the Committee on the Status of Endangered Wildlife in Canada

(COSEWIC) and/or the Species Status Advisory Committee (SSAC) on the appropriate assessment of a species.

COSEWIC is an independent, national committee of government and non-government scientists who determine the national status of species, subspecies and nationally significant populations considered to be at risk of extinction or extirpation across their range in Canada. Similarly, the SSAC is an independent, provincial committee of government and non-government scientists who determine the provincial status of species, subspecies and populations.

In Newfoundland and Labrador there are currently 51 species, subspecies, and populations listed under the NL ESA: 27 of these species are listed as endangered, 10 are listed as threatened and 14 are listed as vulnerable. The designations of Endangered, Threatened and Vulnerable are defined below:

- Endangered: A wildlife species facing imminent extirpation or extinction.
- Threatened: A wildlife species that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction.
- Vulnerable: A wildlife species that has characteristics which make it particularly sensitive to human activities or natural events (equivalent to COSEWIC's designation of Special Concern).

Wildlife and Plant species at risk that may occur or have been identified as occurring in the Project Area are discussed below.

#### 3.1.8.1 Species at Risk

##### American Marten (*Martes americana atrata*)

American (Newfoundland) Marten (*Martes americana atrata*) population on the Island of Newfoundland is a genetically and geographically distinct subspecies from that which is found throughout the boreal region of North America (COSEWIC 2022). The Newfoundland Marten is currently listed as Threatened under the NL ESA and Threatened under Schedule 1 of SARA. A re-examination of the species was undertaken in 2022 by COSEWIC, who assessed the subspecies as being of Special Concern (COSEWIC 2022). The Government of Newfoundland and Labrador has published a recovery plan for the species with the goal to have and maintain a stable population of American Marten (NMRT 2010). Current threats identified for Newfoundland Marten are primarily incidental mortality from snaring and trapping although commercial trapping for the species has been outlawed since 1934 (COSEWIC 2022). Habitat loss from deforestation, disease and collisions are also considered to be key treats to the population.

A 2019 population estimate for Newfoundland Marten suggested a population of 2558-2837 individuals, an increase from 320-622 individuals estimated in 2007 (COSEWIC 2022). The 2022 COSEWIC report suggests that this change to the population is the result of an increase in the number of individuals as well as due to previous estimates having been being conservative due to a lack of empirical data. It is now known that marten inhabit 15 of the 18 designated forestry management districts and both National Parks on the island. There were no marten identified within the Project Area during the field studies (Appendix D). As indicated in section 3.1.7.2, the Project area does not overlap with known marten habitat on the Island of Newfoundland and the Project area does not contain identified critical habitat for Newfoundland Marten, the nearest area of which is found near Highway 490 approximately 6 km north-east of the Project area (Figure 3.54).

LITTLE BROWN MYOTIS (*MYOTIS LUCIFUGUS*)

Little Brown Myotis is listed as Endangered under Schedule 1 of SARA and under the NL ESA. AC CDC ranks the species as S3S4, suggesting that the population is within a range of Vulnerable to Apparently Secure on the Island of Newfoundland.

Little Brown Myotis is a small, brown-pelaged, insectivorous bat species of the *Vespertilionidae* (simple-nose) family, averaging 7.9 g in weight. This species has a wingspan of 22-27 cm with a short and blunt tragus. Little Brown Myotis is distributed across Canada from Newfoundland and Labrador to British Columbia. Habitat for the species is composed of hibernacula for overwintering such as cool and humid caves or mines as well as summering habitat that supports foraging. In summer, females establish maternity colonies in buildings, under bridges, or in cavities of large-diameter trees near abundant foraging features. These roost sites are generally near open water and wetland habitats which support a high abundance of insects. Large open fields and clearcuts are generally avoided by the species. The primary threat to Little Brown Myotis is White-nosed Syndrome (WNS) caused by *Pseudogymnoascus destructans,* a cold-preferred fungus, whereas other threats include colony eradication, chemical contamination, change in forestry structure and wind turbines (COSEWIC 2013b).

Little Brown Myotis was not identified in any historical records within or surrounding the Project Area, but are known to be distributed throughout Newfoundland and Labrador. Discussions with the provincial Wildlife Division indicate that the presence of bat species within the Study Area is likely, and indeed, the presence of Little Brown Myotis was confirmed within the Study Area based on results from the bat acoustic detection study described earlier.

NORTHERN MYOTIS (MYOTIS SEPTENTRIONALIS)

Northern Myotis is listed as Endangered under Schedule 1 of SARA and under the NL ESA. AC CDC ranks the species as S2S3, suggesting that the population is within a range of Imperiled to Vulnerable on the Island of Newfoundland.

Northern Myotis is a small, brown-pelaged, insectivorous bat species of the *Vespertilionidae* (simple-nose) family, averaging 7.4 g with a wingspan of 23-26 cm. The species is distinguished from Little Brown Myotis by their long, slender, and pointed tragus with ears that extend beyond the nose when pressed forward. In Canada, Northern Myotis are found from Newfoundland and Labrador to British Columbia. Habitat for this species is similar to that of Little Brown Myotis and is composed of hibernacula for overwintering such as cool and humid caves or mines as well as summering habitat that supports foraging. In summer, females establish maternity colonies typically in large-diameter trees, usually near abundant foraging features, and tend to avoid human-made structures. These roost sites are generally near habitats which support a high abundance of insects. The primary threat to Northern Myotis is White-nosed Syndrome (WNS) caused by *P. destructans* a cold-preferred fungus, whereas other threats include colony eradication, chemical contamination, change in forestry structure and wind turbines (COSEWIC 2013b).

Northern Myotis was not identified in any historical records within or surrounding the Project Area, but are known to be distributed throughout Newfoundland and Labrador. Discussions with the provincial Wildlife Division indicated that the presence of bat species within the Study Area was likely, and indeed, the presence of Northern Myotis was confirmed within the Study Area based on results from the bat acoustic detection study described earlier.

BARN SWALLOW (*HIRUNDO RUSTICA*)

Barn Swallows are listed as Threatened under Schedule 1 of SARA and Vulnerable under the NL ESA. AC CDC ranks the species as S2B, SUM, suggesting that the breeding population of this species is considered Imperiled, and the migrating population is considered unrankable on the Island of Newfoundland.

Barn Swallows are medium-sized insectivorous passerine with metallic blue and cinnamon underparts, with chestnut throat and forehead. Barn Swallows are documented to breed in all provinces and territories in Canada and are long-distance migrators, wintering as far south as South America. Habitat for barn swallows includes fissures in cliffs, rock overhangs and caves. However, with the presence of anthropogenic structures, preference has been shown for barns, houses, and bridges. Barn swallows choose to forage over open areas of grasslands, agriculture fields, forest clearings, wetlands and roads. Threats to Barn Swallows are not well known and require better understanding through empirical data. Potential threats include loss of habitat and reductions of insect (prey) quality and quantity through habitat loss, degradation, climate change and pesticide use (COSEWIC 2021).

Barn swallows were not identified through background review of NBBA records or AC CDC reports. Barn swallows were identified during the 2022 breeding bird studies, during which several individuals were observed along a gravel road adjacent to a residential area. The occurrences are likely associated with nesting individuals utilizing the adjacent residential area. No nesting habitat appears to be present within the Project Area itself.

BANK SWALLOW (RIPARIA *RIPARIA*)

Bank swallows are listed as Threatened under Schedule 1 of SARA and the NL ESA. AC CDC ranks the species as S1S2B, SUM, suggesting that the breeding population of this species is within a range of Critically Imperiled to Imperiled, and the migrating population is considered unrankable on the Island of Newfoundland.

Bank Swallows are a medium-sized insectivorous passerine with brown and white underparts with a characteristic dark breast band. They breed in various natural and artificial habitats that involve vertical banks, including, riverbanks, lakes and ocean bluffs, aggregate pits, road cuts and stockpiles of till. Breeding sites are usually located near open terrestrial habitat for aerial foraging, and large wetlands are utilized for communal nocturnal roosts during post-breeding and migration. Key threats to Bank Swallows include loss of breeding and foraging habitat through erosion control, flood management and aggregate management activity. Decline in insect availability and abundance from habitat loss, degradation, climate change and pesticide use is another reported factor (COSEWIC 2013a). Although the potential presence of Bank Swallows was identified through the AC CDC report on historical records within the search area, no bank swallows were observed during any field visits. The ELC study suggests there is a lack of habitat present within the Study Area to support Bank Swallows. However, the surrounding coastlines adjacent the Study Area has the potential to support suitable habitat for the species.

OLIVE-SIDED FLYCATCHER (*CONTOPUS COOPERI*)

Olive-sided Flycatcher is listed as Threatened under Schedule 1 of SARA and under the NL ESA, while a 2018 COSEWIC Assessment and Status Report ranked the species as being of Special Concern (COSEWIC 2018). The AC CDC ranks the species as S3B, SUM, suggesting that the breeding population of this species is considered Vulnerable, and the migrating population is considered unrankable on the Island of Newfoundland.

Olive-sided Flycatcher is a medium-sized passerine, with adults described as having deep brown-olive above, through wings and along sides, appearing vested with white coloration around the throat, center of breast, belly and undertail. The species has widespread migration, with over half of its breeding range extending across Canada's forests. Olive-sided Flycatcher inhabits edge habitat of open to semi-open coniferous or mixed mature forests, with adjacent open areas supporting tall tree snags for perching including wetlands, rivers, lakes, clearcuts or burned areas. The species is in decline across Canada, with the main contributing factors being habitat loss and degradation across breeding and wintering habitat and declining insect populations both throughout breeding and wintering locations (COSEWIC 2018).

Although olive-sided flycatchers were identified through background review of NBBA records, no individuals or pairs were identified during the breeding bird studies completed in 2022. Potential habitat for the species is found throughout the area, and the ELC findings suggests that the region contains suitable nesting habitat, foraging areas and perching snags to support Olive-sided Flycatcher.

#### Piping Plover (Charadrius melodus)

Piping Plover is listed as Endangered under Schedule 1 of SARA and under the NL ESA. AC CDC ranks the species as S1B, SUM, suggesting that the breeding population of this species is Critically Imperiled, and the migrating population is considered unrankable on the Island of Newfoundland.

The Piping Plover is a small shorebird endemic to Noth America. It is described as having a pale, sand-colored back with a short stout bill and orange legs. Piping Plovers nest and feed along sand and gravel coastal beaches. The eastern population of *melodus* has restricted breeding along Canada's Atlantic Coast and the east coastal United States. The Atlantic Coast population is associated with sandy beaches on barrier islands, ocean fronts, bays and sand bars. Key threats include predation, primarily to their eggs and juveniles, as well as human impacts and habitat loss and degradation (COSEWIC 2013c). Piping Plover were identified in the AC CDC records. Sandy Point (Flat Island) is known as a nesting area and is located approximately 3 km north of the Project area. No individuals were observed during any field visits and the ELC study found no suitable breeding or nesting habitat for the species within the Study Area.

#### Banded Killifish (Fundulus *diaphanous*)

Banded Killifish (Newfoundland Population) is listed as being of Special Concern under Schedule 1 of SARA and Vulnerable under the NL ESA. AC CDC ranks the species as S3, suggesting that the population of this species is Vulnerable on the Island of Newfoundland.

Banded Killifish are members of the *Fundulidae* family, reaching a maximum length of 120-130 mm and having a flat head with an upward-pointing mouth with a brown to olive-coloured dorsal surface fading to silver and cream color below. Vertical bands over most of their body are a distinguishing feature. In Newfoundland and Labrador the species has scattered distribution with ten known locations, including concentrations along the south coast of the island in Grand Bay West, Loch Leven, St. George's Bay, the Bay of Islands and Cow Head. Additional populations are present on Ramea Island, in the Indian Bay Watershed, on the Burin Peninsula and in the head waters of the Exploits River, with an introduced population present in Burtons Pond, St. Johns. Banded Killifish are generally found in fresh water but can inhabit estuaries, requiring shallow water, slow currents, soft substrates and abundant aquatic vegetation. Primary threats to the species include sedimentation from road construction and forest harvesting activities in addition to altered water flow regimes, obstruction of fish passage, pollution and predation by invasive non-native salmonid fishes (COSEWIC 2014).

Banded Killifish were identified through AC CDC records, which identify seven records of the species within the search area. St. George's Bay is known to contain the species (COSEWIC 2014). No Banded Killifish were identified during any field surveys.

#### AMERICAN EEL (ANGUILLA ROSTRATA)

American Eel is listed as Vulnerable under the NL ESA, but is not listed under Schedule 1 of SARA. COSEWIC assessed the species in 2012 and considers American Eel to be Threatened. AC CDC ranks the species as S3, suggesting that the population of this species is Vulnerable on the Island of Newfoundland.

American Eels are described as an elongate, cylindrical fish, a member of the "freshwater eels", and the only North American representative of the genus. Their dorsal fin is long, beginning at mid-body and extending such that it is confluent with the caudal and anal fin. The species lacks pelvic fins and grows to a maximum size of one metre long. American Eel play an important role as a top aquatic predator and are considered as an excellent indicator of habitat integrity. The historical Canadian distribution encompasses all accessible freshwater habitats, estuaries, and coastal marine waters connected to the Atlantic Ocean, up to the mid-Labrador coast. During their oceanic migrations their sole habitat is salt water; during continental phases American Eel occupy all salinity zones, including shallow and sheltered marine waters, estuaries, and freshwater rivers and lakes. Threats to the species include anthropogenic developments in migratory watercourses (i.e., hydroelectric dams and their turbines, infrastructure), fisheries and bioaccumulation of contaminants (COSEWIC 2012).

American Eel were identified in Barachois Pond through eDNA metabarcoding analysis and therefore may inhabit Barachois Pond. Although Man o' War Brook and Blanchard's Brook are connected to coastal waters their presence in these watercourses was not evident during field surveys.

#### MUMMICHOG (FUNDULUS HETEROCLITUS)

Mummichog is a small fish that resides in coastal habitats and is listed as Vulnerable under the NL ESA. This species is not listed under Schedule 1 of SARA and COSEWIC has not assessed the species. AC CDC ranks the species as S3, suggesting that the population of this species is Vulnerable on the Island of Newfoundland.

Mummichog are an euryhaline species, meaning they live in both fresh and salt water and can adapt to a wide range of salinities. They are normally found in shallow brackish waters of estuaries, salt marshes, or tidal streams but can occasionally be found in freshwater streams and rivers (Species Status Advisory Committee 2016). Mummichog were identified in the Barachois Pond through eDNA metabarcoding analysis and therefore may inhabit Barachois Pond.

### 3.1.8.2 Species of Conservation Concern (SOCC)

Species that are recognized by COSEWIC as needing protection but have not been protected in regulation are known as Species of Conservation Concern.

Table 3.18 lists plant SOCC identified though AC CDC historical records. Although there were no plant SOCC identified during the field investigations, the absence of these species in the area cannot be confirmed. Most of the historically identified species, with the exception of Knotted Rush (*Juncus nodosus*) and Creeping Rush (*Juncus subtilis*), are typical of coastal habitats including saltwater marshes and beaches.

*Table 3.18: Flora SOCC Identified through AC CDC Historical Records*

| Scientific Name | Common Name | S-Rank (2015) * | G-Rank * | Habitat [1] |
|---|---|---|---|---|
| *Suaeda calceoliformis* | American Sea-blight | S1S2 | G5 | Brackish or salt marshes and flats, coastal beaches, intertidal, subtidal, or open ocean |
| *Polygonum oxyspermum subsp. raii* | Ray's Knotweed | S2 | G2G4Q | Coastal beaches |
| *Juncus nodosus* | Knotted Rush | S2 | G5 | Floodplain (river or stream floodplains), meadows and fields, shores of rivers or lakes, swamps |
| *Bolboschoenus maritimus subsp. paludosus* | Saltmarsh Bulrush | S2 | G5 | Brackish or salt marshes and flats, marshes, intertidal, subtidal, or open ocean, wetland margins |
| *Spartina patens* | Salt-Meadow Cordgrass | S2 | G5 | Brackish or salt marshes and flats, coastal beaches, marshes, wetland margins |
| *Spartina alterniflora* | Saltwater Cordgrass | S2 | G5 | Brackish or salt marshes and flats, coastal beaches, marshes, wetland margins |

| Scientific Name | Common Name | S-Rank (2015) * | G-Rank * | Habitat [1] |
|---|---|---|---|---|
| *Carex silicea* | Sea-Beach Sedge | S2 | G5 | Anthropogenic (man-made or disturbed habitats), coastal beaches, |
| *Schoenoplectus tabernaemontani* | Soft-stem Bullrush | S2 | G5 | Anthropogenic, brackish or salt marshes and flats, floodplain (river or stream floodplains), fresh tidal marshes or flats, marshes, shores of rivers or lakes, wetland margins |
| *Juncus subtilis* | Creeping Rush | S2 | G5? | Floodplain, shores of rivers or lakes |
| *Juncus gerardii* | Black Grass | S2S3 | G5 | Anthropogenic, brackish or salt marshes and flats, marshes, intertidal, subtidal or open ocean, wetland margins |
| *Festuca rubra* | Red Fescue | S2S3 | G5 | Anthropogenic, cliffs, balds, or ledges, coastal beaches, meadows and fields, talus and rocky slopes |
| *Limonium carolinianum* | Sea-Lavender | S2S3 | G5 | Brackish or salt marshes and flats, coastal beaches, marshes, intertidal, subtidal, or open ocean |
| *Hordeum jubatum subsp. jubatum* | Foxtail Barley (Squirreltail Grass) | S2S3 | G5T5 | Anthropogenic, brackish or salt marshes and flats, coastal beaches, marshes |
| *Solidago sempervirens subsp. sempervirens* | Seaside Goldenrod | S2S3 | G5T5 | Coastal beaches, dunes, marshes |

"*" – S-Ranks (2015) and G-Rank were derived from the AC CDC 2022 Report.
"1" – Habitat descriptions were derived from information provided at m https://gobotany.nativeplanttrust.org/

Wildlife species of conservation concern (SOCC) include: Hoary Bat, Willet, Great Blue Heron, and Yellow Bellied Sapsucker. These species were identified during field work completed as part of the Ecological Baseline Report (Appendix D).

### HOARY BAT (*LASIURUS CINEREUS*)

Hoary Bat is not currently listed under Schedule 1 of SARA or under the NL ESA, although COSEWIC assessed the species in 2023 as Endangered. AC CDC ranks the species as SUM, suggesting that the migrating population is considered unrankable on the Island of Newfoundland.

Hoary Bats are the largest bat species in Canada, with a complex colouration of fur consisting of light to dark brown with white tipped hairs. They have distinctive light yellow-brown fun on the head, throat, and anterior margins of the wings. Furred tails are characteristic of *Lasiurus* species and is consistent with the Hoary Bat. Hoary Bats are amongst the widest ranging native terrestrial mammal in the western hemisphere. Globally, they occur from the boreal forest to Central America. It is likely that the species spans every Canadian province and US state, although there are few records of the species in Nunavut and in Newfoundland and Labrador. The species is migratory, concentrating in coastal areas of the United States and Mexico over the winter months. Although hibernation occurs in the southern United States, migration routes are not known (COSEWIC 2023).

Habitats utilized by Hoary Bats in summer and during migration include foraging, drinking and roost sites. Treed habitats of coniferous, deciduous, and occasionally shrubs are utilized for roosting. Forests of any age class are utilized and maternity roost trees tend to be of large diameter with height reaching or exceeding the height of the surrounding canopy. Hoary Bats forage in open areas including wetlands, grasslands, and open fields. Wind energy developments are the most immediate and concerning threat to the species, while global insect declines are also of particular concern as the species is an obligate insectivore. Additional threats include noise and chemical pollution and deforestation. Although Hoary Bat distribution across Newfoundland and Labrador is not well known, discussions with the provincial Wildlife Division determined that presence of bat species within the Study Area was likely (Appendix D). Presence of Hoary Bat was confirmed within the Study Area based on results from the bat acoustic detection study described previously.

WILLET (*TRINGA SEMIPALMATA*)

Willet are large, stocky shorebirds with long legs and a thick, straight bill. The species is ranked by AC CDC as S1B, SUM suggesting that the breeding population of this species is considered Critically Imperiled, and the migrating population is considered unrankable on the Island of Newfoundland. The species is not listed under Schedule 1 of SARA or listed under the NL*ESA,* and COSEWIC has not assessed the species. Habitat for this species includes marshes, wet meadows, beaches, tidal estuaries and mudflats.

The breeding bird surveys completed by Gemtec for Atlas Salt Inc. identified this species adjacent the Project area along the shoreline. It is likely that this species utilizes the shoreline and nearby freshwater marshes for nesting and foraging.

GREAT BLUE HERON (*ARDEA HERODIAS*)

Great Blue Heron is ranked by AC CDC as S2B,SUM suggesting that the breeding population of this species is considered Imperiled, and the migrating population is considered unrankable on the Island of Newfoundland.

The sub species, *Ardea herodias fannini,* is listed under Schedule 1 of SARA as being of Special Concern, but this population is restricted to British Columbia. It is not listed under the NL*ESA*.

This species is typically a colonial nester with freshwater or saltwater marshes and lakes being the primary nesting habitat. This species will build nests in trees and tall snags. The breeding bird surveys completed for the Project identified two occurrences of Great Blue Heron adjacent to a wetland and within the gravel road / residential area (Appendix D). Although marshes are present in the region, habitat to support nesting of this species (i.e. tall trees and forests) are not present within the Project Area.

YELLOW-BELLIED SAPSUCKER (*SPHYRAPICUS VARIUS*)

The Yellow-bellied Sapsucker is ranked by AC CDC as S2B,SUM suggesting that the breeding population of this species is considered Imperiled, and the migrating population is considered unrankable on the Island of Newfoundland. The species is not listed under Schedule 1 of SARA nor is it listed under the NL*ESA.* Furthermore, COSEWIC has not assessed the species.

Yellow-bellied Sapsuckers typically inhabit forests and will nest in tree cavities within deciduous trees. The breeding bird surveys completed for the Project identified an individual Yellow-bellied Sapsucker within the Project Area (Appendix D).

### 3.1.9 PROTECTED AND SPECIAL AREAS

A number of onland and coastal areas in Western Newfoundland have been designated as protected under provincial, federal and/or other legislation and processes, or have been formally identified through relevant forums and processes as being otherwise special or sensitive due to their ecological, historical and/or socio-cultural characteristics and importance.

A desktop review of known protected and special areas was completed using existing and available mapping and other sources of information. This review identified the following (Figure 3.57):

**Parks / Reserves and Natural Areas**

- The Provincial Trailway runs through the Town of St. George's and is located approximately 600 m north of the proposed mine site. It crosses the existing Flintkote Road at one location at Beach Lane where a conveyor bridge is planned thereby providing access for pedestrian and vehicular traffic (Figure 3.50).

- Barachois Pond Provincial Park is about 13 km northeast of the Project site.
- Barachois South Transitional Reserve is located 6 km to the southeast of the mine site on the eastern side of the Trans Canada Highway

**Biologically Sensitive Lands**

- Sandy Point Waterfowl Area is located offshore, approximately 2 km to the west from existing Turf Point and 3 km from the Project mine site.
- Pine Martin protected habitat 5 km is found northeast of the mine site, and is managed by NL Wildlife Division.
- Wetland Stewardship Area 6.5 km northeast of the mine site.

The Project does not interact directly with any of these protected and special areas. The Trailway crossing is on an existing industrial use and the proposed conveyor design (i.e. with a bridge) at the intersection of the Trailway and Flintkote Road will maintain current access (allow travel along the trailway). The Project is greater than 2 km away from all other Parks, Reserves and Biologically Sensitive Lands.

The Town of St.AC George's in consultation with the Government of Newfoundland and Labrador has identified several areas within its municipality where special measures should be taken to protect vulnerable habitats that support several species listed under the NL ESA. These sensitive land areas are shown in Figure 3.51 and include:

**Environmental Protection Areas within the Town of St. George's Municipal Plan:**

- The Flat Bay peninsula and Sandy Point are critical habitat for Piping Plover and are designated as Sensitive Waterfowl, Seabird and Shorebird Areas.
- Lands along Flat Bay Brook, including tidal marshes at the estuary, and on Flat Bay Islands (Sandy Point) for protection of several species of rare plants
- Little Barachois Brook for sensitive NL Pine Marten habitat
- Environmental Protection Area on the eastern shores of Barachois Pond for Banded Killifish

The Project does not include any shoreline or marine development and will not interact directly with any of these identified protected areas. Other potential indirect effects have known and proven mitigative measures that will be implemented. These mitigative measures are discussed in Chapter 5.0.

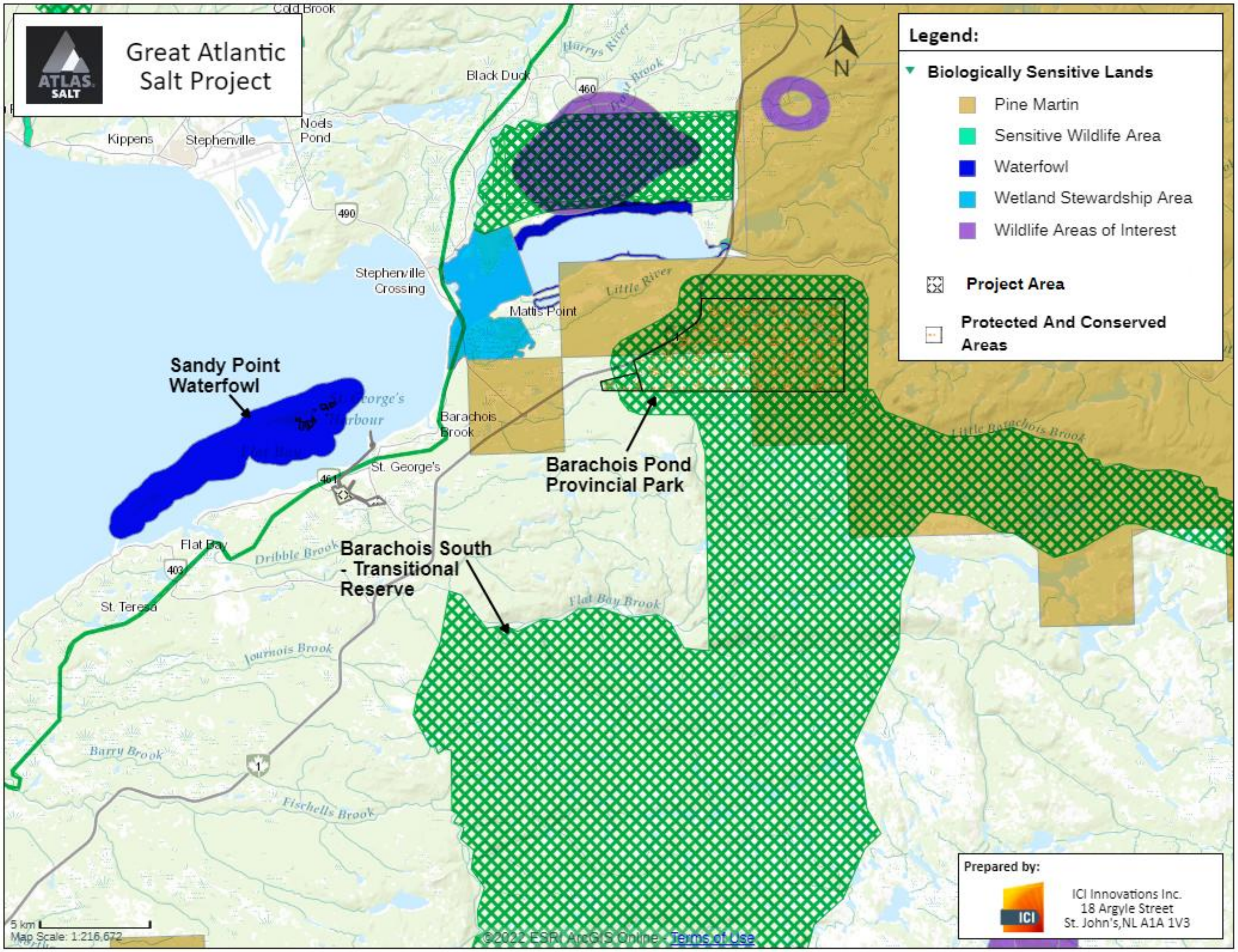



*Figure 3.55: Identified Protected and Special Areas*


*Figure 3.56: Provincial Trailway Through Town of St. George's*

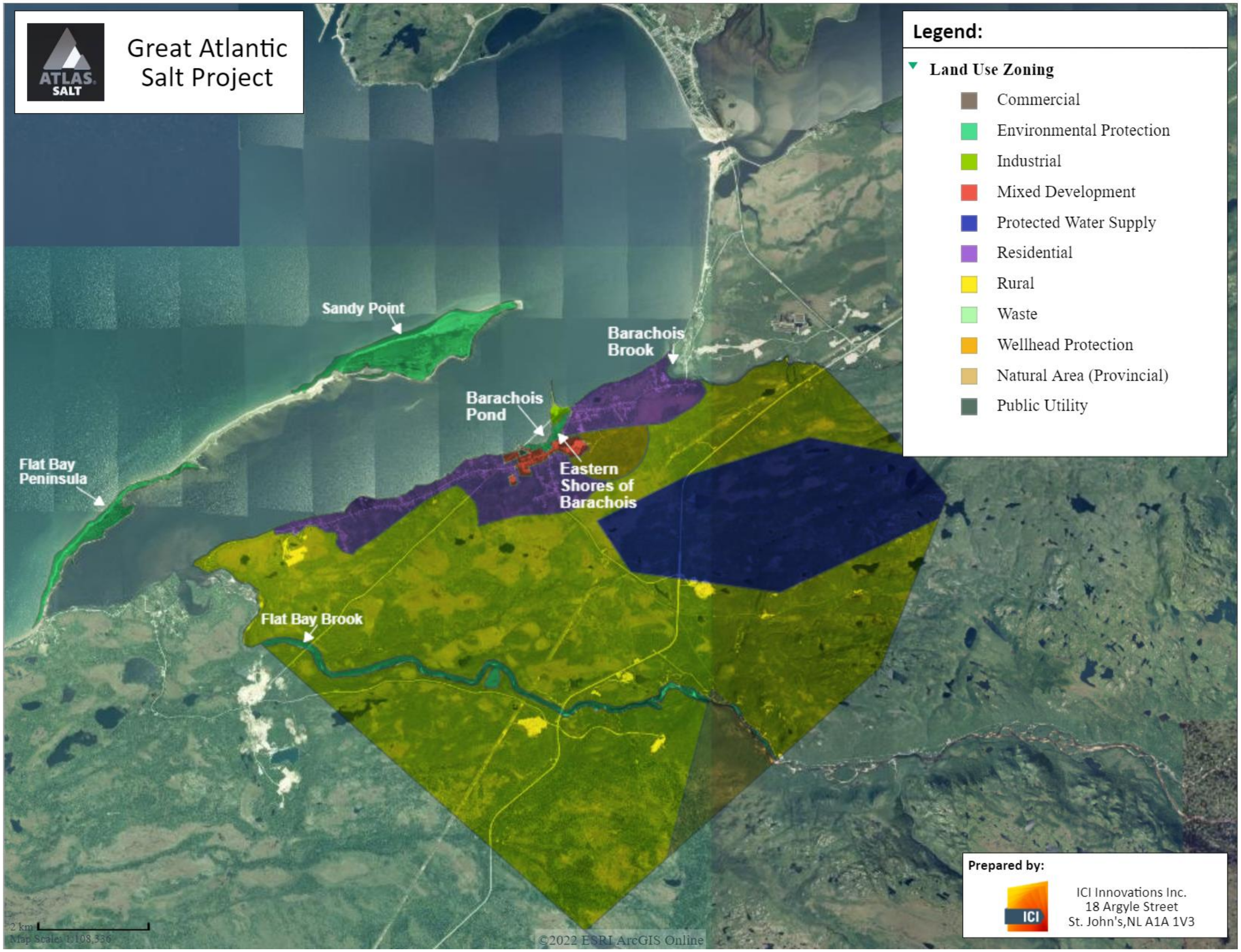



*Figure 3.57: Identified Protected and Special Areas*

### 3.1.10 Marine Environment

St. George's Bay NL, or Bay St. George as it is often referred, is a sub-region of the Gulf of St Lawrence extending from Cape Anguille in the south to Cape St. George in the north at the western tip of the Port au Port Peninsula, NL. The marine waters support numerous pelagic and demersal fish, shellfish, marine mammals and corals and sponges. Nearshore shallow regions of St. George's Bay contain highly productive eelgrass beds and salt marshes which are important areas for juvenile fish due to their significance in supporting a wide variety of biological assemblages. St. George's Bay is also recognized as an important spawning and nursery region for fish species and most notably Atlantic herring (*Clupea harengus*).

As discussed previously, Project construction will not include work within the marine environment, and once operational the Project will see a continuation of the marine vessel traffic from Turf Point that has occurred for years. While the Project will therefore have limited potential for interactions with, and adverse effects upon, the marine environment, for the sake of completeness a short overview of the existing marine environmental setting is provided below - with a focus on any key areas that have been identified as being sensitive or otherwise special in or near St. George's Bay.

**Ecologically or Biologically Significant Areas (EBSA)**

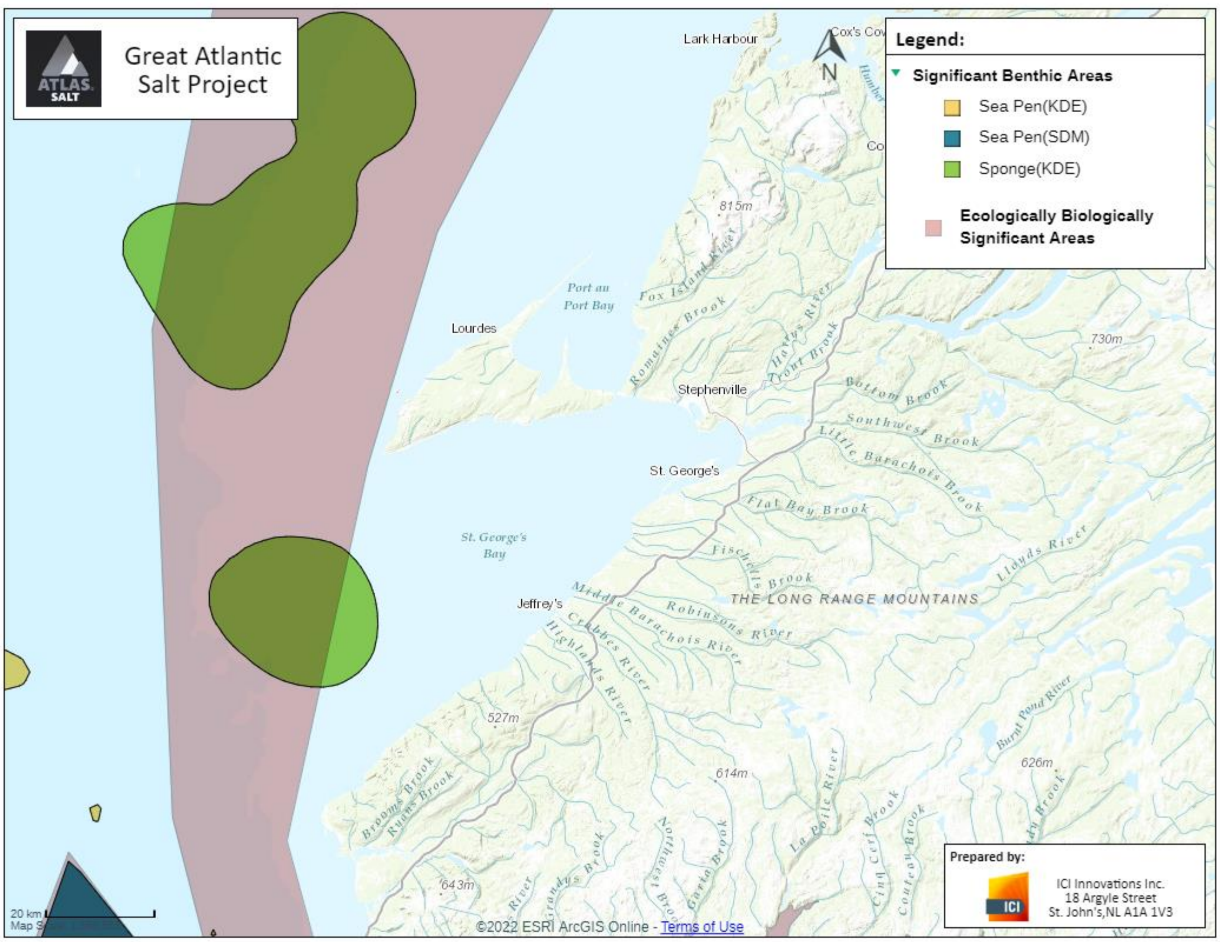
Further west in the Gulf of St. Lawrence DFO has identified areas of western Newfoundland and Labrador that are considered ecologically or biologically significant (Figure 3.50). Ecologically and biologically significant areas are a tool for management; they are intended to identify areas in need of enhanced management that supercede the management needs of individual species (DFO 2017). Canada's Oceans Act (1997) provides the legislative basis for an integrated ecosystem approach to management in Canada's oceans by focussing on the maintenance of biological diversity and productivity in the marine environment (DFO 2013). The Fisheries and Oceans Canada (DFO) Sustainable Fisheries Framework (SFF) provides the basis for ensuring Canadian fisheries are conducted in a manner which supports conservation and sustainable use. As part of the SFF, DFO published the Policy on Managing the Impacts of Fishing on Sensitive Benthic Areas (the Policy) in 2009 to provide a more systematic, transparent, and consistent approach to mitigate fishery impacts on benthic habitats, species, and communities (DFO 2017). This information is also valuable for the management of various marine activities including resource extraction, marine shipping, ocean dumping, spill response, etc.

**West Coast of Newfoundland EBSA**

The west coast of Newfoundland EBSA runs along the west coast of Newfoundland, Cabot Strait in the south and up to the Esquiman Channel in the north. It is located approximately 50 km west of the Town of St. George's in the Gulf of St Lawrence (Figure 3.50). The area is mostly characterized for the role it plays for groundfish (maximum uniqueness, concentration and adaptive values). Whether in the Esquiman Channel or in shallower waters, western Newfoundland remains the main concentration area for juvenile Atlantic cod (*Gadus morhua*), Atlantic redfish (Sebastes marinus), American plaice *(Hippoglossoides platessoides*) and Atlantic wolfish (*Anarhichas lupus*) (DFO 2013). The area is also significant for pelagic fish such as Atlantic herring (*Clupea harengus*) and capelin (*Mallotus villosus*) that use the area as a summer feeding area. Since 1993, the area offshore from St. George's Bay is regarded as Atlantic cod's principal area for early spawning (northern Gulf stock entering the Gulf from wintering areas). There are also capelin and Atlantic herring larvae in abundance in this area, especially in the coastal area north of the Port-au-Port Peninsula. The area also has significant sections for marine mammals (low to maximum uniqueness, concentration and adaptive values). The most important are located in the northern margin of the area and south of the area, where St. George's Bay represents a potentially significant feeding area for many marine mammal species that enjoy the ice-free water.

**Gulf of St Lawrence Significant Benthic Areas (SBA)**

Significant Benthic Areas are defined by DFO as "significant areas of cold-water corals, sea pens and sponge dominated communities" that are vulnerable to a proposed or ongoing fishing activity (DFO 2017). One SBA has been defined by DFO in western NL to the west of St. George's Bay as containing sponge-dominated communities. Cold water sponges form structural habitats that provide an important functional role for fish assemblages. This type of benthic habitat is important for feeding, breeding and spawning for numerous fish and invertebrate species (DFO 2015).




Source: DFO (2013)

*Figure 3.58: Ecologically or Biologically Significant Areas (EBSA)*

## 3.2 Socioeconomic Environment

The following sections provide an overview of the existing socioeconomic environment, including a number of anthropogenic components and activities that occur within or near the proposed Project Area and surrounding region, and which may potentially interact with the proposed Project.

### 3.2.1 People and Communities

The Project area is located within the Town of St. George's in Western Newfoundland. Nearby communities include Barachois Brook, Flat Bay, St. Teresa, and Mattis Point, and there are other smaller communities and settlements also found in the region (See previous Figure 1.2: The Proposed Great Atlantic Salt Project - Local Setting).

#### 3.2.1.1 Settlement History

The abundant natural resources and harbours of the St. George's area have attracted people for centuries, for a variety of reasons. The area is said to have been historically inhabited by a number of Indigenous peoples, including the Dorset and Beothuk, followed by Mi'kmaq and European settlers. From as early as the 1600s, crews from France, England and the Jersey Islands sailed to the area seasonally to fish in the area's waters, leaving a diverse cultural legacy that still resonates throughout the region in both language and lifestyle.

St. George's (originally known as South Side or Little Bay) has its origins in the French fishery of the seventeenth century when the harbour would attract fishermen to spend the summer in the area and return to France for the winter months. Permanently settled in the eighteenth century, the community remained a fishing village for nearly 200 years until the advent of the railroad. Sandy Point, a small uninhabited island a few hundred meters offshore from St. George's has a great deal of historical significance to the settlers in St. George's. In the 1700s and 1800s, Sandy Point was the commercial center of the west coast of Newfoundland, until the railway went through in 1898. Because of the work that the railway created and the rapid transportation of goods, many people from Sandy Point settled at St. George's around the train station (commonly referred to as The Tank). The new settlement of St. George's then rapidly became more prominent than Sandy Point (Town of St. George's 2023).

St. George's itself grew rapidly and soon became a major center in the region, eventually becoming the main distribution centre for goods to the surrounding area and the Port au Port Peninsula, as supplies were delivered to the peninsula by the St. George's Steamship Company. Fishing, lumbering and farming were the primary occupations, and lobster factories and other enterprises also operated there. The community also became the seat for the magistrate for the area and a courthouse was constructed. St. George's was the most prominent town in the Bay St. George area until the early 1900s, but with the coming of the Ernest Harmon Air Force Base in Stephenville in 1941, that community eventually became the primary regional center, with Stephenville Crossing becoming the trans-shipment point for goods going to Stephenville by rail (Town of St. George's 2023).

In the mid-1950s, the development of a gypsum operation with its marine loading operation in St. George's helped sustain the community, and has led to generations of workers and families being familiar with, and skilled at these mineral extraction and shipping activities. This industrial history sets a solid foundation for the further expansion and diversion of the area's mining sector, through the proposed salt mining and shipping project described herein.

#### 3.2.1.2 CURRENT POPULATION

The socioeconomic baseline information that follows in this section includes the most current and relevant data and information available for various local and regional geographic divisions as, defined below:

- *Municipality*: The Town of St. George's. The proposed Project will be located within the boundaries of this municipality, which was incorporated in 1965 and is the oldest town in the Bay St. George Area (Town of St. George's 2023).
- *Local Area 36: St. George's Area:* A local region that encompasses St. George's and a number of adjacent communities such as Barachois Brook, Flat Bay, Journois and St. Teresa. The Local Area is similar to Statistics Canada Census Consolidated Subdivision 4C (but 4C also includes other inhabited areas, such as Mattis Point) (NL Community Accounts 2023).
- *Census Division 4:* A Statistics Canada statistical division in Western Newfoundland that includes and surrounds the above administrative divisions.

The Town of St. George's itself is located on the southeastern shore of Flat Bay. It is approximately 17 km from Stephenville (the largest community and service centre in the region) and 136 km from Channel – Port aux Basques.

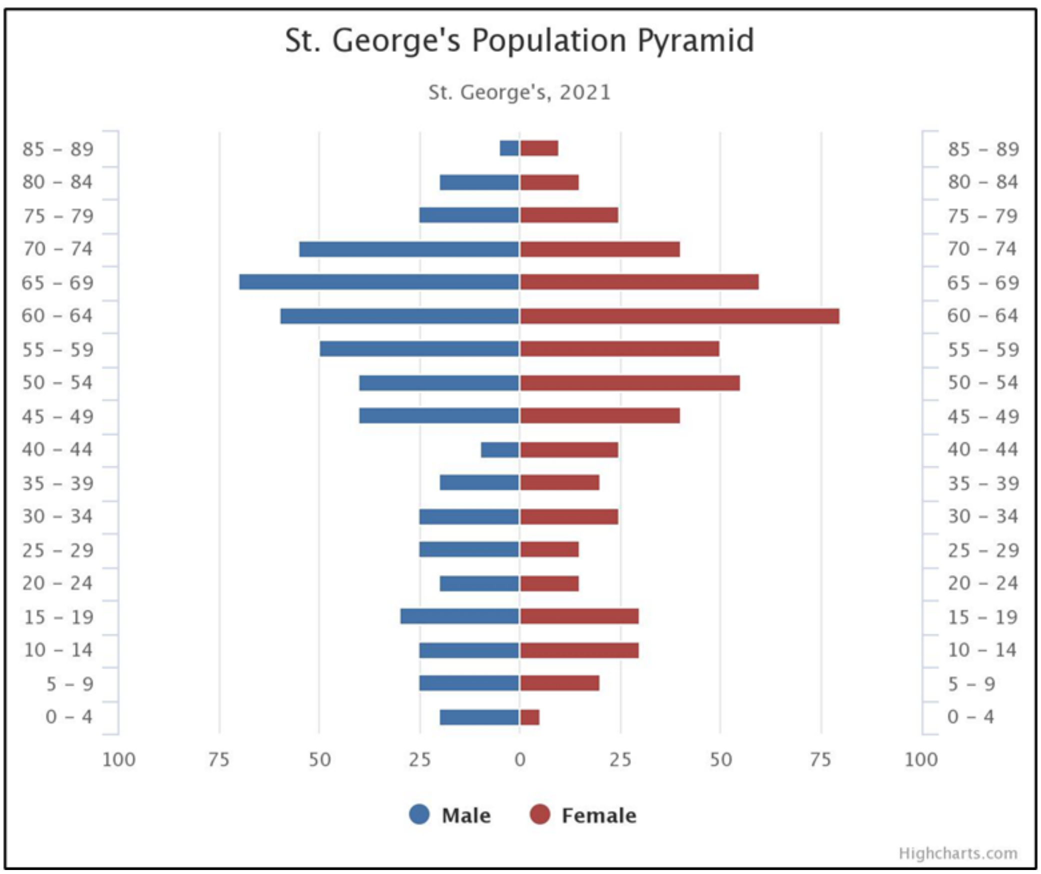
The Town of St. George's had a population of 1,139 persons in 2021, which represented a decrease of over five percent from 2016 (the previous census) (

Table 3.19). A summary of the 2021 population of St. George's by age and gender is provided below in Figure 3.59.

*Table 3.19: Population by Community and Region (2021 and 2016)*

| Geographic Area | Description | 2021 | 2016 | % Change (2006 to 2011) |
|---|---|---|---|---|
| Town of St. George's | Municipality within which the proposed Project is located. | 1.139 | 1,203 | - 5.3% |

| Geographic Area | Description | 2021 | 2016 | % Change (2006 to 2011) |
|---|---|---|---|---|
| Local Area 36 | Region that includes the communities of Barachois Brook, Flat Bay, Journois, St. George's and St. Teresa. | 1,590 | 1,795 | - 11.4% |
| Census Consolidated Subdivision 4C | Region that includes the communities of St. George's, Barachois Brook, Black Duck, Flat Bay, Mattis Point, St. Teresa, Journois, Sandy Point, and various other smaller communities and settlements. | 1,730 | 1,950 | -11.3% |
| Census Division 4: St. George's | A Statistics Canada statistical division in Western Newfoundland that covers a land area of approximately 7,088 km² surrounding Bay St. George. | 19,890 | 20,714 | -4.0% |
| Source: NL Community Accounts (2023) | | | | |




Source: NL Community Accounts (2023)

*Figure 3.59: Town of St. George's: Population by Age and Gender (2021)*

The 2021 census indicated a population for the St. George's Area (Local Area 36) of 1,590 persons, which represented a decrease of 11.3 percent from 2016 (1,795 residents). This compares to a population decrease of 1.8 percent for Newfoundland and Labrador as a whole from 2016 to 2021. The median age of residents in the St. George's Area was 56 years old in 2021 (NL Community Accounts 2023).

The average number of persons per household in the Town of St. George's is 2.7 and the estimated number of private dwellings is 541 (Town of St. George's 2023).

A major indicator of personal and community health and well-being is how residents rate their own health status. In 2015-2016, 61.2 percent (+/- 15.5 percent) of individuals aged 12 and over in the St. George's Area (Local Area 36) rated their health status as excellent or very good. By comparison, in Newfoundland and Labrador as a whole, 62.0 percent (+/- 1.7 percent) of individuals aged 12 and over rated their health status as excellent or very good (NL Community Accounts 2023).

#### 3.2.1.3 Indigenous Population

In the 2016 census, over 65 percent of the total population of the St. George's Area (Local Area 36) identified as Indigenous, most of which (60 percent) identified as "First Nations (North American Indian)" (NL Community Accounts 2023). Of the total number of persons that reside in the Town of St. George's itself, over 55 percent belong to the Mi'kmaq Nation (Town of St. George's 2023).

The Qalipu First Nation Band (QFNB) is an *Indian Act* Band representing some 25,000 members who reside primarily in Western and Central Newfoundland. QFNB is made up of 67 traditional Mi'kmaq communities, spread out over nine Electoral Wards. An elected Chief and Council govern the QFNB, and Ward Councilors are elected to represent each of the nine Wards along with two Vice-Chiefs that represent western and central Newfoundland. QFNB has four satellite offices located in Glenwood, Grand Falls-Windsor, St. George's, and Stephenville, and its central administrative office is in Corner Brook. The organization's core programs and services are delivered by a growing body of staff, and include education and training, tourism development, health benefits and services, employment programs, registration assistance, environmental monitoring, culture and heritage and community economic development. Economic and corporate development initiatives are led by the Qalipu Development Corporation (QDC), which was established as an independent, arms-length corporate business entity that functions as a holding company for all business operations and investments of the QFNB (QFNB 2023).

There are also three independent self-identified Indigenous Band Councils near the Project Area. Most but not all members of these Bands are also QFNB members.

St. George's Indian Band members primarily reside within St. George's and are thus closest to the proposed Project and to its proposed components and activities. The Flat Bay Band operates as the de-facto community council in Flat Bay, known in part as No'kmagq Village, a self-governed Indigenous community founded in 1972. Flat Bay is located next to St. George's. The private road used for the gypsum mine (i.e. Flintkote Road), which is intended to be used for the salt mine operation, is sometimes used by members of the public to travel between Flat Bay and St. George's. The Three Rivers Mi'kmaq Band is not adjacent to the proposed salt mine but works closely with the St. George's and Flat Bay Band Councils in advocating for social and economic development, environmental protections, and Indigenous recognition.

### 3.2.2 Community Services and Infrastructure

The Town of St. George's is an incorporated community under Section 3 of the provincial *Municipalities Act, 1999*. It has a defined Municipal Boundary and a Municipal Planning Area Boundary, established by order pursuant to Section 11 of the Urban and Rural Planning Act, 2000 and a Municipal Plan and Development Regulations in legal effect. The Town therefore has the legislative powers of the Municipalities Act, 1999 and the Urban and Rural Planning Act, 2000, allowing it to collect taxes and provides infrastructure and services to its residents as well as providing land use planning and development control services.

The Town itself stretches approximately 10 km along the south coast of St. George's Bay and extends up to 3 km inland from the coast to cover approximately 25.7 square kilometers (Figure 3.60). The Town's municipal planning area covers an area of approximately 104 square kilometers. The Town of St. George's municipal plan defines the types of development activities that have been approved within the larger municipal planning area (Figure 3.57 above). The land use zones defined in the plan include Rural (69%), Protected Water Supply (15%), Environmental Protection (5%) (which is comprised largely of Sandy Point), Residential (7%), Community Service (2.7%) and small pockets of Commercial, Industrial, Town Regional Centre and Mixed Development.

The proposed Project lies within the boundaries of the Town of St. George's and within the limits of the Municipal Planning Area of the Town of St. George's (Figure 3.60). The current Municipal Plan and Development Regulations were approved by Council on 2 November 2020 and were notified in the *Newfoundland and Labrador Gazette* on 12 March 2021, on which date they came into legal effect. There have been no amendments to the planning documents since then. Appendix P – Town of St. George's Municipal Landuse Zoning as of March 12, 2021 provides a scale map of the current Town of St. George's municipal land use zones. The municipal plan (https://www.gov.nl.ca/mpa/files/St_Georges_MP.pdf) and development regulations (https://www.gov.nl.ca/mpa/files/St_Georges_DR.pdf) with associated mapping are available at https://www.gov.nl.ca/mpa/registry/community/st-georges/.

In the Fall of 2023, Atlas completed a series of engagements with the Town of St. George's to determine the Town's overall views on and interest in the Project, and review any potential changes required to the Municipal Plan and associated permitting and compliance requirements (Chapter 4). The proposed Project components and their overlap with current municipal land use zones are displayed in Table 3.20. Appendix P (Municipal Landuse Zones of GAS Project Map) provides a scale map of the Project and the current municipal zones in relation to each of the proposed Project components. Appendix P also provides a series of scale maps to denote the current municipal land use zones of the major components of the Project.

*Table 3.20: Major Project Components in relation to Current Land Use Zones*

| **Major Component** | **Component** | **Municipal Zone (Area Ha)** | **Summary** |
|---|---|---|---|
| Surface Mine Site | Surface Mine Site | Residential (34.9 Ha) | Currently 90% of the proposed Project mine surface site is within the residential municipal zone. This proposed activity is not permitted with the current zoning. The rural zoning is considered appropriate for the proposed activity. |
| | | Rural (4.1 Ha) | Currently 10% of the proposed mine surface site is within the rural municipal zone. This zoning is considered appropriate. |
| Ancillary Infrastructure | Main Access Road and Adjacent Transmission Line | Rural (10.5 Ha) | Currently, 84% of the proposed main access route and adjacent transmission line is within the rural zone. Since the activity is associated with the mine site, it is appropriate to be zoned rural to match the zoning of the mine site |
| | | Residential (2.0 Ha) | Currently, 16% of the proposed main access route and adjacent transmission line is within the residential zone. This activity is normally permitted within this zone, however, given that the activity is associated with the mine site, it would be more appropriate to be zoned rural to match the zoning of the mine site |
| | Water and Sewer Service | Residential (3.1 Ha) | Currently 91% is within the residential zone. Water and sewer activity is permitted within this zone. |
| | | Mixed Development (0.3 Ha) | Currently 9% is within the mixed development zone. Water and sewer activity is permitted within this zone. |
| | Secondary Access Road | Residential (1.4 Ha) | The secondary access road runs directly adjacent to the Project Overland conveyor as it travels from the surface mine site to the Flintkote Road (haul road). This activity is normally permitted within this zone, however, given that the activity is associated with the mine site, it would be more appropriate to be zoned rural to match the zoning of the mine site |
| | | Residential | |

| | | | |
|---|---|---|---|
| Overland Conveyor | Overland Conveyor | (2.5 Ha) | Currently each of these zones provide for discretionary use for conveyance by truck only. The proposed overland conveyance is not a permitted or discretionary activity within these land use zones. It is appropriate to amend the municipal plan and development regulations to allow overland conveyor as discretionary use in these land use zones |
| | | Mixed Development (1.4 Ha) | |
| | | Environmental Protection (0.1 Ha) | |
| | | Industrial (0.5 Ha) | |
| | | No Municipal Zone (2.1 Ha) | |
| | | Industrial (0.9 Ha) | The overland conveyor is considered outside the municipal limits as it crosses the causeway. |
| Turf Point | Turf Point Marine Terminal | Industrial (3.0 Ha) | This is an existing operational site that has been zoned Industrial to allow the Turf Point marine terminal and storage activity. This is currently zoned correctly for the intended purpose. |
| | Turf Point Storage and Offloading | | |

During Atlas' discussions with the Town and subsequent to these meetings, the Town of St. George's indicated that they support the Project (See letter of Support - Appendix L and Section 5.0 of the Municipal Plan). Additionally, the Town determined that aspects the current municipal plan and development regulations did not appear to allow for the Project as currently defined. In a subsequent Town Council meeting it was decided to engage a planning consultant to review the Project as it relates to the Municipal Plan and Development Regulations (see https://townofstgeorges.com/wp-content/uploads/2024/02/council-minutes-2023-11-09.pdf). Subsequent to this Town Meeting, in November 2023, the Town engaged Mr. Jens Jensen, P.Eng, MCIP with HMJ Consulting Limited to complete the required Amendments. Mr. Jensen has drafted proposed Municipal Plan Amendment No 1, 2024 (https://townofstgeorges.com/wp-content/uploads/2024/02/St.-Georges-MP-amendment-for-presentation-31-Jan-2024-1.pdf) and Development Regulations Amendment No. 1, 2024 (https://townofstgeorges.com/wp-content/uploads/2024/02/St.-Georges-DR-amendment-for-presentation-31-Jan-2024.pdf). These were reviewed and approved by Council for presentation to the Town's residents in a public meeting. This public meeting was scheduled and completed on January 31, 2024 (see https://townofstgeorges.com/notice-of-public-meeting/). Mr. Jensen completed a presentation to the Town's residents at this meeting (see https://townofstgeorges.com/january-31st-rezoning-presentation/). The specific amendments to the Municipal Plan and the Development Regulations being proposed by the Town of St. George's to allow the Project to proceed have been made available to the public (https://townofstgeorges.com/wp-content/uploads/2024/02/St.-Georges-MP-amendment-for-presentation-31-Jan-2024-1.pdf and https://townofstgeorges.com/wp-content/uploads/2024/02/St.-Georges-DR-amendment-for-presentation-31-Jan-2024.pdf). It is currently understood by Atlas that these proposed amendments have been submitted to the Province (MAPA) for review. These proposed amendment documents provide a discussion of the following:

- Background
- Planning Policy Analysis
- Public Consultation
- Steps to Lead to a Permit
- Amendment

The following provides a summary of the process for completing the amendments to the Town of St. George's Municipal Plan and Development Regulations, as described to Atlas by the Town's planning consultant:

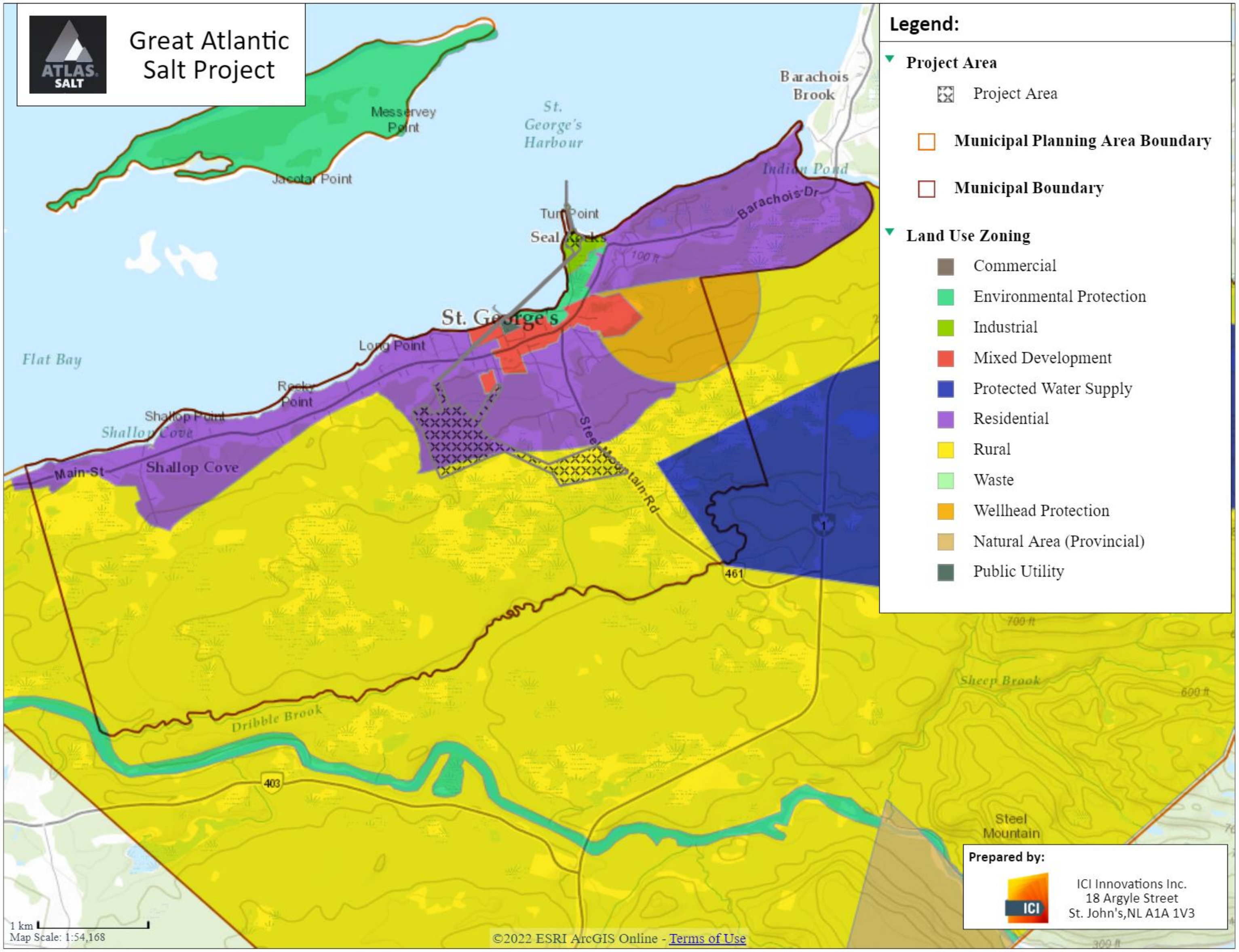
1. **Definition of amendments** - Write up the precise wording of the amendments. This has been done in the form used for the public consultation stage (https://townofstgeorges.com/wp-content/uploads/2024/02/St.-Georges-MP-amendment-for-presentation-31-Jan-2024-1.pdf and https://townofstgeorges.com/wp-content/uploads/2024/02/St.-Georges-DR-amendment-for-presentation-31-Jan-2024.pdf) These documents use illustrations to show the area affected. These were advertised in preparation for presentation to the public at a scheduled and publicized public meeting (see https://townofstgeorges.com/notice-of-public-meeting/).
2. **Preparation of the official maps to accompany amendments** – Scale drawings/maps of the area affected by the land use zone changes were prepared .
3. **Notice of the presentation to the public –** As per the Urban and Rural Planning Act (s.14 and 25), the Town of St. George's carried out a public consultation program. This was accomplished by way of a presentation, in which the planning consultant made an in-person presentation to the community. The presentation to the public was scheduled and completed on 31 January 2024 (see below). The event was publicized by way of posting on the Town of St. George's website and the same notice appeared in the regional digital newspaper Saltwire *Newfoundland Wire* before the date of the presentation.
4. **Presentation to the public** – The proposed amendments to the Town's municipal plan were presented by the planning consultant on January 31, 2024. The presentation ended with an invitation to the public to submit comments Council's consideration.
5. **Required Feedback Period** – Town residents and the general public were provided with 16 days to provide feedback and comments to the Town. This period occurred from the date of the presentation to the public on January 31, 2024 until end of day February 16, 2024.
6. **Revisions to the draft amendments –** After the required feedback period, Council may make revisions in consideration of public comments and any remaining minor matters. At the time of submission of this EA Registration, it is unknown by Atlas if any such revisions are being considered. Note that any major changes to the defined Amendments would be subject to a repeat of the public consultation Steps 1 through 5 and further consideration by the Council.
7. **Submission of documents to MAPA for URPA s.15 statutory review** - The final amendment documents will be prepared by the planning consultant and approved by Council then submitted to MAPA for review. MAPA will identify any conflicts with provincial government interests. MAPA may identify minor matters which can be corrected without repeating any of the above steps. If any major matters surface the process begins at Step 1and is repeated

8. **Release of documents for final steps** - When MAPA is satisfied with the documents, an official release is issued, enabling Council to proceed to the steps of adoption, public hearing, approval and registration.
9. **Adoption and public hearing** – At this point, Council can move to adopt the documents, and arrange for a public hearing per URPA s.18. Council appoints an independent commissioner to conduct the hearing. The hearing must be publicized by website and newspaper ads in the regional digital newspaper Saltwire *Newfoundland Wir*e, at least 14 days beforehand.
10. **Public hearing and report** - the independent commissioner conducts the hearing and considers all written and oral submissions, then writes a report to Council. The report is advisory and Council is not obliged to execute any recommendations which the commissioner may make. If no written submissions are received before two days before the hearing date, Council may cancel the hearing.
11. **Council considers commissioner's report, if any, and moves to approve -** As noted above, Council will consider the commissioner's report, if any, and can move to approve the documents, with or without accepting any of the commissioner's recommendations. At this point, the only changes Council can make must be in accordance with the commissioner's recommendations.
12. **Submission of documents for MAPA registration** - The documents together with certifications are sent to MAPA for registration in their planning registry. Once registered, MAPA advises Council that the registration is to be posted in the *Newfoundland and Labrador Gazette.*
13. **Posting notice of registration in the *Newfoundland and Labrador Gazette*** - Council places the notice. It is at this point that the amendments take legal effect.
14. **Local notice of posting in *Newfoundland and Labrador Gazette*** - Once the *Gazette* notice is placed, Council places a notice on the Town website and in the regional digital newspaper Saltwire *Newfoundland Wir*e to say that the matter is posted in the *Gazette* and that the date of the posting in the *Gazette* is the legal effect date.

It is anticipated that once the proposed amendments are approved at all steps in the process as defined above, the Project components will occupy municipal zones that permit the proposed Project, or allow the Town the discretion to approve the activities. At this point, the municipal plan amendment process is outside of the scope of activities of Atlas, and the Proponent therefore cannot provide details on the outcome. Based on communication with the Town of St. George's, Step 7 in the process (submission of documents to MAPA for URPA s.15 statutory review), has been completed.

Additionally, Atlas has reached out to the Town to determine permitting requirements and process for the Project. The Town currently allows for development, business and building permits. However, it is understood that since the Project is the largest project to occur within the Town's jurisdiction, the Town will be seeking professional services and guidance on appropriate levels of permitting and process to ensure it protects the interests, health, and safety of its residents (Danny Conway, Town Manager, Town of St. George's, pers. com).

St. George's layout centers around a main artery, Barachois Drive, which runs from the east from the community of Barachois Brook, continuing westward from Turf Point (from there named Main Street) to the westerly limit of the municipal planning area at Flat Bay Brook. A secondary artery is Steel Mountain Road, running to the south from its intersection with Main Street in the heart of the community, from which a number of side streets extend. Access to and from the Trans-Canada Highway (TCH) is conveniently located, as Highway 461 turns inland from Main Street as Steel Mountain Road and comes to the TCH shortly thereafter. Driving eastward on Barachois Drive, beyond Barachois Brook, also leads to Highway 490 and the TCH (Town of St. George's 2020).




Source: NLFFA (2023)

*Figure 3.60: Town of St. George's Municipal Boundary and Planning Area*


Source: NLFFA (2023)

*Figure 3.61: Town of St. George's Road Network*

Much of the non-residential development in the community is concentrated in a core area, on Main Street between Beach Lane and Abbott's Lane and up Steel Mountain Road for a short distance. Non-residential development in that core area is mixed together with some residential development. The residential areas throughout the community are compactly developed, but with little sense of crowding, and the overall street network features many side streets (Figure 3.61).

The Town of St. George's provides a range of municipal services and associated infrastructure for its residents, including core programs such as regular garbage collection as well as water and sewer. The water system draws its groundwater supply from a wellfield of four wells lying in a designated recharge area which has been regulated since 2011 as a wellhead protected water supply area (Figure 3.44). The regulated area comprises a circle of 900 metres radius, except where it is truncated by Barachois Drive. A surface water supply (an impoundment of Dribble Brook), which is intended for use as a backup, is designated as a protected public water supply area. Some development has already occurred in the wellhead protected water supply area (eg, stadium, playground and ballfield and residential development along the south side of Barachois Drive from Seal Rocks to Alder Drive), while the Dribble Brook surface water supply area is virtually unoccupied other than for the water works infrastructure and a length of the TCH which crosses it (Town of St. George's 2020).

Much of the Town area is served by a municipal central sewer system, which discharges into the sea in Flat Bay. Council has designated a site for a potential future wastewater treatment plant. Sewage disposal in areas outside the municipal central system is entirely by way of private sewage disposal systems (Town of St. George's 2020).

A variety of other municipal and provincial services and infrastructure are also provided in the community. Two schools are located in the town and provide elementary (kindergarten to grade 8) and high school (grade 9 to level IV) education. The recreation complex (stadium) offers an ice surface for sport, space for large gatherings and bowling, alongside a children's playground and ballfield. Nearby trail systems and country roads offer hiking and all-terrain vehicle access. A library, fire hall (established in 1971, and with two crews of volunteers) and town offices are housed in the main town building. Local tourism attractions include a historic museum and a registered heritage structure, and commercial enterprises in the town include a marina, service station, restaurant, medical clinic and pharmacy, bank, legion branch, and a convenience store, with a post office also located within the community (Town of St. George's 2023).

The town is approximately 24 km by road from Stephenville, which is one of the larger centres in Western Newfoundland with a population of 6,765 residents in 2021 (NL Community Accounts 2023). The services of Stephenville include a modern hospital and other health care services, year-round marine port, airport, government offices, the headquarters of the provincial college (College of the North Atlantic), provincial detention centre, community centres, and more diverse commercial services. Corner Brook is the largest community in Western Newfoundland with a population of approximately 20,000 in 2021 (NL Community Accounts 2023), and is approximately 90 km away from the Project Area.

### 3.2.3 Economy, Employment and Business

An overview of the labour force of the St. George's Area (Local Area 36) in 2021 for a number of key occupational categories is provided in Table 3.21 below. As noted above, the communities in this area are within commuting distance of the regional service centre of Stephenville and other centres where many of its resident's work. However, the Town of St. George's also has a number of its own commercial enterprises as listed in the preceding section, as do other communities in the region. The labour force participation rate in 2021 was 38 percent, with an employment rate of 28.5 percent, and an unemployment rate of 25.9 percent (Table 3.22)

*Table 3.21: St. George's Area (Local Area 36) – Labor Force by Occupational Group (2021)*

| Occupational Category | Total |
|---|---|
| Health | 45 |
| Business, finance and administration | 50 |
| Education, law and social, community and government services | 110 |
| Sales and service | 65 |
| Manufacturing and utilities | 10 |
| Natural resources, agriculture and production | 20 |
| Trades, transport and equipment operators | 80 |
| Natural and applied sciences | 10 |
| **Total** | **390** |
| Source: NL Community Accounts (2023) | |

*Table 3.22: St. George's Area (Local Area 36) – Labor Force Profile (2021)*

| Labour Force Indicator | Total | Male | Female |
|---|---|---|---|
| Total population aged 15 years of age and over | 1,420 | 710 | 710 |
| In the labour force | 540 | 275 | 270 |
| Participation rate | 38.0% | 38.7% | 38.0% |
| Employment rate | 28.5% | 26.1% | 31.0% |
| Unemployment rate | 25.9% | 32.7% | 18.5% |

*Notes*:

*Participation rate*: Total labour force expressed as a percentage of the population aged 15 years and over.

*Employment rate* (employment/population ratio): Number of employed persons expressed as a percentage of the population 15 years of age and over.

*Unemployment rate*: Number of unemployed persons expressed as a percentage of the labour force.

Source: NL Community Accounts (2023)

In the St. George's Area (Local Area 36), approximately 73 percent of people aged 15 and over had at least a high school diploma in 2021, compared to 80 percent in the province as a whole, while about 12 percent had a bachelor's degree or higher in 2021 compared to 17 percent in the province overall (NL Community Accounts 2023).

In 2020, the gross personal income per capita in the St. George's Area (Local Area 36) was $29,500, and the after tax personal income per capita, adjusted for inflation, was $18,200 for this area. The average couple family income in this area was $81,400 in 2020. In 2020, the identified sources of market income for persons in this area were (NL Community Accounts 2023):

- Employment income (800 persons reporting $30,400 average income)
- Investment income (130 persons reporting $1,500 average income)
- RRSP income (65 and older) (20 persons reporting $10,300 average income)
- Private pension (270 persons reporting $19,300 average income)
- Other income (160 persons reporting $5,800 average income)

### 3.2.4 Land and Resource Use

An all-weather gravel haul road (i.e. Flintkote Road) was constructed across the Project Area during historic mining operations to connect the Flat Bay Gypsum Quarry with the Turf Point Marine Terminal. Although the road is privately owned, permission has been granted by the owner to Atlas to use for property access. Based on site visits undertaken by Atlas in recent months, it appears that members of the public occasionally use this road as well.

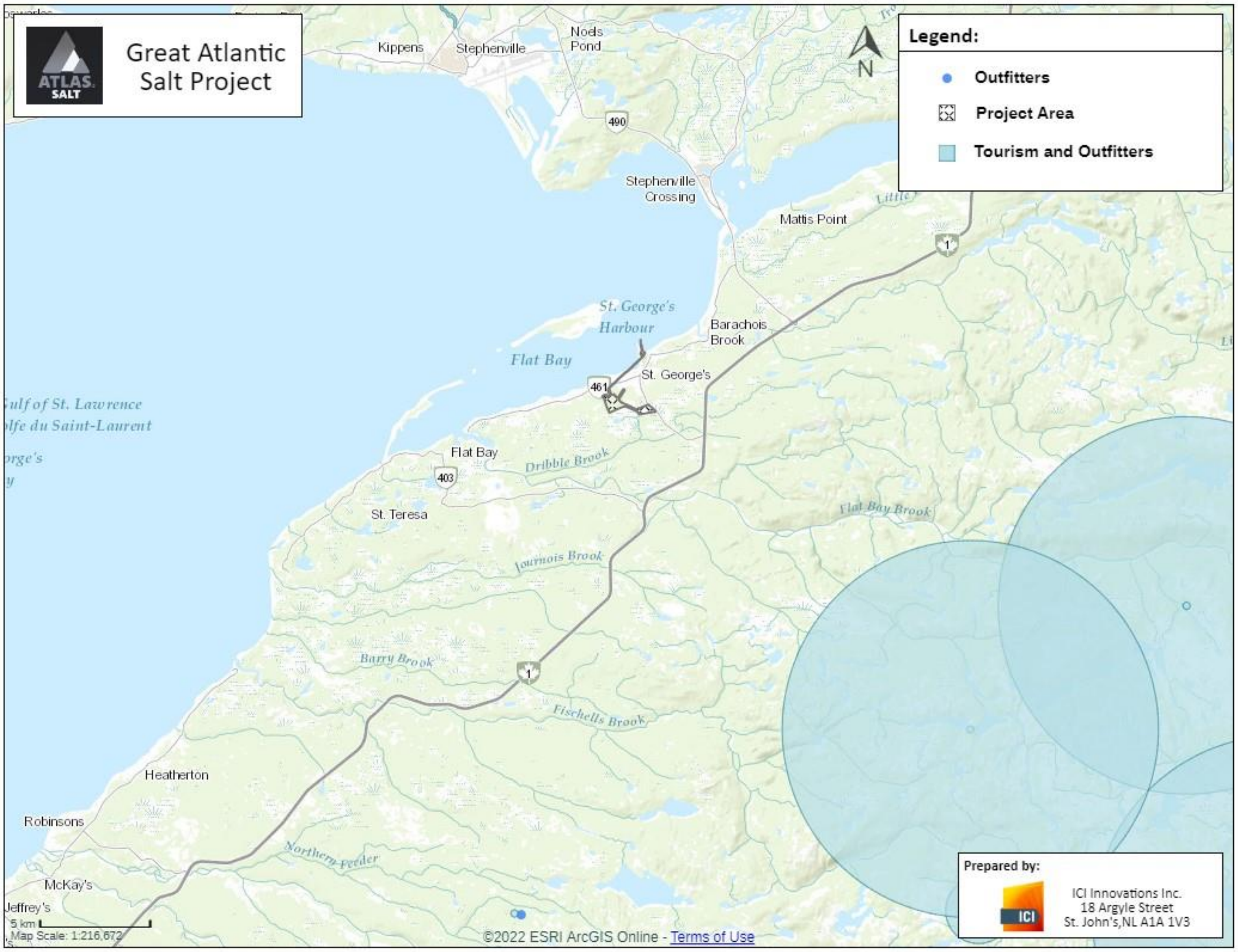
Local residents and visitors also have a long tradition of participating in a wide range of other outdoor pursuits throughout the overall region, including recreational activities such as hunting, fishing, wood cutting, berry picking, snowmobiling and ATV use, boating and others. The Project area is made up of around 87% forest, woodland, thicket, and scrub, with the remaining 12% being wetland. Through discussions with the Town and residents it has been suggested that the proposed Project area itself is not used significantly for recreational activities, especially as compared to other locations in the larger, surrounding region.

The Project area does not overlap with any outfitter locations; the nearest outfitter is approximately 23 km away (Figure 3.62). While the area does interact with the Moose Management Area for St. George’s, existing information and local residents indicate it is unlikely there is any hunting in the area due to its proximity to residential areas.

Residents of St. George's have noted the existence of an historical route (not approved by Crown Lands) which some residents use to travel west from Muises Lane via snowmobile or ATV, and cross a marshy area to access hunting and timber areas.

The Newfoundland Trailway runs from Port aux Basques to St. John’s (as part of the Trans Canada Trail) and extends along the coast through St. George’s. Additionally, there is a crown reserve for the Maritime Link that passes through the town boundary along the southeast edge of the community. The Project area does not overlap nor interact with this Maritime Link Reserve.

There are a number of silviculture planning areas that exist within or on the edge of the town boundary to the northeast. These areas are over 3 km from the proposed Project Area.

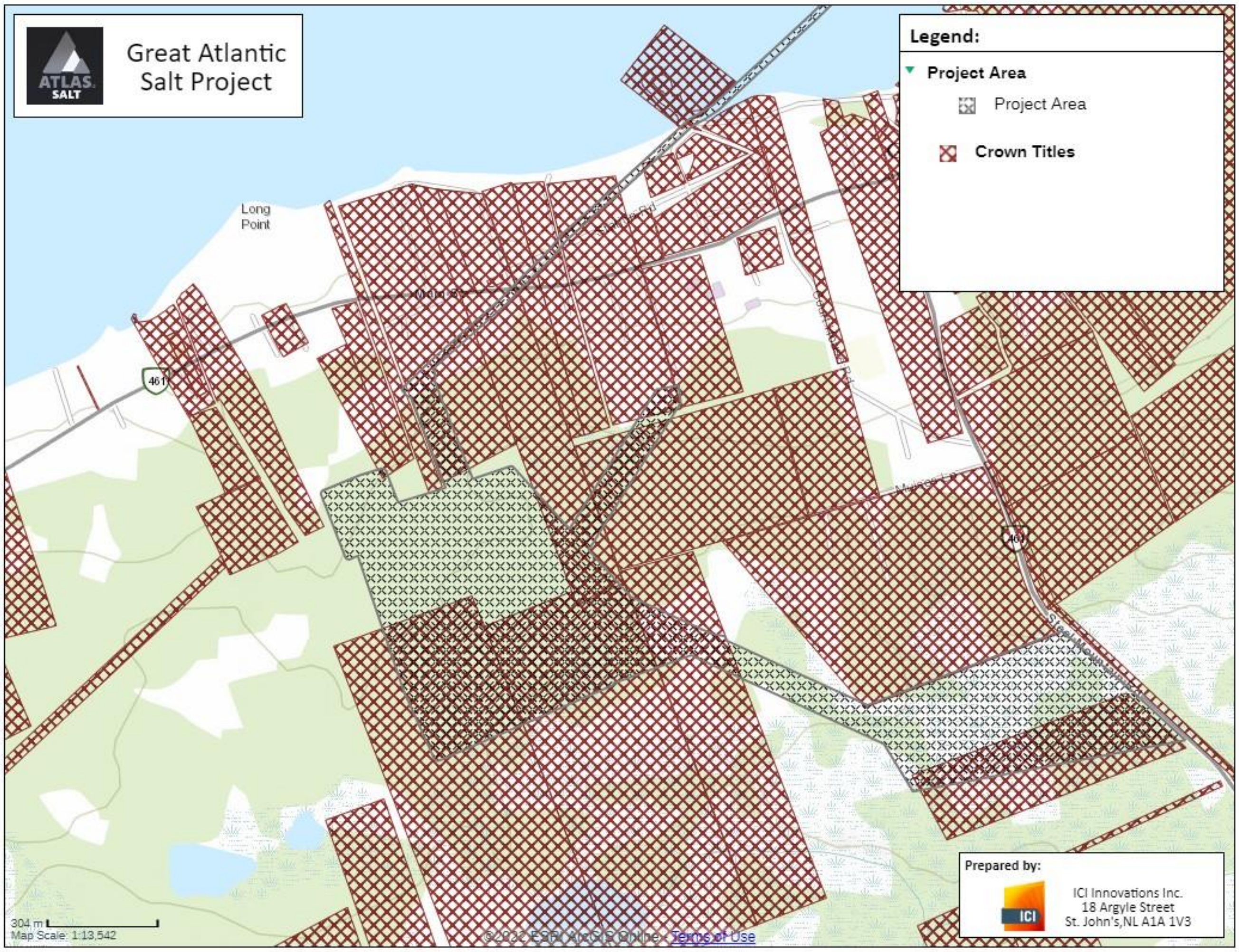



Source: Government of NL (2023)

*Figure 3.62: Outfitter Locations*

Also, there is a peat resource development area approximately one kilometer to the southwest of the proposed mine site area. It is understood that this an experimental / research area, which will not interact with the Project.

The Project Area occupies both crown lands and granted crown land (Figure 3.63). Atlas has applied for a surface lease with the provincial Mineral Lands Division, Department of Industry, Energy and Technology for the crown land portion of the Project Area. Additionally, Atlas has engaged a legal consultant and title search company to work out the status of the granted lands. Currently, the granted lands are not owned by any person that is a resident of the Town of St. George's (D Conway, Town Manager, pers com). Additionally, the Town does not have any record of any taxes being paid on these properties. It is anticipated that the title search will provide a starting point to define the status of land ownership. Based on this status it is anticipated that the land will either be defined as privately held or land that reverts back to the Crown. Atlas will take the appropriate steps to either purchase the land privately, or acquire a Crown Lands Surface lease from the Province.




Source: NLFFA, 2023

*Figure 3.63: Crown Lands within the Project Area*

### 3.2.5 HISTORIC RESOURCES

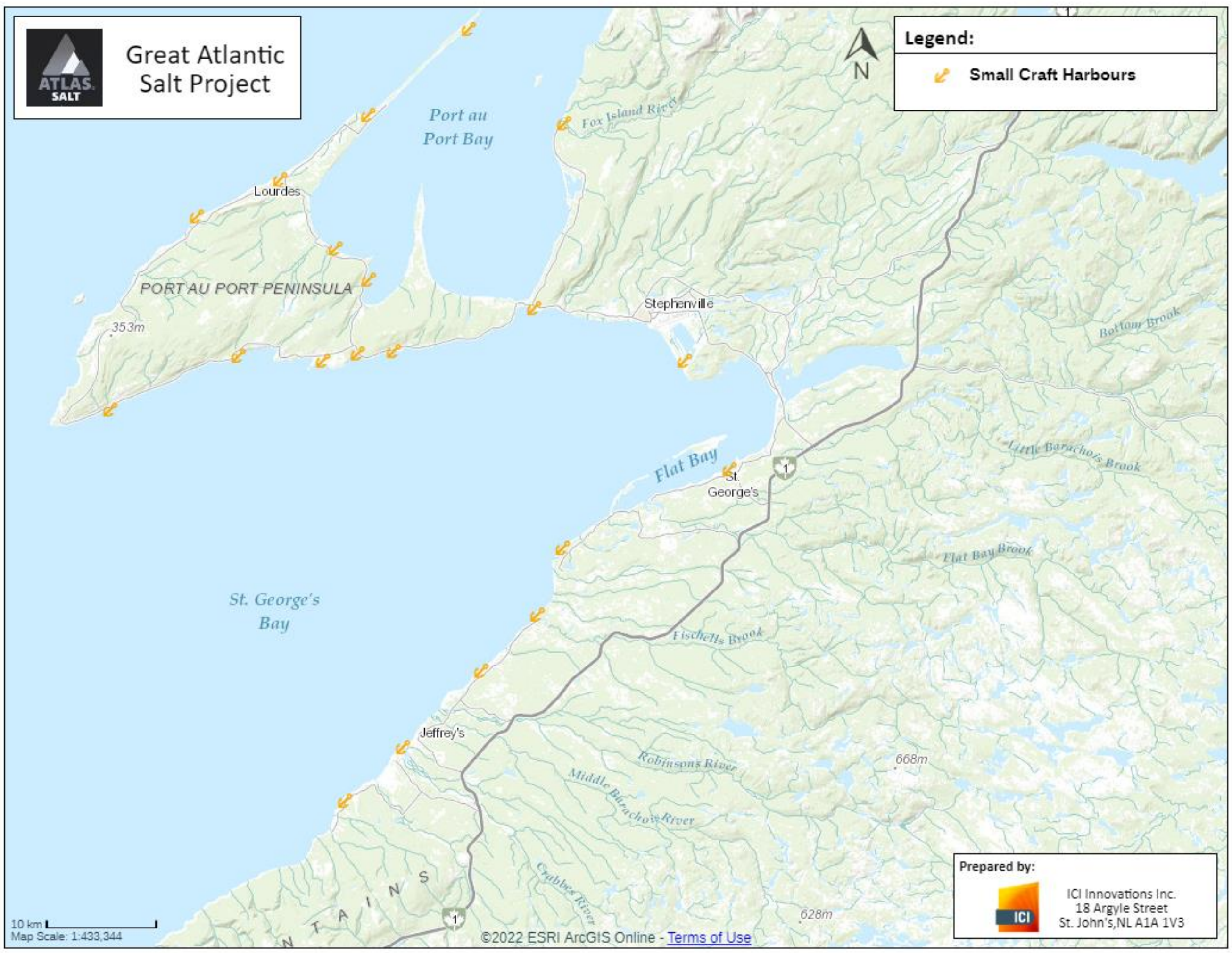
Historic resources are works of nature or of humans that are primarily of value for their archaeological, prehistoric, historic, cultural, natural, scientific or aesthetic interest, which may include archaeological, prehistoric, historic or natural sites, structures or objects. Such resources are identified and protected under the NL *Historic Resources Act* (1990) administered by the Provincial Archaeology Office (PAO) of the Newfoundland and Labrador Department of Tourism, Culture, Arts and Recreation. Development activities that involve the clearing of vegetation and other ground disturbance may disturb or destroy such resources if they are present within the eventual Project "footprint".

Based on information available from the PAO database, there are no known historic resources located within or near the Project Area itself (S. Hull, pers com), with the closest sites being located several kilometers to the north-west and to the east-north-east of the Project.

### 3.2.6 Fisheries and Other Ocean Uses

Fisheries are an important component of the socioeconomic environment of Western Newfoundland and other parts of the province, including the various communities that extend along the coastline adjacent to the proposed Project location and elsewhere.

St. George's itself is not a core fishing port but does have a "Non-Core" Fishing Harbour not managed by a harbour authority. The marine areas off this portion of Western Newfoundland also see considerable fishing activity by fishers and vessels from elsewhere in the region and beyond. There are numerous small craft harbours located along Bay St. George (Figure 3.64).

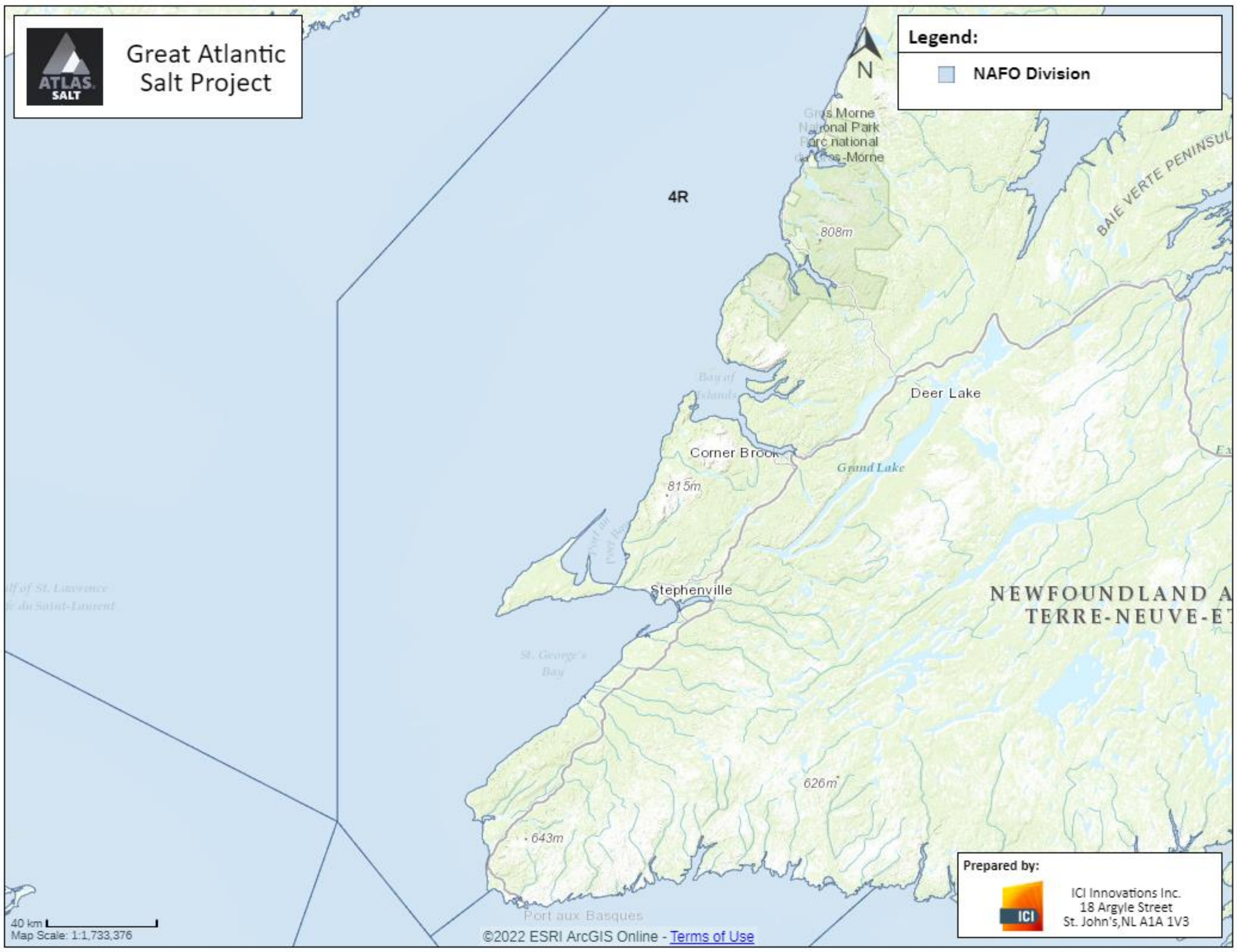



Source: DFO (2023)

*Figure 3.64:Small Craft Harbours*

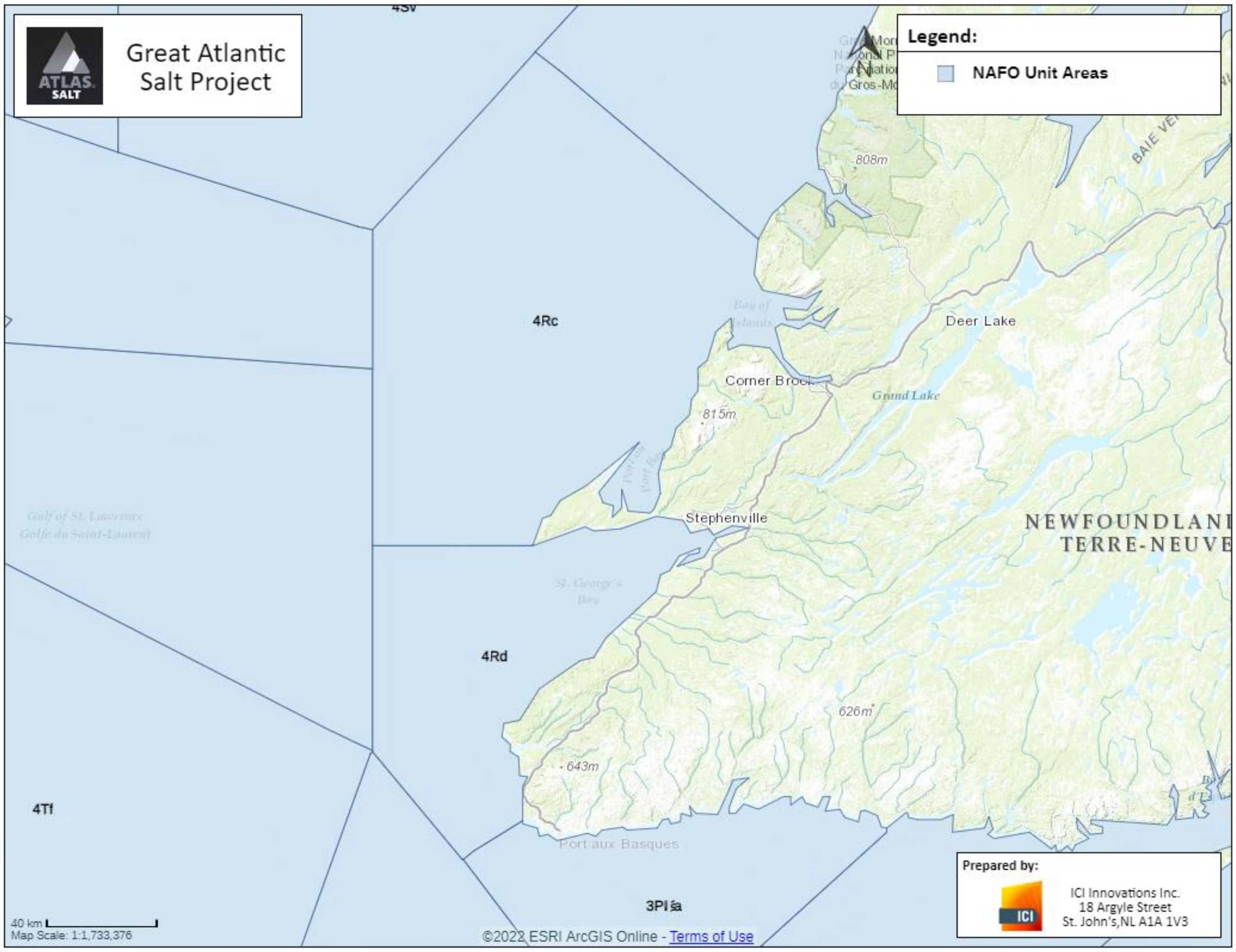
The following sections give an overview of marine fisheries within and around the marine component of the Project Area, with a key focus on commercial fisheries, as well as describing any aquaculture and Indigenous and recreational fishing activity in or near the region.

For administrative purposes, the Northwest Atlantic is divided into a series of NAFO Divisions, Subdivisions and Unit Areas, and although fish harvesting activities and fisheries management responsibilities do extend across these areas and their boundaries, they are generally used to regulate and manage fishing activity. The marine areas along the western coastline of the Island of Newfoundland comprise NAFO Division 4R (Figure 3.65), with St. George's Bay itself comprising NAFO Unit Area 4Rd (Figure 3.66 ).




Source: DFO (2023)

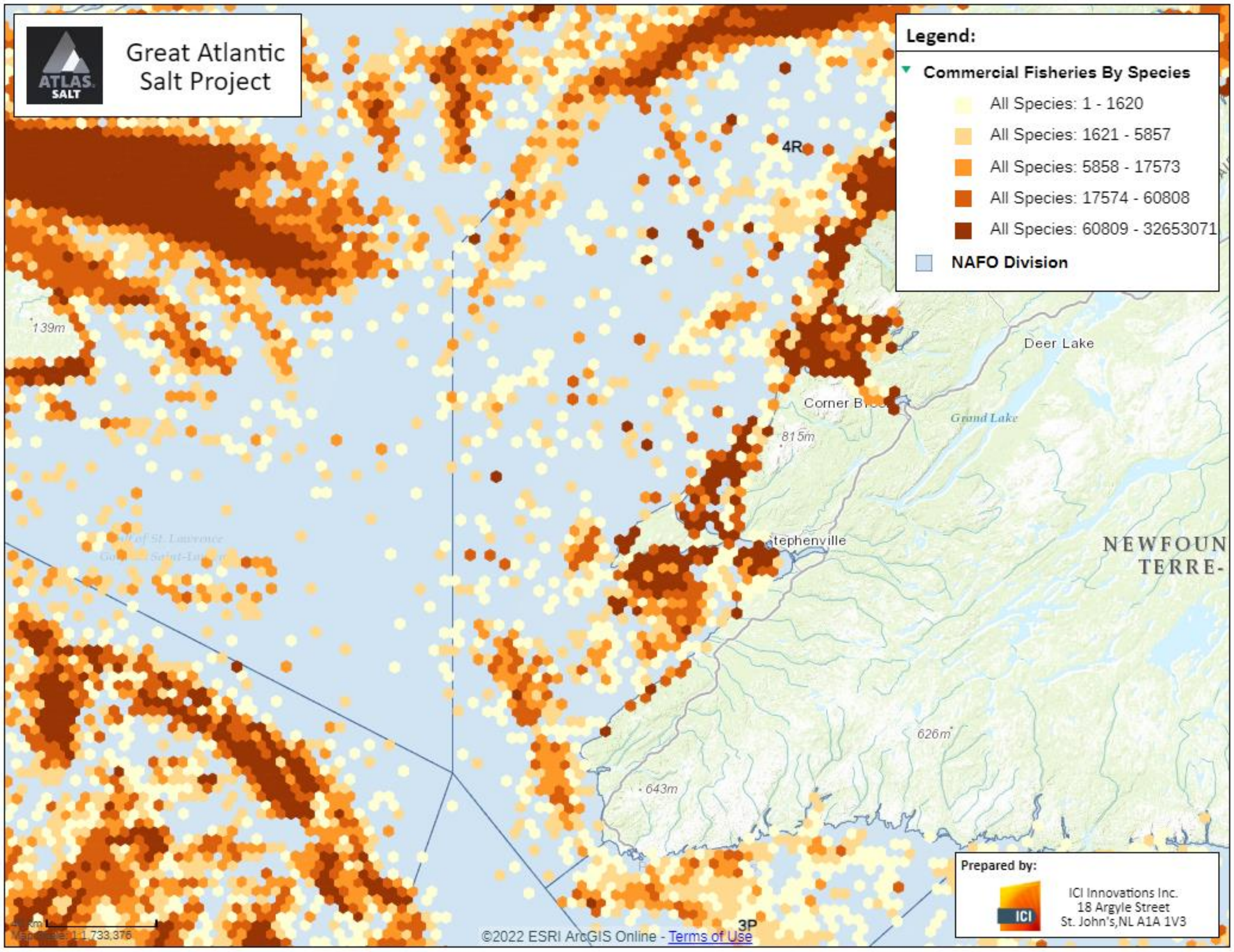
*Figure 3.65: NAFO Divisions*




Source: DFO (2023)

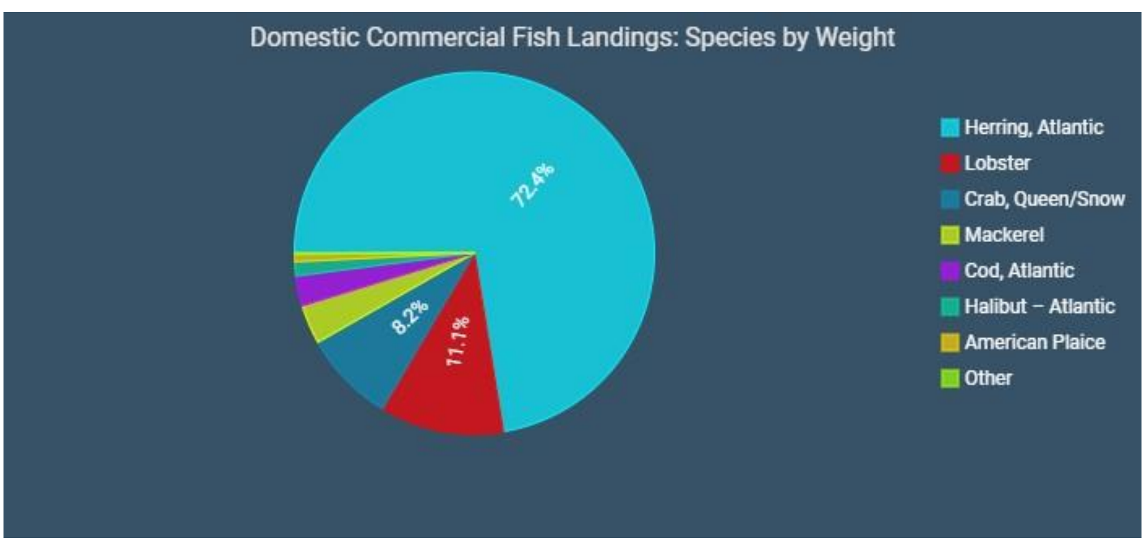
*Figure 3.66: NAFO Unit Areas*

Commercial fishing activity occurs throughout St. George's Bay and elsewhere along this portion of the west coast of the Island of Newfoundland. Figure 3.67 shows the distribution of commercial fisheries and associated catch levels (kg per grid cell) over the period 2012-2021 (DFO 2023). The graphs below (Figure 3.68 and Figure 3.69) show fish landings in NAFO Unit Area 4Rd by species by both landed weight and value for the period 2013 to 2017 (DFO 2023).



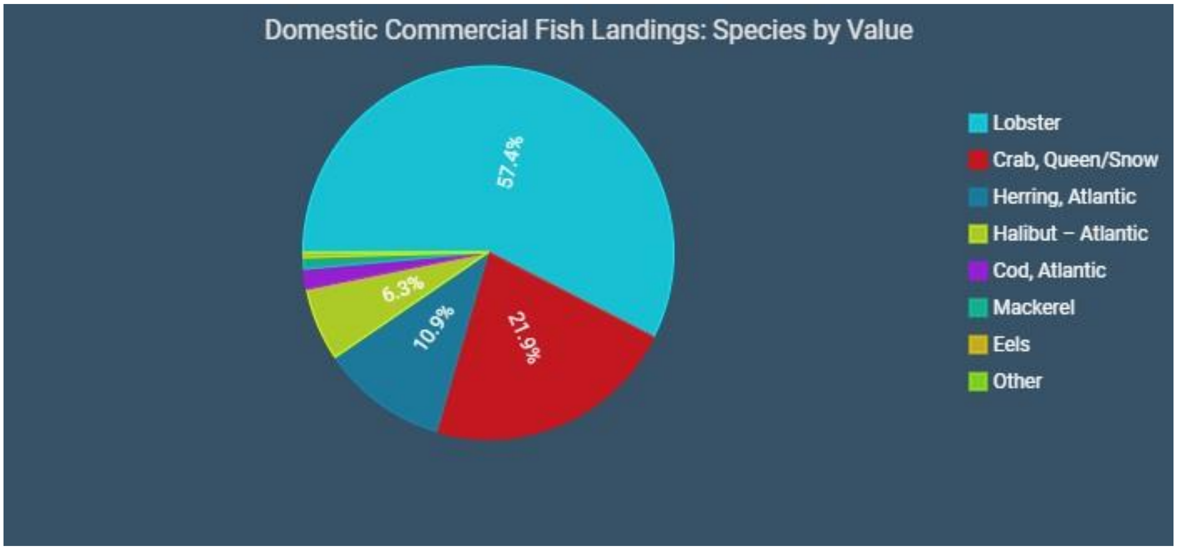

Source: DFO (2023)

*Figure 3.67:Commercial Fishing Catch (kg per grid cell) 2012 to 2021*




Source: DFO (2023)

*Figure 3.68:Commercial Fishing Catch by Species (Weight) in NAFO Unit Area 4Rd, 2013-2017*




Source: DFO (2023)

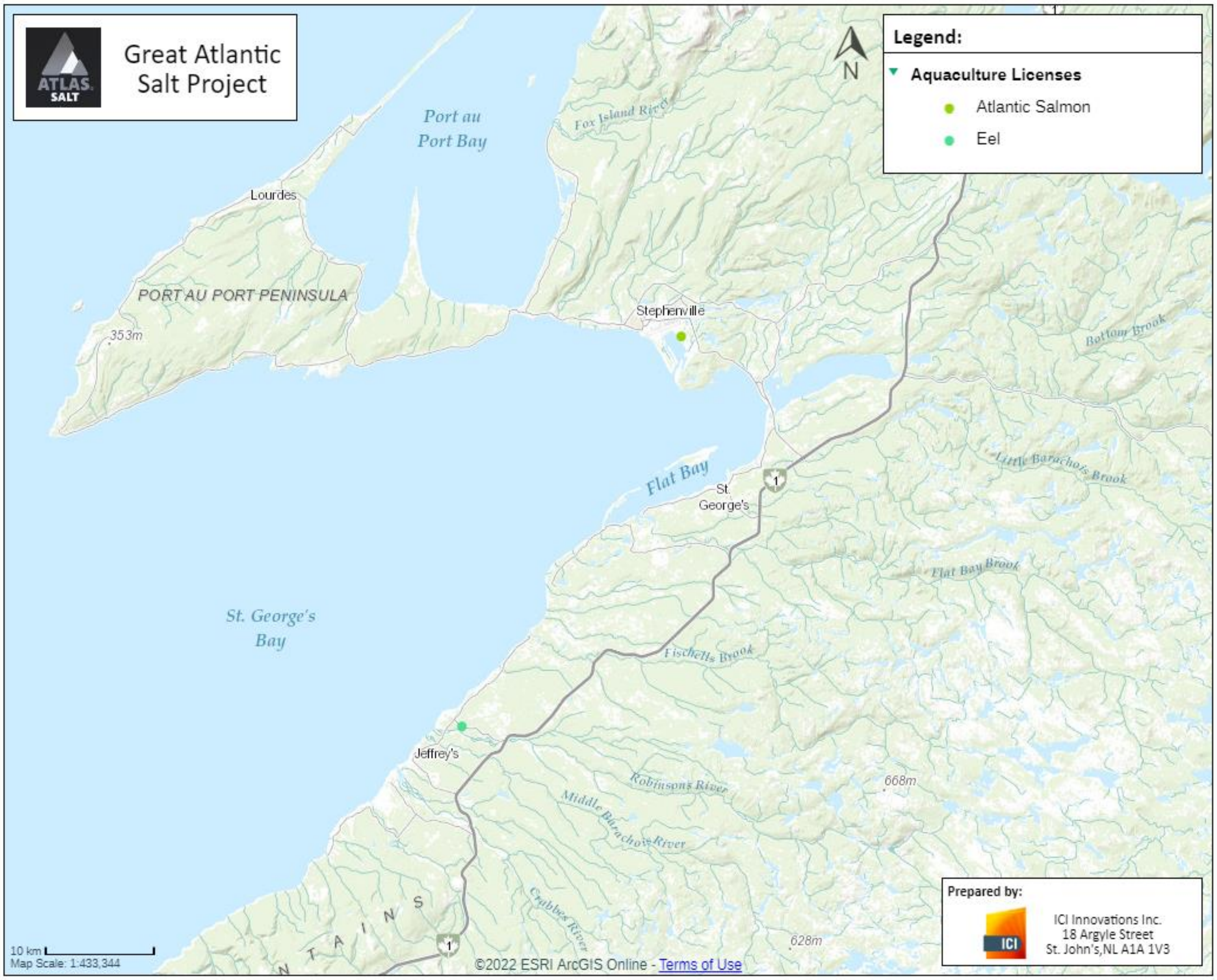
*Figure 3.69:Commercial Fishing Catch by Species (Value) in NAFO Unit Area 4Rd, 2013-2017*

Aquaculture is an increasingly important component of Newfoundland's fishing sector and overall economy. The primary seafood species farmed in coastal areas of the Island are blue mussels, Atlantic salmon and steelhead trout. Some aquaculture operations are located on the west coast of Newfoundland, including on the Port au Port Peninsula and to the north along the Northern Peninsula and in Notre Dame Bay (Figure 3.70). There are currently no aquaculture sites located in the immediate vicinity of the Project Area, the closest being over 10 km to the northwest (salmon) while another (for eel) is located on the south side of St. George's Bay (NLDFA 2021).

In Newfoundland and Labrador, recreational fishing may take place in coastal and inland waters. For specified periods during the summer and fall, residents and non-residents of Newfoundland and Labrador are permitted to participate in a recreational / food fishery for groundfish, which typically takes place in the summer and early fall (July to September) period. A number of Indigenous communities and organizations are also involved in marine fishing activity in Bay St. George and/or elsewhere off Western Newfoundland, including for traditional and commercial purposes. Residents and visitors also hunt various migratory bird species in marine and inland areas in season (usually fall and winter), including several species of waterfowl and murres which have long been an important source of food in traditional diets.

As it is throughout the province, tourism is an important industry on the west coast of Newfoundland, and a variety of marine tourism activities and associated infrastructure can be found throughout the region.

St. George's Bay is adjacent to important shipping routes of the Gulf of St. Lawrence and the St. Lawrence Seaway. The existing Turf Point marine terminal located in St. George's is used currently to ship gypsum. It was also used in the past to ship ore from the Duck Pond mine project.




Source: DFO (2023)

*Figure 3.70:Aquaculture Facilities*

# 4.0 ENGAGEMENT

Public and Indigenous participation is an integral component of the Environmental Assessment (EA) process, and a key aspect of Atlas' approach to project planning and development. The Newfoundland and Labrador EA process provides considerable opportunity for interested parties to bring forward their views, identify issues and ask questions about a project for consideration during the province's EA review and eventual decision-making. This includes engagement by the Proponent and by Government at various stages of the EA process.

Atlas is committed to full and open communications and on-going engagement throughout all phases of the Project. It is a core requirement of the company's management team and its advisors to actively lead and implement engagement initiatives and to interface regularly with all interested parties. Approaches and methods include regular community and public meetings and updates, information sessions, publicly accessible offices in St. George's and St. John's, presentations to community and industry organizations, management team accessibility and visibility in St. George's and nearby communities, website, media coverage, support to community groups, and a comprehensive engagement database to record and track initiatives, commitments and outcomes.

The company continues to facilitate meaningful dialogue with people and organizations that have an interest in the proposed Project and its potential effects (both positive and adverse). Engagement initiatives have been designed and implemented to provide comprehensive, accurate and timely information about the Project to interested and potentially affected people and groups. Throughout the Project's planning and design process to date, participants have been given the opportunity to ask questions, identify issues and concerns, and share local knowledge and perspectives about the Project and its surrounding environment. The feedback, insights, and information received has been, and will continue to be, considered in Project planning, this EA review, and eventually during Project implementation.

Atlas has incorporated feedback and sought to address questions and concerns raised during its public engagements to date as part of its Project planning and design, and will continue to do so as the Project moves forward. For example, early discussions with the Town of St. George's indicated that residents had concerns in the past related to dust from the trucking of gypsum to Turf Point Port. This feedback helped lead to Atlas' decision to use an enclosed and covered conveyor with key underground and overground crossings at high traffic areas to transport the salt to Turf Point. Additionally, at the 2023 Public Information Session discussed below, some residents advised Atlas that a potential access road routing would interact with an ATV/snowmobile crossing near Muises Lane. To help preserve this important throughway, Atlas has decided to incorporate safe crossing points in the detailed design of the access route to ensure that residents can continue to access the area west of Muises Lane. As Atlas continues its engagement with residents and other parties, it will continue to seek to address their concerns and priorities into the Project planning and design wherever possible.

There have been many engagement initiatives to date with the Town of St. George's and other nearby communities, Indigenous groups, businesses and industry organizations, other organizations and the interested public. The nature and key outcomes of these engagement activities are summarized in this chapter, along with an indication of where and how the various questions and issues raised are addressed in the EA Registration. The list and schematic below provide a high level overview and chronology of some of the key engagements Atlas has had to date with communities, Indigenous groups, and other organizations and individuals.

- Communities in the Bay St. George area
    - Councils
    - Residents
    - Local Businesses
- Indigenous Groups
    - Qalipu First Nation
    - St. George's Indian Band
    - Flat Bay Mi'kmaq Band
    - Three Rivers Mi'kmaq Band
- Government Departments and Agencies
    - Federal
        - Fisheries and Oceans Canada
        - Environment and Climate Change Canada
        - Impact Assessment Agency of Canada
    - Provincial
        - Environmental Assessment Division
        - Water Resources Management Division
        - Pollution Prevention Division
        - Climate Change Division
        - Office of Indigenous Affairs and Reconciliation
        - Mineral Development Division
        - Mineral Lands Division
- Industry, Educational and Other Interest Groups
    - Bay of St. George's Chamber of Commerce
    - Energy NL
    - Mining NL
    - Canadian Institute of Mining and Metallurgy
    - Women in Resource Development
    - The Mining Industry Diversity Network
    - College of the North Atlantic

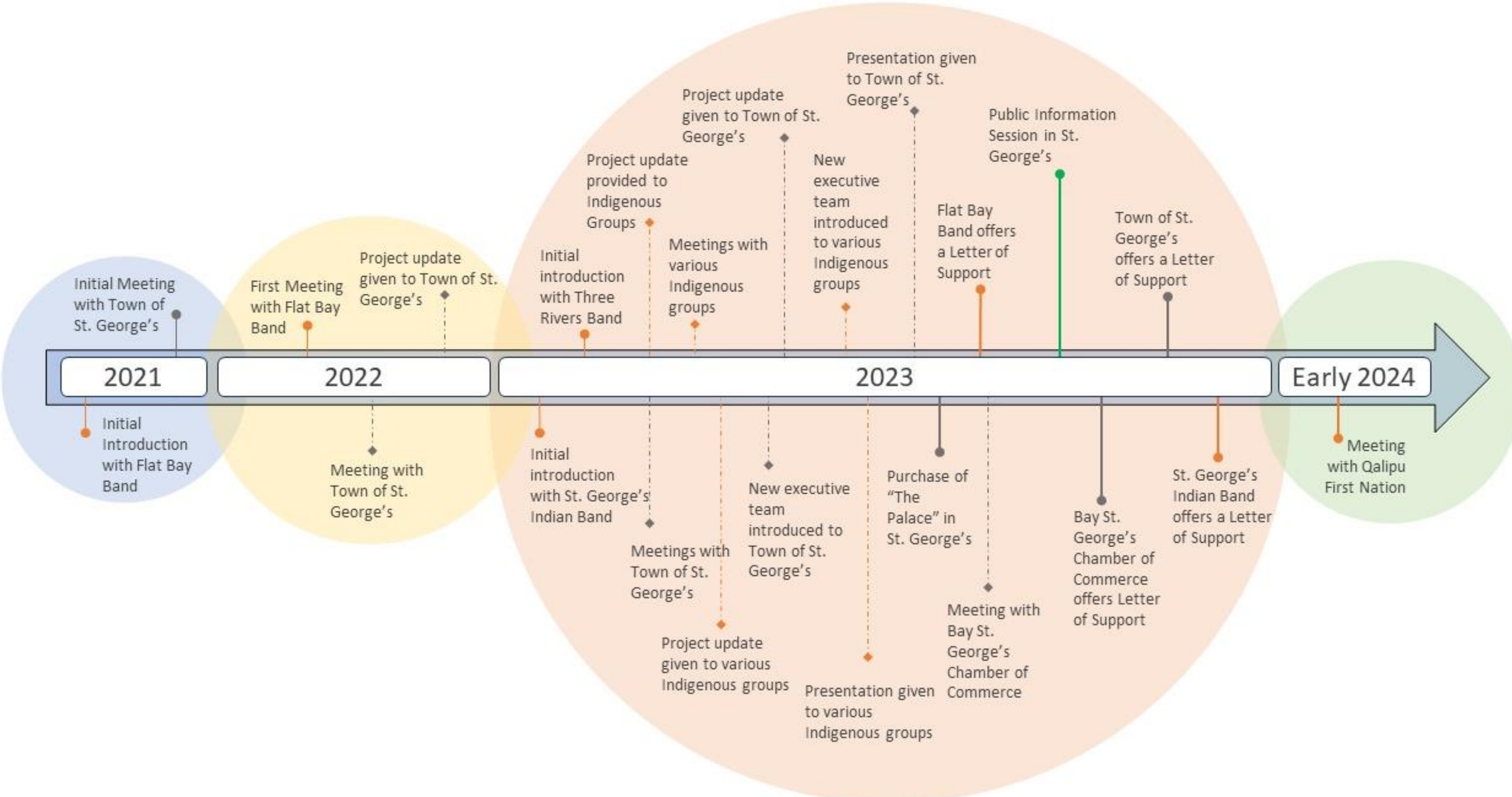



*Figure 4.71: Key Community & Indigenous Engagement Initiatives and Milestones*

Atlas' engagement program to date has indicated a tremendous level of interest in, and support for, the Project on the part of local communities, Indigenous groups, other organizations and residents. There is a clear recognition of the important economic opportunities and associated benefits it will provide, as well as acknowledgement of the measures that Atlas Salt will implement to address raised issues and concerns, both through avoiding or reducing potential adverse effects as well as creating and maximizing its benefits. Atlas Salt has received letters of support from the Town of St. George's, the Bay of St. George's Chamber of Commerce, the St. George's Indian Band, the Three Rivers Mi'kmaq Band and the Flat Bay Mi'kmaq Band. These letters of support are included as Appendix L.

## 4.1 Community Engagement

There are a number of communities located within the general vicinity of the Project. The closest community to the Project site is the Town of St. George's, as the Project is located within its municipal boundary. Additional communities that are close to the Project are listed in Table 4.23 below.

*Table 4.23: Communities Located near Project*

| Community | Distance from Project | Direction from Project |
|---|---|---|
| St. George's | 0 km | Within Town Boundary |
| Stephenville Crossing | 8 km | North |
| Flat Bay | 9 km | Southwest |
| St. Teresa | 13 km | Southwest |
| Stephenville | 16 km | Northwest |
| Kippens | 16 km | Northwest |
| Heatherton | 27 km | Southwest |
| Robinsons | 32 km | Southwest |
| Jeffery's | 36 km | Southwest |

### Overview of Community Related Engagement Activities

Atlas Salt's community engagement program is based on relationships that have been in place for close to 20 years, beginning when principals of Atlas Salt's parent company, Vulcan Minerals, connected with residents of the area during its exploration and gypsum operations. The company regularly engaged with the St. George's Town Council, local residents and business owners, and supported community youth recreation and other activities. It actively provided industry and public with regular updates regarding the Project's advancement through its exploration and economic analysis phases.

With the eventual focus on the salt deposit and the formation of Atlas Salt, these discussions continued and increased during past exploration, engineering and environmental work at the site.

Atlas Salt understands that local communities and their residents are generally interested in knowing how the Project will proceed. They understand that the company is proceeding with care and caution, and want to learn more about opportunities for economic development and how the environment will be cared for. Table 4.20 provides an overview of key community engagement activities and initiatives to date.

*Table 4.24: Recent Community Engagement Activities*

| Timing | Engagement | Key Areas of Focus |
|---|---|---|
| October 2021 | Atlas' engineering consultants met with Town of St. George's representatives and Turf Point operators during site visits for feasibility study analysis | Project design, potential use of required infrastructure |
| September 2022 | Atlas Executive met with Town of St. George's Mayor and councillors | Potential environmental effects; use of Turf Point port; employment; anticipated duration of mining operation |
| October 2022 | Atlas' engineering consultants met with Town of St. George's representatives and Turf Point operators during site visits for feasibility study analysis | Project design, potential use of required infrastructure |
| January 2023 | Atlas shared news releases and Project updates with the Town of St. George's | Clean-up of exploration drill sites within Town boundaries |
| January 2023 | Atlas emails and calls to key organizations to offer meetings during site visit | Information sharing and Project updates |
| March 2023 | Inquiry from Town of St. George's on behalf of local hikers and berry pickers | Information gathering; individuals had questions regarding previously drilled exploratory bore hole sites |
| April 2023 | Atlas emails and calls to key organizations to offer meetings during site visit - Town, business operators | Information sharing and Project updates |
| April 2023 | Atlas Salt team visited region, met local businesses | Information sharing and Project updates |
| April 2023 | Atlas Salt team met with Town of St. George's | Project status and plans for development; permitting; public engagement; safety, noise, dust, sight lines, possible infringement on recreation and marine access, local preference for employment |

| Timing | Engagement | Key Areas of Focus |
|---|---|---|
| | | and procurement opportunities; development and cooperation agreement |
| August 2023 | Business operator request for financial support to leverage daycare center operation | Possible company contribution for childcare services |
| September 2023 | Atlas team met Town of St. George's Mayor and Town Manager to introduce new Executive | Update on the Project and completed Feasibility Study; Town requested presentation on plan, and public engagement |
| October 2023 | Atlas team met Bay St. George Chamber of Commerce | Update on the Project; Chamber offered letter of support; future organization of a business showcase, promotion of public information session |
| October 2023 | Atlas team met Town of St. George's Mayor and Councillors | Will seek council approval for rezoning Project site from rural to industrial; potential dust from conveyors, mine site, and roads; possible funding agreement and support for community initiatives, recreation; community letter of support |
| October 2023 | Public Information Session at St. George's Parish Hall (described in detail in later section, see below) | Employment opportunities; disposal of used electric vehicle batteries; student career support; government financial support; comprehensive community communications; continued ATV access off Flat Bay Road and mine access roads; continued vehicular use of Flat Bay road; dust; clean-up of gypsum mine site; conveyor system noise, dust, route, public access, and sightlines; groundwater and surface water; vessel ship volume, size and frequency; community benefits; community-negotiated agreements; private land interference |

| Timing | Engagement | Key Areas of Focus |
|---|---|---|
| October 2023 | Atlas team met with Town of Stephenville and MHA Scott Reid, provided a Project Overview | Project status and plans for development; permitting; public engagement |
| November 2023 | Atlas Salt presentation at Canadian Institute of Mining and Metallurgy / Mineral Resources Review; networking with industry suppliers, community groups | Procurement; employment; Environmental Assessment |
| November 2023 | Opened Atlas Salt office and accommodations building in St. George's | Project Information Centre; operations and project management; opportunities for employment and procurement |
| Planned | Career Information Fairs – career fairs at local schools and communities to provide information on future employment opportunities | Provide potential job seekers with information about the skillsets required for different positions with the Project |
| Ongoing | Atlas Salt Website - https://atlassalt.com | Project overview and updates |
| Ongoing | Social media accounts:<br>Facebook:<br>https://www.facebook.com/AtlasSaltInc<br>Linkedin:<br>https://www.linkedin.com/company/74957793<br>Twitter:<br>https://twitter.com/AtlasSalt | Project overview and updates |

## 4.2 Indigenous Engagement

Atlas Salt's engagement program has involved meetings and other discussions with various Indigenous organizations, including the St. George's Indian Band, Flat Bay Mi'kmaq Band, Three Rivers Mi'kmaq Band, and the Qalipu First Nation, through which Atlas has identified various questions and considerations for on-going Project planning.

While the proposed Project does not directly interact with Indigenous lands, Atlas recognizes that Indigenous peoples reside in the local communities and undertake various commercial, recreational and traditional activities throughout the region. Atlas is committed to continuing engagement, learning, and where possible and appropriate incorporating Indigenous knowledge in the planning and implementation of this Project.

Other Indigenous organizations include the Newfoundland Aboriginal Women's Network and People of the Dawn Indigenous Friendship Centre; Newfoundland Native Women's Association; and Mi'kmaq Assembly of Newfoundland

Table 4.25 below provides an overview of Atlas' Indigenous engagement activities to date

*Table 4.25: Indigenous Engagement Activities*

| Timing | Engagement | Key Areas of Focus |
|---|---|---|
| February 2021 | Update to Flat Bay Band Chief | Update on gypsum mine operations, plans for tailings reclamation; closure and cleanup |
| September 2022 | Atlas executive met Flat Bay Band Council, Chief; and Indigenous Elder | Indigenous recognition; concerns about previous projects and their environmental effects; requirements for more information on Project plans and ensuring positive local outcomes |
| January 2023 | Atlas shared news releases and Project updates with St. George's, Flat Bay, and Three Rivers Band Chiefs | Clean-up of exploration drill sites within Town boundaries |
| January 2023 | Atlas emails and calls to stakeholders to offer meetings during site visit as part of feasibility analysis | Advised the Indigenous Bands that Atlas would be returning in the future and that they would like to meet if possible |
| April 2023 | Atlas emails and calls to offer meetings during upcoming site visit - Band Chiefs, Elders, Indigenous Business Operators | Follow up on previous email. Seeking to schedule meetings with the groups |
| April 2023 | Atlas Salt team met with St. George's Indian Band Chief | Social, health, and economic supports – food bank, social activities for Elders and youth, transportation services |
| | Atlas Salt team met Three Rivers Mi'kmaq Band Council and Chief | Employment, business opportunities, care for environment; social activities for Elders and youth, transportation, and food services |
| | Atlas Salt email discussion with Flat Bay Band Chief | Requirements to engage with Flat Bay Band members |
| May 2023 | Atlas attended, contributed to, and met with organizers of Mi'kmaq Cultural Foundation fundraiser | Local cultural interests and cultural support program |
| October 2023 | Atlas team met jointly with Chiefs and Council members of Mi'kmaq Band Councils of St. George's, Flat Bay, and Three Rivers | Need to ensure safe and continued public access to road to Flat Bay; reinforced Indigenous representation |

| Timing | Engagement | Key Areas of Focus |
|---|---|---|
| | | and expectation for engagement and agreements; requested PowWow sponsorship; interest in business opportunities such as port growth and related business service; workforce development, training and readiness; youth focus; Project’s electricity requirements; protection of environment for subsistence and cultural purposes; Bands offered to provide letters of support. |
| October 2023 | Contact with Qalipu First Nation to develop plan for engagement | Information sharing; First Nation’s participation in Project EA process; economic opportunities |
| November 2023 | Attended presentation by Qalipu First Nation at CIM Mining Conference in St. John’s | n/a |
| November 2023 | Opened Atlas Salt office and accommodations building in St. George’s | Project Information Centre; operations and project management; opportunities for employment and procurement |
| January 2024 | Meeting with representatives of the Qalipu First Nation and Qalipu Development Corporation | Present Atlas GAS Project to build understanding with Qalipu leadership of the Project and gain understanding within the company of Qalipu interests and initiatives. Plans were made for further engagement and dialogue. |
| January 2024 | Meeting with Band Council of Qalipu First Nation | Present Atlas GAS Project to Council to build further understanding within the Qalipu First Nation, and address any concerns while working towards informed support for the Project. |

## 4.3 Regulatory Engagement

Atlas recognizes that various provincial and federal government departments and agencies have responsibilities or interests related to the proposed Project and its potential environmental effects because of associated government legislation, regulations, policies, and other relevant mandates and programs.

A summary of Atlas' governmental engagement activities is provided in Table 4.26. This includes information on the specific department or agency consulted, meeting location, general purpose and focus of each meeting.

*Table 4.26: Engagement with Government Departments and Agencies*

| Date | Department/Agency | Location | Purpose and Focus |
|---|---|---|---|
| October 2023 | NL Environmental Assessment Division | St. John's, NL | Project overview., EA review |
| | NL Water Resources Management Division | | Settling pond design and operation, ground water, and regional water resources |
| | NL Pollution Prevention Division | | Settling pond design and operation |
| | NL Climate Change Division | | GHG emissions |
| | NL Office of Indigenous Affairs and Reconciliation | | Indigenous engagement |
| October 2023 | NL Mineral Development and Mineral Lands Divisions | St. John's, NL | Mine development plan, future construction / operation |
| October 2023 | Fisheries and Oceans Canada | Online | Fish and fish habitat within the Project area |
| October 2023 | Environment and Climate Change Canada | Online | Lighting, blasting noise / vibrations, potential pollutants, avifauna, species at risk |
| November 2023 | Impact Assessment Agency of Canada | Online | Project overview, EA review |
| December 2023 | Impact Assessment Agency of Canada | Email | Received letter indicating that the Project is not subject to federal Impact Assessment Act (IAA) |

Atlas Salt's engagement with government departments and agencies has included discussions and on-going information sharing through various other means (such as email and telephone conversations), the results of which have also been considered and reflected in this EA Registration document.

## 4.4 Public and Stakeholder Engagement

Atlas Salt has utilized a variety of engagement methods and practices to provide access to Project information in a complete, timely and straightforward manner, and to identify and seek to address public questions and concerns. These have included:

- Personal contact with Atlas Salt team and continued accessibility and outreach
    - In person, by telephone, and by email and text

At approximately 6:45 pm, a short (20 minute) presentation was given by Alasdair Federico, Vice-President of Corporate Affairs with Atlas Salt, which provided an overview of the Project, a copy of which is attached as Appendix M. Once the presentation was completed, participants were able to engage in a question-and-answer session.

- Site visits
- Fact sheets and other plain language information for use in information panels, handouts, and social media, including to present information on:
    - Project description (location and layout, key components, phases / activities)
    - Employment and procurement
    - Environmental considerations
    - Key contact people
- Atlas website with up to date information
- Regular meetings and other discussions with St. George's Town Council
- Regular meetings and other discussions with Indigenous organizations
- Community open house with public advertising
- Corporate memberships (Bay St. George Chamber of Commerce, Mining NL)
- Atlas community liaison person based in St. George's
- Presentations at industry conferences
- Site tours
- Project office in St. George's
- Corporate office in St. John's

### Public Information Session - October 25, 2023

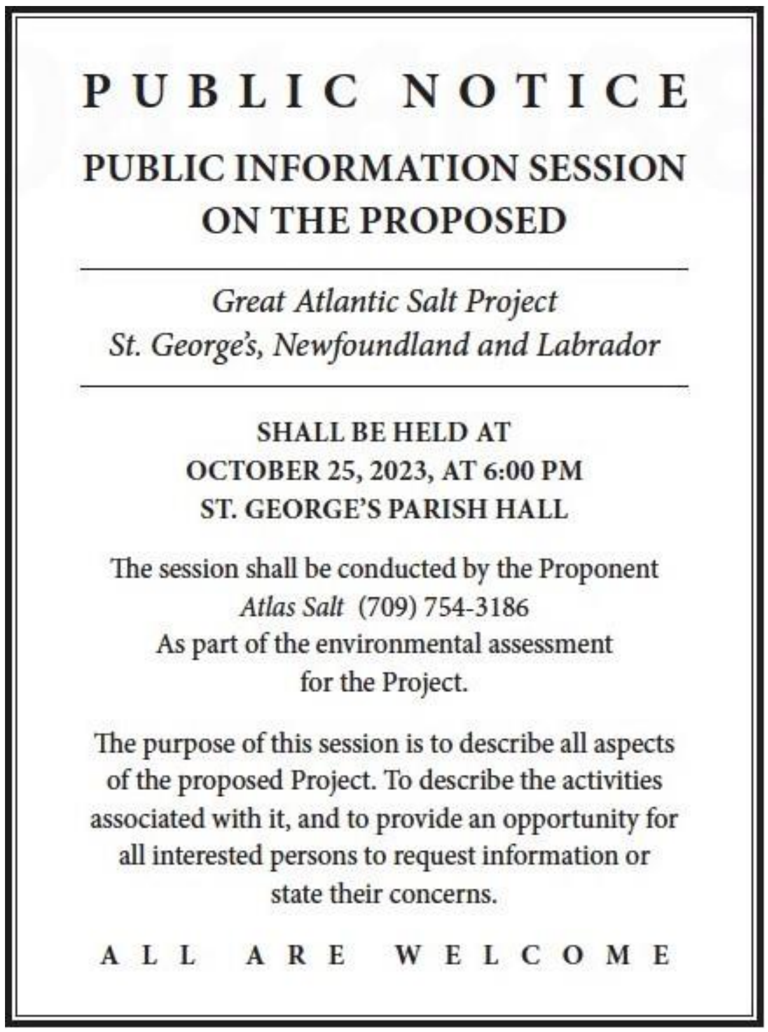
Atlas Salt conducted a public meeting in the Town of St. George's on October 25, 2023, to provide information on the Project and to identify any associated questions or concerns that local residents or other interested members of the general public may have had.

Public notifications were issued in advance of the information session, which included advertisements in local newspapers (Table 4.27) and other means. The newspaper advertisement conformed with the specifications required by the provincial EA process:

*Table 4.27: Newspaper Advertisements*

| Newspaper | Insertion Dates |
|---|---|
| *The Telegram* (Provincial) online and in print | October 18, 21 and 24, 2023 |
| *Western Wire* online | October 25, 2023 |

An example of the ad that was placed in the newspapers is shown in Figure 4.72.



PUBLIC NOTICE

PUBLIC INFORMATION SESSION
ON THE PROPOSED

*Great Atlantic Salt Project*
*St. George's, Newfoundland and Labrador*

SHALL BE HELD AT
OCTOBER 25, 2023, AT 6:00 PM
ST. GEORGE'S PARISH HALL

The session shall be conducted by the Proponent
*Atlas Salt* (709) 754-3186
As part of the environmental assessment
for the Project.

The purpose of this session is to describe all aspects
of the proposed Project. To describe the activities
associated with it, and to provide an opportunity for
all interested persons to request information or
state their concerns.

ALL ARE WELCOME

*Figure 4.72: Public Notice Placed in The Telegram (October 2023)*

Public notices (Figure 4.73) were also developed and circulated by Atlas Salt, and supported by multiple parties who forwarded and redistributed the notice through:

- Postings on websites, social media

- Distribution by email
- Printed information posted in public locations
- Display on electronic signs by the Town of St. George's, Band Councils of St. George's, Flat Bay and Three Rivers, and the Bay St. George Chamber of Commerce

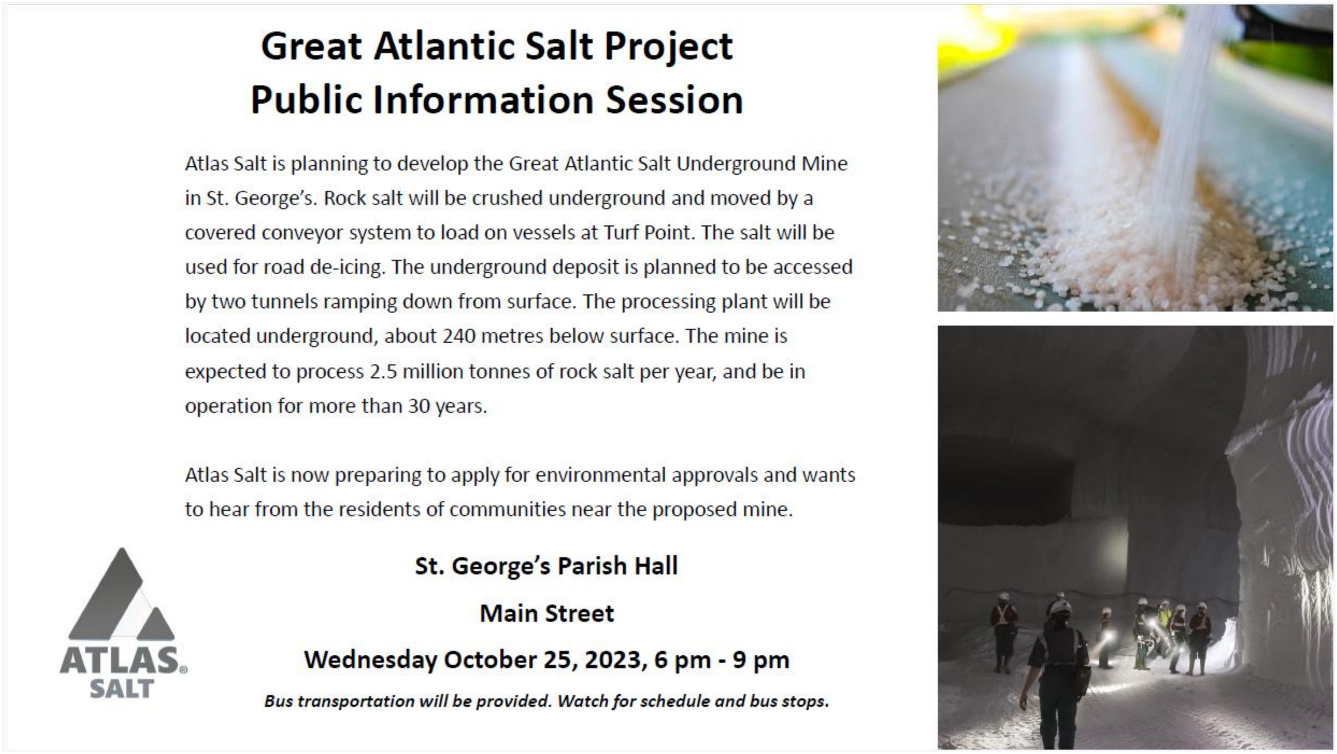
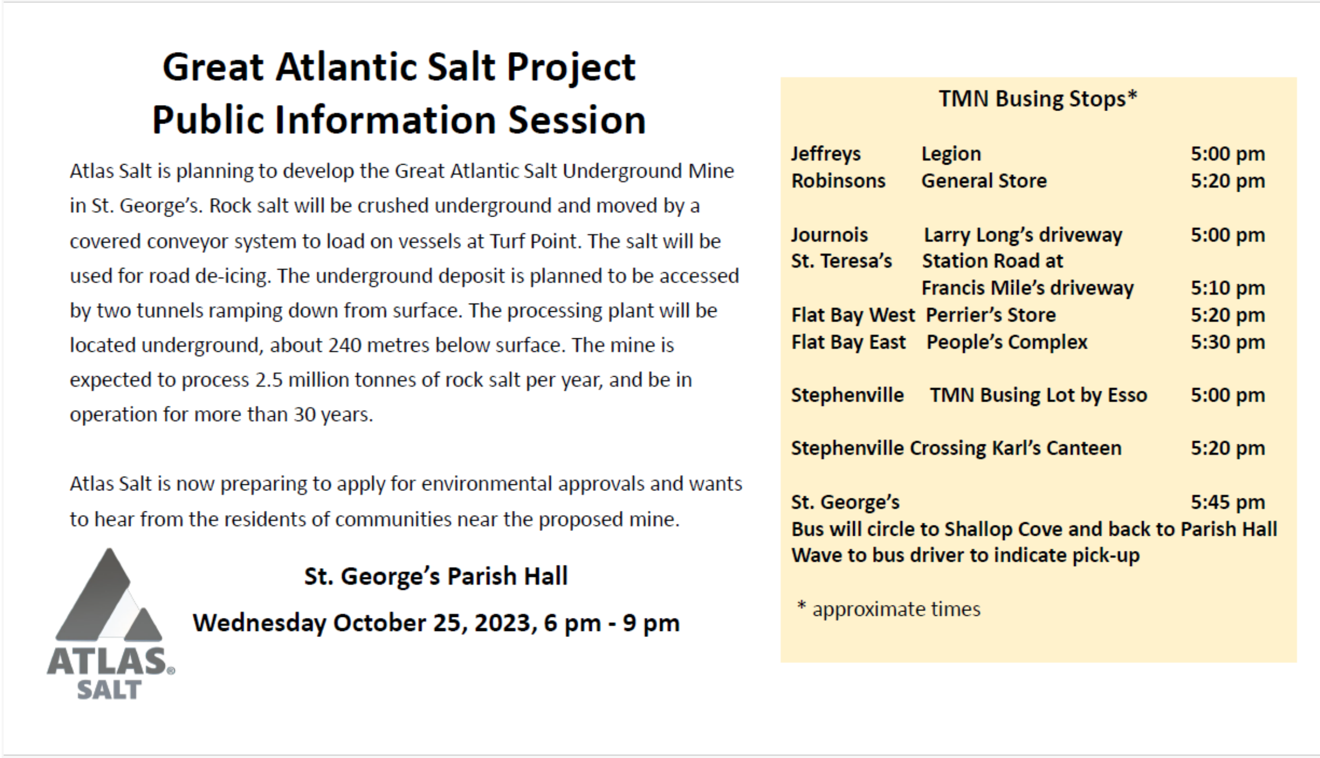



*Figure 4.73: Public Information Session Online Advertisement*

It was a key priority of Atlas to make the October 2023 public information session as accessible as possible to all residents in the region who wished to attend. Atlas hired a local company, TMN Busing, to provide transportation services to and from communities near the Project area (Figure 4.74 for the bus transportation information). The initial public announcement was followed by another announcement listing available bus transportation from nearby communities, as shown below.



**Great Atlantic Salt Project**
**Public Information Session**

Atlas Salt is planning to develop the Great Atlantic Salt Underground Mine in St. George's. Rock salt will be crushed underground and moved by a covered conveyor system to load on vessels at Turf Point. The salt will be used for road de-icing. The underground deposit is planned to be accessed by two tunnels ramping down from surface. The processing plant will be located underground, about 240 metres below surface. The mine is expected to process 2.5 million tonnes of rock salt per year, and be in operation for more than 30 years.

Atlas Salt is now preparing to apply for environmental approvals and wants to hear from the residents of communities near the proposed mine.

**St. George's Parish Hall**

**Wednesday October 25, 2023, 6 pm - 9 pm**

**TMN Busing Stops***

| | | |
|---|---|---|
| **Jeffreys** | **Legion** | **5:00 pm** |
| **Robinsons** | **General Store** | **5:20 pm** |
| **Journois** | **Larry Long's driveway** | **5:00 pm** |
| **St. Teresa's** | **Station Road at Francis Mile's driveway** | **5:10 pm** |
| **Flat Bay West** | **Perrier's Store** | **5:20 pm** |
| **Flat Bay East** | **People's Complex** | **5:30 pm** |
| **Stephenville** | **TMN Busing Lot by Esso** | **5:00 pm** |
| **Stephenville Crossing** | **Karl's Canteen** | **5:20 pm** |
| **St. George's** | | **5:45 pm** |

**Bus will circle to Shallop Cove and back to Parish Hall**
**Wave to bus driver to indicate pick-up**

* approximate times

*Figure 4.74: Example of Public Notice with Bus Transportation Information*

The public information session took the form of a "drop in" open house session, held at the St. George's Parish Hall in St. George's from 6 pm to 9 pm on Wednesday October 25, 2023.

Upon arrival, participants were greeted by an Atlas representative, who provided an overview of the open house purpose and "information circuit" type format. While not everyone in attendance signed in when entering the venue, there were 82 persons that did so (Table 4.28). Of those that signed in, 70% were from St. George's, 12% were from Stephenville, and the remaining 18% resided in either McKay's, Barachois Brook, Kippens, Stephenville Crossing, St. Teresa, Flat Bay, or Loch Leven.

*Table 4.28: Overview of Open House Participants (from sign in sheet)*

| Community of Residence | Number | Percentage |
|---|---|---|
| St. George's | 57 | 70% |
| Stephenville | 10 | 12% |
| Prefer not to say | 5 | 6% |
| McKay's | 2 | 2% |
| Barachois Brook | 2 | 2% |
| Kippens | 2 | 2% |
| Stephenville Crossing | 1 | 1% |

| Community of Residence | Number | Percentage |
|---|---|---|
| St. Teresa | 1 | 1% |
| Flat Bay | 1 | 1% |
| Loch Leven | 1 | 1% |
| **Total** | **82** | **100%** |

At the beginning of the public information session, participants had the opportunity to view information panels and engage in discussions with Atlas Salt personnel. This provided those in attendance with an opportunity to learn more about the Project and to pose questions and raise any concerns in an interactive and relatively informal manner. This included information panels on the following topics: 1) Project Components and Activities; 2) Environmental Considerations and Mitigation, and 3) Engagement Opportunities and Socioeconomic Benefits. The purpose of these information panels was to provide general information, to serve as a basis for prompting dialogue and the sharing of information and input by participants. At the public open house, Atlas personnel were clearly identified and were positioned at the stations to discuss the Project and answer questions. Participants were provided with contact information and forms to write and submit comments, questions and concerns.

*Figure 4.75: Attendees Reviewing the Information Panels*

At approximately 6:45 pm, a short (20 minute) presentation was given by Alasdair Federico, Vice-President of Corporate Affairs with Atlas Salt, which provided an overview of the Project, a copy of which is attached as Appendix M. Once the presentation was completed, participants were able to engage in a question-and-answer session.


*Figure 4.76: Atlas Representative (VP Alasdair Federico) Presenting at the Public Information Session*

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*Figure 4.77: Question and Answer Session*

This format allowed for all interested parties to attend the session, where they could receive information, ask questions and provide input in whatever manner and format that they felt most comfortable. By adopting this open house format, the Atlas Team attempted to establish a relatively informal and relaxed environment, where participants could provide input and ask questions through one-on-one conversations, and/or in small groups as they preferred, as well as during the question-and-answer session. Atlas representatives were present to provide information, answer questions and to record all questions, issues and perspectives raised.

A key focus of the public information session and associated discussions was on obtaining and recording information related to:

- Questions, issues or concerns regarding the Project and its potential environmental or socioeconomic effects (adverse or positive);
- Local knowledge regarding the existing biophysical or socioeconomic environments in or near the Project Area; and
- Suggestions for any mitigation measures or other means through which any identified issues could be addressed in future Project planning and decisions / actions.

The Atlas team members took extensive notes and recorded all input received throughout the sessions, and met as a group to debrief, record, and compile all information received.

The public information session was attended by CBC TV and covered in a provincial television *Here and Now* evening news broadcast on October 26, 2023. https://www.cbc.ca/news/canada/newfoundland-labrador/salt-mine-st-georges-1.7008770

### 4.5 Engagement Outcomes and Key Findings

Several key topics and themes were identified during the above-described engagement activities, a summary overview of which is provided in Table 4.29, including a general overview of Atlas' plan approach to address them. Further details on these issues, potential effects and planned mitigation are presented in Chapter 5 of this EA Registration document.

*Table 4.29: Summary of Questions and Issues Raised During the Engagement Program*

| Question / Issue Raised | How Atlas will Address in Project Design and/or Implementation |
|---|---|
| Existing ground water and surface drinking water supply protection | • The surface facilities and mine site for the Project are located 1.9 km away from the Dribble Brook Water Supply and 1.8 km away from the Wellfield Public Water Supply.<br>• The Project involves no processing or treatment of the salt, meaning there will be no tailings or concerns regarding effluent impacting water supplies. |

| Question / Issue Raised | How Atlas will Address in Project Design and/or Implementation |
|---|---|
| | • The Dribble Brook Surface Water Supply is upstream of the mine site area and Project operations are not anticipated to interact with it.<br>• Groundwater entering the underground mine will be collected and pumped to a settling pond prior to discharge back into the receiving environment adjacent the mine site.<br>• While changes to local ground water levels are possible, Atlas is planning further hydrogeological studies to better understand groundwater conditions in the mine site area and the potential level of groundwater drawdown. |
| Water Management Plan, including the nature and functioning of the Project's settling pond | • Surface runoff from the Project facilities (waste rock stockpile, pre-production (temporary) salt stockpile, and site terrace) will be collected via perimeter ditches and then directed to a settling pond.<br>• Any required underground mine dewatering will also be pumped to the same settling pond. The settling pond is designed with a three-day retention time allowing for suspended solids to settle out of the water using gravity before release.<br>• The discharge from the settling pond is the only point of discharge to the receiving environment for the Project.<br>• The discharge location will be designed with suitable outflow rates and adequate protection against erosion.<br>• All discharge will meet the standard quality outlined in schedule "A" as set out in the Environmental Control Water and Sewage Regulations, 2003 under the Water Resources Act (O.C. 2003-231) |
| Project electricity requirements (incl for any electric vehicles) and planned power supply | • The Project will consume approximately 100,000 MWh annually.<br>• Electrical power will come from offsite via a new 66 kV wood-pole transmission line.<br>• A new, on-site substation would receive the power and step it down to 13.8 kV for distribution to key areas of the Project.<br>• Atlas is committed to using electric vehicles in the underground mine wherever possible. |
| Salt storage | • There will be salt stored both onsite and offsite during Project operations.<br>• Onsite there will be two storage areas: a pre-production salt stockpile and a salt storage building for production salt.<br>• Salt excavated during the pre-production period, will be temporarily stored in a lined stockpile and covered with a tarp to manage seepage and runoff.<br>• The production salt will be housed in a steel-walled and roofed building to provide dry storage and will have the capacity to store 11,700 t of salt. |

| Question / Issue Raised | How Atlas will Address in Project Design and/or Implementation |
|---|---|
| | • Offsite storage will consist of a set of storage buildings at the Turf Point Port facility that can hold a combined 60,000 t of salt. Both buildings are steel-walled and roofed for dry storage. |
| Use of existing facilities and infrastructure | • The Project utilizes existing infrastructure including the Turf Point Marine Terminal and the Flintkote Road, a former conveyor route from a previous gypsum mine.<br>• The Turf Point Port will have additional storage capacity added, but there will be additions or modifications to the marine terminal itself.<br>• All access roads will be new infrastructure, while the route the conveyor follows will be given upgrades where needed.<br>• All surface facilities and underground mine facilities will comprise new infrastructure. |
| Capacity of the Town of St. George's water and sewer systems to accommodate Project requirements | • A connection to the water supply of the Town of St. George's will be established from the mine site directly to the end of Parsons Road.<br>• Similarly, the Project will connect directly to the Town's existing sewage system for the disposal of sewage and wastewater from the administration building, maintenance facility, and mine dry.<br>• The water and sewage lines will follow the same route from the mine site to the town systems on Parson Road.<br>• Sewage from underground facilities will use truck pump-outs to collect and carry sewage to the town's sewage disposal system.<br>• Discussions with the Town Manager have indicated that the community's systems can accommodate the requirements of the Project.<br>• Analysis and discussions are continuing with the Town of St. George's to confirm the capacity of the system to accommodate the Project's water requirements, both in general and to ensure that any such interconnection will not have negative effects on distribution system pressures within the Town. |
| Requirements for blasting during Project construction and/or operations | • Blasting will be required during box cut construction and declines providing access to the salt deposits.<br>• There will be no blasting during mine operations. Salt will be excavated using continuous miners which eliminates the need for blasting.<br>• |
| Vessels traffic to and from the Turf Point port | • Turf Point marine terminal has been used for decades as a deep-water port for shipping mining ore. For the last several years Atlas has been shipping gypsum from Turf Point at a rate of approximately one vessel every two weeks. Red Moon Resources Inc. has ceased mining operations and its last vessel shipment of gypsum left via Turf Point in October, 2023. Production from the Atlas Salt Project is expected to |

| Question / Issue Raised | How Atlas will Address in Project Design and/or Implementation |
|---|---|
| | require two vessels shipments per week at the Turf Point marine terminal. |
| Potential effects on wildlife and any protected / special areas in the region | • The Project is not expected to adversely affect wildlife, and there are no protected or special areas directly within or adjacent to the Project Area.<br>• Detailed assessments of the potential effects of the Project on wildlife and their habitats and on protected and special areas is provided in Chapter 5 of this EA Registration, including a variety of commitments by Atlas for mitigation measures to avoid or reduce any such effects. |
| Fugitive dust emissions and their management | • The Project has been designed to minimize dust generation as much as possible.<br>• All mining, crushing, and processing are to be completed underground<br>• The covered conveyor will produce minimal dust, especially when compared to the alternative of trucking the salt through the Town<br>• At the port facility, salt will be stored in a new covered building which will reduce any fugitive dust emissions. |
| Noise emissions and their management | • All mining, crushing, and processing are to be completed underground, which will significantly reduce any associated noise coming from the Project operations.<br>• Additionally, the enclosed and covered conveyor reduces the amount of heavy equipment required for moving the salt for shipment. Without the conveyor, large trucks would constantly be moving from the site and through St. George's to reach Turf Point. |
| Potential effects on recreational users in the Project Area | • Engagement with the Town of St. George's and residents indicates that the proposed Project area itself is not used extensively for recreational purposes.<br>• Residents indicated that the proposed main access road would interact with an existing ATV/Snowmobile access route. Project execution engineering of the main access road has not yet been initiated and is anticipated to begin in late 2024. Atlas will incorporate the requirement for an ATV/Snowmobile crossing into the main access road design.<br>• A detailed assessment of the potential effects of the Project on land and resource use is provided in Chapter 5 of this EA Registration, including a variety of commitments by Atlas for mitigation measures to avoid or reduce any such effects. |
| Potential effects on community services and infrastructure in the Town of | • A detailed assessment of the potential effects of the Project on people and communities – including local services and infrastructure - is provided in Chapter 5 of this EA Registration, including a variety of |

| Question / Issue Raised | How Atlas will Address in Project Design and/or Implementation |
|---|---|
| St. George's (including housing) | commitments by Atlas for mitigation measures to avoid or reduce any such effects. |
| Sponsorship of community events and programs | • As the Project moves forward, Atlas is committed to becoming an active and involved member of the local community.<br>• This will include participation in and further sponsoring of local projects, activities, and other events.<br>• Atlas has already established an office in St. George's and contributed to community events and programs. |
| The routing of the conveyor system and potential traffic effects | • The proposed conveyor route generally follows along the Flintkote Road, which has recently been used as shortcut for individuals to travel into St. George's.<br>• Atlas will review the feasibility of allowing the shared access of the road to continue.<br>• Additionally, within St. George's the conveyor has mitigations designed for high traffic intersections along its route. The conveyor will pass through an underground tunnel near one intersection, with two other key intersections being bridged over. |
| Project cost and funding | • Atlas Salt is a publicly traded company on the Toronto Venture Exchange, TSXV: SALT; with capital investment coming from private investors.<br>• The total capital cost of the Project is expected to be in the range of $400-$500 million. No government funding is required for the Project. |
| Project-related employment and business opportunities | • Detailed information on the Project's labour force requirements (for both its construction and operations and maintenance phases) is provided in Chapter 2.<br>• A detailed assessment of the potential effects of the Project on economy, employment and business is provided in Chapter 5 of this EA Registration, including a variety of commitments by Atlas for measures to create and maximize the Project's socioeconomic benefits. |
| How will the benefits be dispersed? Will there be any royalties given to the town directly? | • Atlas Salt is in discussions with the Town of St. George's regarding a payment structure in lieu of taxes. |
| Continued engagement throughout the life of the Project | • Atlas will continue to communicate and engage with local communities, organizations, and residents throughout the implementation phases of the project.<br>• Atlas has purchased a local property, known locally as the Palace Inn, to use as a local office and information centre. |

| Question / Issue Raised | How Atlas will Address in Project Design and/or Implementation |
|---|---|
| Significant support for the Project | • The Town of St. George's, Bay St. George's Chamber of Commerce, and the First Nations Bands of St. George's, Flat Bay and Three Rivers have all communicated their support.<br>• The Qalipu First Nation is still considering their support for the Project but to date has not expressed any specific concerns. |

## 4.6 Future Engagement Program

Atlas Salt is committed to employing best practices and standards, and seeks to ensure that it is respectful of the human rights and aspirations of affected communities; provides safe, healthy and respectful workplaces; minimizes harm to the environment; and leaves a positive legacy. Atlas is committed to ongoing engagement with the community and other key organizations affected by the Project. Atlas is currently creating an Engagement Program for the Great Atlantic Salt Project. The following defines the overall approach to engagement with key organizations, and the objectives of this Program.

**Approach**

The goal of the engagement program is to share information and listen to and seek out concerns and feedback. Atlas will then identify how issues and concerns will be addressed or mitigated, as appropriate, in Project development. Ultimately, this will establish the foundation to support how the Project will be advanced through construction, development, and operation, with a longer view for rehabilitation and reclamation.

Atlas Salt will meaningfully engage all key parties, address relevant concerns where practical, and build community support when possible. Ultimately, government and regulatory officials will balance any competing considerations when making their final decisions. Project approval is expected to include some compromise and accommodation.

Atlas Salt's ongoing interaction and community engagement will allow different groups to remain connected to the Project and its decision-makers beyond formal processes and will establish strong relationships to sustain ongoing engagement.

**Objectives**

The objectives of the engagement process, and the Engagement Program being prepared, are to:

- Efficiently manage communications about issues and concerns during engineering design and environmental assessment processes with all key organizations.
- Demonstrate Atlas Salt's commitment to a thorough and detailed planning process that values community input and provides genuine opportunities for people to have their concerns heard.

- Develop a coordinated plan with clearly defined roles for those in contact with the public and key organizations.
- Define an appropriate mechanism for dissemination of information to key organizations.
- Define an appropriate mechanism for key organizations to voice concerns, comments or other feedback.

# 5.0 ENVIRONMENTAL EFFECTS ASSESSMENT

This chapter includes an assessment and evaluation of the Project's potential environmental effects. It is focussed on the Project components and activities described in Chapter 2, and considers the description of the existing environment within and adjacent to the Project Area provided in Chapter 3 and the results of Atlas' public, Indigenous and governmental engagement activities as described in Chapter 4. It includes the associated identification of measures to avoid or reduce potential adverse effects, and to create and maximize potential benefits resulting from the Project.

## 5.1 Environmental Assessment Approach and Methods

This section outlines the scope and focus of the EA, as well as providing an overview of the approach and methods used to conduct the environmental effects assessment.

### 5.1.1 Scope and Focus of the Assessment

An EA requires an initial scoping exercise to define the key components and activities of the proposed project that is being assessed, as well as to establish the spatial and temporal boundaries for the assessment and identify the primary environmental components and issues to be considered. The scope of an EA should be established early in the process to ensure that the analysis remains focused, manageable and meaningful.

#### 5.1.1.1 Key Project Components / Activities and Associated Environmental Issues

An overview description of the proposed Project, including each of its associated components and activities, was included in Chapter 2. The key aspects of the Project that are particularly relevant to the assessment and evaluation of its potential environmental effects include the following:

**Construction**

- Site preparation
- Installation of surface mine site infrastructure
- Construction of the underground facilities
- Construction of the overland conveyor
- Upgrades and modifications at the existing port facility
- Construction of ancillary components (water and sewer, power supply, access roads)
- Project related expenditures
- Employment (including accommodations and transportation)

**Operations and Maintenance**

- Underground mining
- Underground processing
- Operation of surface components
- Port operations

- Water management
- Project related expenditures
- Employment (including accommodations and transportation)
- Progressive rehabilitation

**Closure and Decommissioning**

- Site decommissioning
- Closure rehabilitation

**Potential Accidental Events**

- Spills of deleterious substances
- Fire

Each of these Project phases, and the various components and activities associated with each (as listed above) are considered in the environmental effects assessment and are reflected in the assessment structure and approach that follows.

Some key environmental considerations that may be associated with these Project components and activities include:

- Air emissions (including GHGs), dust, light, noise and vibrations associated with the installation and use of on-site equipment and infrastructure and other activities during construction and operations, and the potential for these to reach and adversely affect fish, wildlife and people;
- Effects on terrestrial and aquatic habitats due to site clearing and excavation and other construction and operations activities;
- Changes in surface and ground water conditions (quantity, distributions, flows) and quality due to Project components and activities, including associated water use and management;
- The generation of solid and liquid wastes by Project components, activities and personnel, and their management;
- Potential spills of fuel or other materials during their transportation, storage and eventual use, and any associated interactions with water, vegetation, wildlife, or people;
- Disturbances or possible health effects to local persons and communities due to Project-related activities (such as traffic) and emissions (such as noise or dust);
- Interference with people and their activities due to site access restrictions or through Project-related noise, traffic (vehicular and vessel), personnel, or other disturbances;
- Potential alteration or destruction of historic resources as a result of clearing and excavating activity and other ground disturbance (if they are present);
- Potential Project-related demands for and use of community services and infrastructure, which may affect their availability, quality or cost for local residents; and

- The creation of Project-related employment and business opportunities, and associated economic effects at the local, regional and provincial scales.

#### 5.1.1.2 Selection of Valued Environmental Components

An EA focuses on components of the environment that are of a particular ecological and/or social importance, and which have the potential to be materially affected (either adversely or positively) by the proposed project under assessment. These are known as Valued Environmental Components (VECs), and may include both biophysical and socioeconomic aspects of the environment.

VEC identification occurs early in an EA, and is informed by public and Indigenous engagement (see Chapter 4), experience with similar projects and assessments in the past, and other scoping initiatives. The VEC approach is a useful, effective and widely accepted way of helping to ensure that an EA focuses on important and relevant environmental components and issues.

Based on these various issues scoping activities and outcomes, the following VECs were identified and are considered in this assessment:

1) Atmospheric Environment;
2) Water Resources (surface and ground water);
3) Fish and Fish Habitat;
4) Wildlife and Their Habitats;
5) Species at Risk;
6) Protected and Special Areas;
7) People and Communities;
8) Land and Resource Use;
9) Fisheries and Other Marine Activities; and
10) Economy, Employment and Business

The rationale for the selection of these VECs is generally described below.

*Table 5.30: Valued Environmental Components*

| Valued Environmental Component (VEC) | Overview and Rationale |
|---|---|
| Atmospheric Environment | • Mining activities can interact with the atmospheric environment through the mobilization and use of equipment, the development and operation of other infrastructure, and other associated components and activities.<br>• This includes potential air emissions (including GHGs), dust, noise and vibrations which may result from these activities.<br>• The atmospheric environment can act as a 'pathway" for other effects, as there are clear inter-relationships between it and other |

| Valued Environmental Component (VEC) | Overview and Rationale |
|---|---|
| | components of the natural and socioeconomic environments, including several of the other VECs described below. |
| Water Resources (surface and ground water) | • The Water Resources VEC includes consideration of groundwater and surface water resources.<br>• Both are integral and inter-related components of the hydrologic cycle, and which have important uses and roles in the biophysical and socioeconomic environments.<br>• As above, water quality and quantity are themselves important and valued. They have clear linkages to other biophysical components, and due to human uses of these resources, to the socioeconomic environment and associated health considerations. |
| Fish and Fish Habitat | • Fish resources and their habitats are important considerations in the EA of any proposed activities that occur within or adjacent to the aquatic (marine or freshwater) environment.<br>• This VEC includes consideration of fish species, as well as relevant components of their habitats (such as water and sediment), given the clear interrelationships between these environmental components. |
| Wildlife and Their Habitats | • The inland and coastal areas of Western Newfoundland are home to a variety of wildlife, including large and small mammals, various resident and migratory species of birds, and other species.<br>• Wildlife can be found in or near the Project site at various times of the year, often moving in and out of the area at different times according to their life histories, habitat requirements and seasonal activities.<br>• Many are an integral component of the local and regional environments and have important ecological and/or socio-cultural roles and value. |
| Species at Risk | • A number of plant and animal species in Western Newfoundland have been designated as being species at risk under federal and/or provincial legislation, or may be otherwise of special conservation concern.<br>• These species are identified, and their known or likely presence, abundance, geographic and temporal distribution is described, within the existing environment sections for each of the above components, as well as in the environmental effects assessment for each of these VECs.<br>• Identified species at risk are, however, given special attention and emphasis in the identification and analysis of potential environmental issues and associated mitigation measures. |
| Protected and Special Areas | • Several locations within and off Western Newfoundland have been designated as protected under provincial, federal /or other legislation and processes, due to their ecological, historical or socio-cultural characteristics and importance. |

| Valued Environmental Component (VEC) | Overview and Rationale |
|---|---|
| | • In addition to areas that may have existing and formal protection, a number of other locations have been identified as being special or sensitive to disturbance for ecological reasons, or for their associated human activities and values. |
| People and Communities | • The proposed Project will occur within the boundaries of the Town of St. George's, as well as being adjacent to a number of other communities in this region.<br>• The physical health and social well-being of people and communities is of paramount importance, and the planning and eventual implementation of the Project will be very much focused on preventing any adverse implications for residents, as well as maximizing the socioeconomic benefits of the Project during its various phases. |
| Land and Resource Use | • The lands and resources of this region are used for a variety of municipal, commercial, recreational and/or traditional purposes, by both residents and visitors.<br>• Land and resource use is an important component of Western Newfoundland's human environment and overall cultural landscape, and reflects the characteristics, traditions and values of its people - the communities they live in, the manner in which they make a living or supplement their incomes, and the outdoor activities that they partake in and enjoy for recreational and/or cultural reasons. |
| Fisheries and Other Marine Activities | • Fisheries (commercial, recreational, traditional) have been key elements in shaping the history and socioeconomic character of Newfoundland and Labrador and are important aspects of the current economic and socio-cultural fabrics of the Western Newfoundland region.<br>• These and other marine uses and users may be affected both directly (through possible interactions and disturbance) and indirectly (due to any negative changes in the biophysical environment) by development projects and activities that are located within or adjacent to the marine environment. |
| Economy, Employment and Business | • The Project will create important and significant employment and business opportunities and other direct, indirect and induced economic benefits throughout its various phases.<br>• Local residents, communities and organizations have expressed strong interest in seeing the social and economic benefits of the Project maximized. |

#### 5.1.1.3 Environmental Assessment Study Areas

EA study areas (spatial and temporal boundaries) have been established to direct and focus the environmental effects assessment:

1) ***Spatial Boundaries*:** Two types of spatial boundaries have been identified and considered in conducting the environmental effects assessment:

    - *Project Area*, which is an area that encompasses the planned Project components and activities (Chapter 2), and represents the "footprint" of the development as defined at the current stage of Project planning and design (Figure 5.78).

    - *Study Area*, which encompasses the Project Area identified above, and extends beyond it to include the possible zone of influence of any Project-related emissions and other disturbances and their potential environmental effects. For the purposes of the EA, this area has been conservatively set at a radius of 2 km beyond the Project Area for the on-land environment (Figure 5.78), and as the entirety of Bay St. George for the marine environment (Figure 5.79).

In addition to the Project Area and Study Area, the environmental effects assessment also considers the characteristics and larger spatial and temporal distributions of the individual VECs under consideration. This includes the nature and movement patterns of any potentially affected fish or wildlife, as well as the overall extent and distribution of human components and activities, including adjacent communities, in the region. Although these are not specifically "mappable" per se, key aspects of the locations, distributions and/or movements of each environmental component (as they relate to the Project and Study Areas) are as presented in Chapter 3.

2) ***Temporal Boundaries***: In all cases, the temporal boundaries include and encompass the planned timing of Project phases and activities, as well as the likely duration of any resulting environmental effects. In conducting the effects assessment, consideration is also given to the relevant temporal characteristics of the VECs themselves, including the timing of their presence within the Project and Study Areas, any particularly sensitive or critical periods, likely response and recovery times to potential effects, and any known and applicable natural (without-Project) variation in that environmental component.

The Project's potential environmental effects are assessed, and their significance is evaluated, within the above described spatial and temporal boundaries.

### 5.1.2 Environmental Planning, Management and Mitigation

Environmental planning, management and mitigation measures are considered in a fully integrated manner in the environmental effects assessments that are presented in this Chapter. This includes those approaches and measures that have been "built-in" to the Project in order to proactively avoid or reduce potential environmental issues (Chapter 2), as well as the other general and issue-specific environmental protection measures, which are further identified and described in this section.

In terms of the former, a number of key aspects of the Project have been planned and are being designed to address potential environmental issues. These include:

- Project access routes and transportation systems have been planned to avoid vehicular traffic through the Town;
- The layout for the mine site surface components has been planned to avoid interactions with, and maximize distance from, waterbodies and other environmental components in the area wherever possible;
- The salt conveyer system extending between the mine site and the marine port at Turf Point will be enclosed or covered to avoid dust and other emissions and interactions; and
- Salt processing will involve dry crushing only, and will not include the required use of water or chemicals.

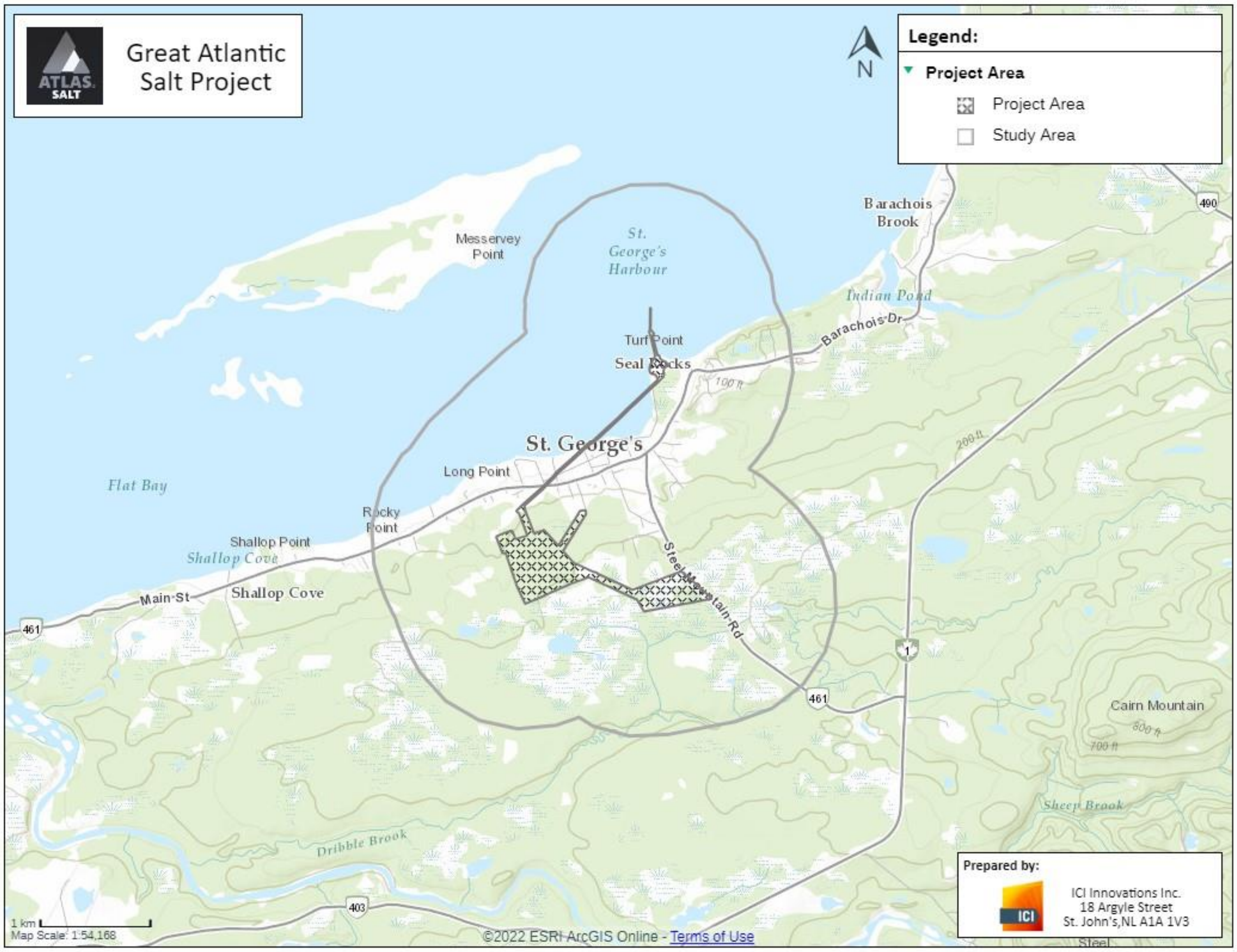


*Figure 5.78: Environmental Assessment Study Area – Onland*

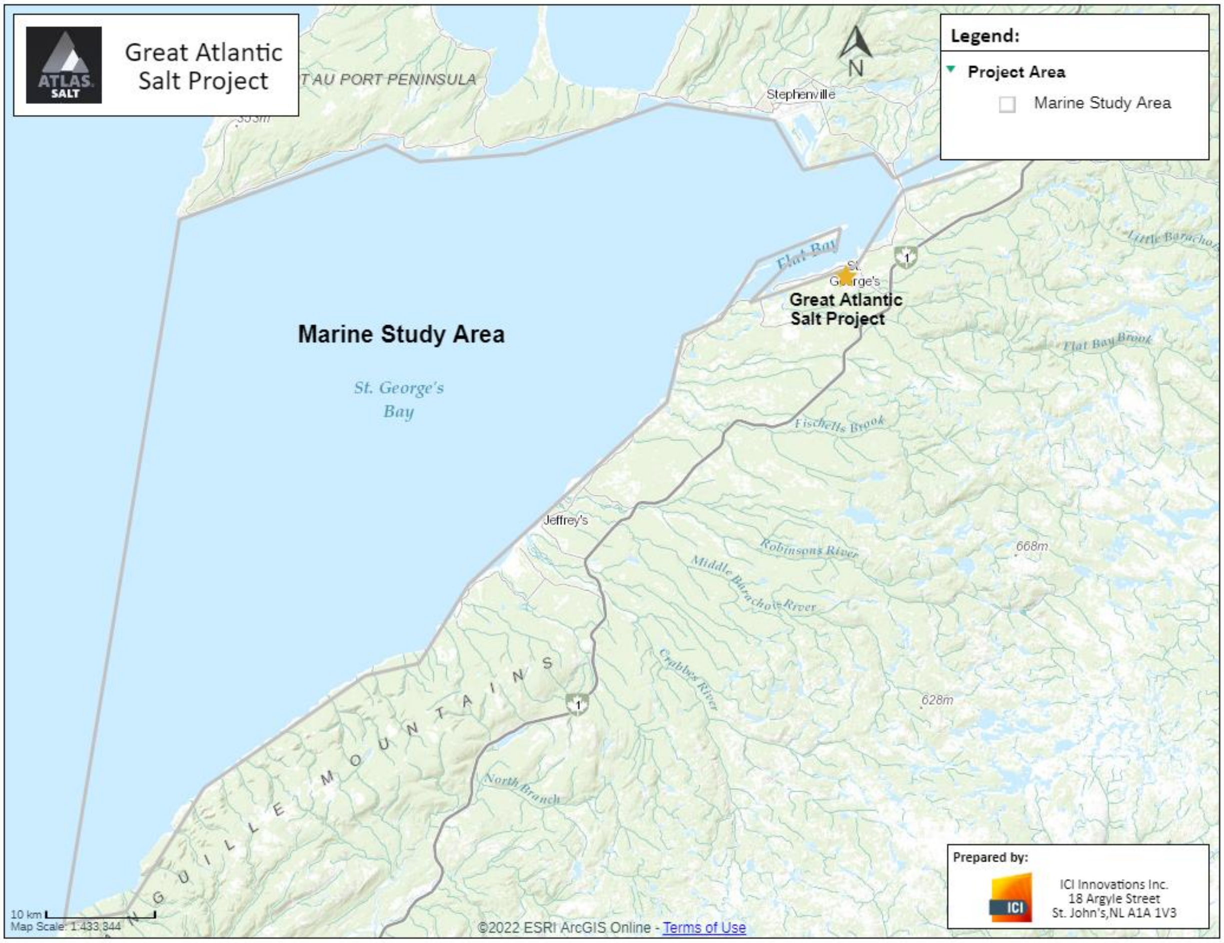


*Figure 5.79: Environmental Assessment Study Area – Marine*

In addition to these "built in" design measures, the Proponent and its contractors will implement and adhere to a number of additional mitigation measures in implementing the Project, in order to avoid or reduce potential adverse effects and to create and maximize benefits. This are summarized in the table below, by VEC:

*Table 5.31: Summary of Key Mitigation Measures by VEC*

| Valued Environmental Component (VEC) | Planned Mitigation Measures |
|---|---|
| Atmospheric Environment | • Compliance with relevant environmental legislation, regulations and permits.<br>• Use of electric equipment and other battery electric vehicles (BEV) to the extent possible, with minimal on-surface equipment and vehicles requires.<br>• Design and use of a covered or enclosed conveyor system (rather than trucking), designed to minimize noise, dust and vibrations (Section 2.5.3), and subject to regular inspection and maintenance.<br>• All mining and processing activities will occur underground.<br>• On-site lighting will be minimized and directed downwards wherever possible, based on Project requirements and safety considerations. Use of glare shields and advanced lighting technology, with lights positioned high enough to illuminate large ground areas.<br>• Regular, preventive maintenance and inspection of vehicles and heavy equipment.<br>• Implementation of dust control measures as required (Section 2.7.7).<br>• Blasting will occur very infrequently during construction and is not required during operations for salt production because of the use of continuous miners, and will be carried out in accordance with applicable regulations and approvals.<br>• Development and implementation of a Blasting Management Plan designed to minimize air emissions, and noise and vibration levels and to ensure adequate clearance areas / evacuations and public communications / notifications.<br>• Implementation of progressive rehabilitation measures and eventual Project rehabilitation and closure.<br>• Implementation of Environmental Protection Plan(s) and Emergency Response Plans and procedures.<br>• Design and implementation of a monitoring program to ensure noise and dust levels are within design standards in compliance with appropriate regulatory requirements. |
| Water Resources<br>(surface and ground water) | • Compliance with relevant environmental legislation, regulations and permits. |

| Valued Environmental Component (VEC) | Planned Mitigation Measures |
|---|---|
| | • Design and use of an enclosed or covered conveyor system, with all mining and processing activities occurring underground.<br>• No required use of water or chemicals in processing, and no tailings generation.<br>• Avoidance of watercourses and waterbodies in mine site planning and design wherever possible.<br>• Maintaining natural buffers around wetlands and riparian areas wherever possible and practical<br>• Runoff controls and erosion and sediment control measures.<br>• Design and establishment of sedimentation / settling pond, collection ditches and other associated infrastructure.<br>• Preservation of natural drainage patterns to the extent possible (culverts and trenching).<br>• All site water to be directed to settling pond and monitored prior to discharge to the environment, in compliance with applicable regulatory requirements.<br>• Planned, additional transient groundwater modelling, including further hydrogeological investigations which will include in-situ hydraulic conductivity testing of overburden and bedrock lithologies, pump testing, groundwater level measurement and long-term monitoring, and water quality sampling.<br>• Implementation of waste management and fuel use / storage plans and procedures.<br>• Implementation of progressive rehabilitation measures and eventual Project rehabilitation and closure.<br>• Implementation of Environmental Protection Plan(s) and Emergency Response Plans and procedures.<br>• Water Management Plan will be developed and submitted to the Province for review and approval. |
| Fish and Fish Habitat (Including Species at Risk) | • Compliance with relevant environmental legislation, regulations and permits.<br>• Avoidance of watercourses and waterbodies in mine site planning and design wherever possible.<br>• Maintaining natural buffers around wetlands and riparian areas wherever possible and practical.<br>• No required use of water or chemicals in processing, and no tailings generation.<br>• Implementation of runoff controls and erosion and sediment control measures.<br>• Design and establishment of sedimentation / settling pond, collection ditches and other associated infrastructure. |

| Valued Environmental Component (VEC) | Planned Mitigation Measures |
|---|---|
| | • Preservation of natural drainage patterns to the extent possible (culverts and trenching).<br>• All site water to be directed to settling pond and monitored prior to discharge to the environment, in compliance with applicable regulatory requirements.<br>• Implementation of Environmental Protection Plan(s) and Emergency Response Plans and procedures.<br>• Implementation of Atlas' waste management and fuel use / storage plans and procedures.<br>• Implementation of progressive rehabilitation measures and eventual Project rehabilitation and closure. |
| Wildlife and Their Habitats (Including Species at Risk) | • Minimization of Project footprint and clear delimitation of clearing limits and work areas.<br>• Maintaining natural buffers around wetlands and riparian areas wherever possible and practical.<br>• Preservation of natural drainage patterns to the extent possible (culverts and trenching, structures of sufficient size).<br>• Erosion and sediment control procedures and practices.<br>• Minimizing contaminants (airborne or runoff) through dust and effluent control measures.<br>• Establish security fence around the Project Area.<br>• Avoiding / minimizing the use of artificial lighting, and other associated lighting control measures as described above.<br>• Conduct nest searches during the breeding season in advance of vegetation clearing, and avoiding any identified active nests during that time.<br>• Establish suitable buffer zones around any active raptor nests.<br>• Avoid wildlife-vehicle collisions by ensuring safe driving practices, including speed limits, and by yielding right of way to wildlife.<br>• Prohibiting the hunting or harassment of wildlife species by on-site Project personnel.<br>• Appropriately disposing of all waste to avoid attracting wildlife to work areas.<br>• Any nuisance animals will be dealt with in consultation with the provincial Wildlife Division.<br>• Protocols for the collection and release of any birds that become stranded, in accordance with applicable governmental guidance, requirements and permits.<br>• Implementation of Environmental Protection Plan(s) and Emergency Response Plans and procedures.<br>• Implementation of progressive rehabilitation measures and eventual Project rehabilitation and closure. |

| Valued Environmental Component (VEC) | Planned Mitigation Measures |
|---|---|
| Protected and Special Areas | • Planned Project location and layout maintains significant distance between planned Project components and activities and existing protected and special areas in the region.<br>• Implementation of other mitigation measures outlined in this table will help avoid or reduce adverse effects on key aspects of the environment, and thus, the potential for effects to extend into or otherwise adversely affect protected and special areas. |
| People and Communities | • Design and use of a covered or enclosed conveyor system, with all mining and processing activities occurring underground.<br>• No required use of water or chemicals in processing, and no tailings generation.<br>• Dust, light, noise and vibration control measures and water management, as outlined above.<br>• Continue to work with the Town to confirm capacity of municipal water and sewer system for Project purposes, or implement other approaches as required (water supply from other sources, septic system)<br>• Establishment of access restrictions, signage and a security fence to prevent public access to the Project area for safety and operational purposes.<br>• Blasting will occur very infrequently during construction and is not required during operations for salt production), and will be carried out in accordance with applicable regulations and approvals.<br>• Development and implementation of a Blasting Management Plan designed to minimize air emissions, and noise and vibration levels and to ensure adequate clearance areas / evacuations and public communications / notifications.<br>• Coordination, scheduling and communications regarding the transportation of large equipment and other loads to address potential traffic or safety concerns.<br>• Continue to engage with communities, Indigenous groups and other organizations to provide Project information and updates on on-going and planned activities, as well as discussion of any issues and potential means of addressing them.<br>• Implementation of environmental protection and emergency response plans and personnel / equipment.<br>• Implementation of progressive rehabilitation measures and eventual Project rehabilitation and closure. |
| Land and Resource Use | • Identify, obtain and comply with all required municipal authorizations. This will include working with the Town of St. George's to facilitate the required and on-going amendments to the municipal plan to rezone the Project Area. |

| Valued Environmental Component (VEC) | Planned Mitigation Measures |
|---|---|
| | • Acquire a mining lease for the subsurface mining rights and a surface lease for the crown lands areas of the Project, with other land acquisition as required.<br>• Design and use of a covered or enclosed conveyor system, with all mining and processing activities occurring underground.<br>• No required use of water or chemicals in processing, and no tailings generation.<br>• Other dust, light, vibration control measures and water management as outlined above.<br>• Establishment of access restrictions, signage and a security fence to prevent public access to the Project area for safety and operational purposes.<br>• Consideration during Detailed Engineering Design of access road options to ensure safe crossing points for existing ATV/snowmobile route to ensure that residents can continue to access the area west of Muises Lane.<br>• Development of blasting protocols, addressing timing, frequency, clearance areas / evacuation and public communications / notifications.<br>• Should an accidental discovery of historic resources occur, all work will cease in the immediate area of the discovery until authorization is given for the resumption of the work.<br>• Any archaeological materials encountered will be reported to the PAO, including information on the nature of the material discovered and the location and date of the find.<br>• Continue to engage and communicate with communities, Indigenous groups and other organizations to provide Project information and updates on on-going and planned activities, as well as discussion of any issues and potential means of addressing them.<br>• Implementation of progressive rehabilitation measures and eventual Project rehabilitation and closure. |
| Fisheries and Other Marine Activities | • Project utilizes an existing and long-standing marine terminal, and will not include in-water works as part of the required upgrades and modifications at Turf Point.<br>• The volume of Project-related ship traffic estimated to be 2 ships a week, which will not materially alter existing marine vessel traffic levels in St. George's Bay.<br>• At the port facility, salt will be stored in a new covered building which will reduce any fugitive dust emissions.<br>• Continue to engage and communicate with communities, Indigenous groups and other organizations to provide Project information and updates on on-going and planned activities, as |

| Valued Environmental Component (VEC) | Planned Mitigation Measures |
|---|---|
| | well as discussion of any issues and potential means of addressing them |
| Economy, Employment and Business | • Implementation of hiring, procurement and human resources related policies, plans and procedures throughout the various phases of the Project.<br>• Continue to engage and communicate with communities, Indigenous groups and other organizations to provide Project information and updates on on-going and planned activities and associated opportunities |

The Project's potential environmental effects are assessed, and their significance is evaluated, with consideration of the various mitigation measures outlined above, and within the above described spatial and temporal boundaries.

#### 5.1.3 Evaluation of Environmental Effects Significance

Evaluating the significance of the predicted environmental effects of a proposed project is one of the most important steps in any EA. This typically involves: 1) defining what a significant environmental effect is, and based on that definition, 2) evaluating whether a project's potential environmental effects are significant or not significant. The determined significance of a project's potential environmental effects is then a primary consideration in eventual EA decisions by regulatory authorities about whether or not, and if so how, the project in question may proceed.

Significant environmental effects are those adverse effects that will cause a change in the VEC that will alter its status or integrity beyond an acceptable and sustainable level. An environmental effect that does not meet these criteria is considered not significant.

For the purposes of this EA, significant environmental effects on the *Atmospheric Environment* and on *Water Resources* are defined as those that are likely to cause one or more of the following:

- A detectable decrease in existing air or water quality conditions (availability, quality) that results in measurable, repeated and prolonged exceedances of applicable regulatory standards and guidelines, and/or associated, detectable and sustained changes in local water use.
- A detectable increase in noise (sound pressure levels) and vibration conditions that results in measurable, repeated and prolonged exceedances of applicable standards and guidelines at nearby residential areas or other sensitive points of reception, and/or which otherwise causes detectable and prolonged disturbance effects; or

- A detectable increase in light levels that results in measurable, repeated and prolonged exceedances of applicable guidelines at nearby residential areas and/or other sensitive receptors, and/or which otherwise cause detectable and prolonged disturbance effects.

Significant environmental effects on the various biological VECs under consideration (*Fish and Fish Habitat, Wildlife and Their Habitats, Species at Risk*) are defined as those that are likely to cause one or more of the following:

- Mortality or life-threatening injury to one or more individuals of a designated (protected) species at risk, or destruction or alteration of the critical habitat of any such species;
- Effects to any species within the Study Area, such that size, health, ecological function or sustainability of a population would be measurably and adversely affected; or
- Destruction of, or displacement of marine biota from, important feeding or reproduction areas, migratory routes or other essential habitats, during time periods and for durations over which the size, health, ecological function and/or sustainability of a population would be measurably and adversely affected.

For the *Protected and Special Areas* VEC, a significant environmental effect is defined as one that is likely to cause an adverse change in one or more of the important and defining ecological and socio-cultural characteristics of such an area, resulting in an associated, detectable and sustained decrease in its overall integrity, value or use.

Finally, significant environmental effects on the socioeconomic VECs (*People and Communities, Land and Resource Use, Fisheries and Other Marine Activities, Economy, Employment and Business*) are defined as those that are likely to cause one or more of the following:

- An adverse effect on the health, safety or well-being of affected individuals or communities, such that there are associated, detectable and sustained decreases in these characteristics and the resulting health or quality of life of a population;
- A detectable reduction in commercial activity levels and overall economic revenues over several years for one or more existing and active enterprises, which challenges their on-going operations and overall economic viability; or
- A decrease in overall recreational or traditional activity levels or the enjoyment or cultural value of these pursuits for a community or region over multiple seasons or years.

In the VEC-specific environmental effects assessments that follow, these criteria and definitions are used to describe and evaluate the significance of both Project-specific and cumulative environmental effects.

### 5.1.4 VEC-Specific Environmental Effects Assessments

The environmental effects assessments for each VEC are presented in a separate subsection, based on the various stages outlined below.

#### 5.1.4.1 Potential Environmental Issues and Interactions

Based on the description of the existing environment for each VEC (Chapter 3) and Atlas' engagement program (Chapter 4), the environmental effects assessment for each VEC identifies and focuses on a number of *Key Indicators and Parameters*, which are generally defined as an important aspect of the VEC which, if changed as a result of the Project, may result in an adverse effect to the VEC (and to which such changes could potentially be detected and measured).

A Table (sample provided below, for illustration) is then used to summarize the potential interactions between each of the main Project components and activities and each of these identified indicators and parameters.

*Table 5.32: Potential Project-VEC Interactions*

| Project Component / Activity | Key Indicators and Parameters * | | | | |
|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | # |
| **Construction** | | | | | |
| • Site preparation | | | | | |
| • Installation of surface mine site infrastructure | | | | | |
| • Construction of the underground facilities | | | | | |
| • Construction of the overland conveyor | | | | | |
| • Upgrades and modifications at the existing port facility | | | | | |
| • Construction of ancillary components (water and sewer, power supply, access roads) | | | | | |
| • Project related expenditures | | | | | |
| • Employment (including accommodations and transportation) | | | | | |
| **Operations and Maintenance** | | | | | |
| • Underground mining | | | | | |
| • Underground processing | | | | | |
| • Operation of surface components | | | | | |
| • Port operations | | | | | |
| • Water management | | | | | |

| Project Component / Activity | Key Indicators and Parameters * | | | | |
|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | # |
| • Project related expenditures | | | | | |
| • Employment (including accommodations and transportation) | | | | | |
| • Progressive rehabilitation | | | | | |
| **Closure and Decommissioning** | | | | | |
| • Site decommissioning | | | | | |
| • Closure rehabilitation | | | | | |
| **Potential Accidental Events** | | | | | |
| • Spills of deleterious substances | | | | | |
| • Fires | | | | | |
| * These indicators and parameters are identified and listed on a VEC-specific basis in the relevant table / section | | | | | |

This matrix is used to guide and inform the subsequent assessment and evaluation of environmental effects and the associated identification of mitigation.

#### 5.1.4.2 Environmental Effects Assessment

This section provides an analysis (prediction) and description of the likely environmental effects of the Project on the VEC. The environmental effects assessment considers the nature, degree, extent and timing of potential Project-induced change from the existing (baseline) environment (as described in Chapter 3).

Within this section, potential environmental effects are assessed and evaluated for both planned Project components and activities, as well as for any potential accidental events that may occur as a result of the Project. The environmental effects assessment for each VEC is presented for each Project phase, each of which is addressed in a separate subsection as follows:

1) Construction
2) Operations and Maintenance
3) Closure and Decommissioning, and
4) Potential Accidental Events

Environmental effects management (including mitigation) measures are considered in a fully integrated manner in the effects assessment, which is therefore focused upon identifying and describing the likely *residual* environmental effects of the Project.

These predicted (residual) effects of the Project are described based on a number of standard and widely accepted environmental effects criteria or "descriptors", as listed and defined below.

*Table 5.33: Environmental Effects Descriptors and Associated Ratings*

| Effects Descriptor | Definition and Ratings |
|---|---|
| **Nature (Direction) of the Effect** | *Adverse*, *Neutral* or *Positive* (as compared to baseline environmental conditions). |
| **Magnitude** | The degree of change from existing (baseline) conditions<br><br>*Negligible*: Although there is potential for a Project-VEC interaction, there would be no likely detectable effect that would differ from current conditions or be outside natural variability<br><br>For the Physical Environment:<br>*Low*: A minor, but detectable change to existing conditions, but one that is within the range of normal variability, or which does not change overall availability or quality of the environmental component or parameter<br>*Medium*: A detectable change to existing conditions, but one that is within applicable regulatory standards and guidelines, or which does not change overall availability or quality of the environmental component or parameter<br>*High*: A detectable change to existing conditions that results in measurable and prolonged exceedances of applicable regulatory standards and guidelines or changes in overall availability or quality of the environmental component or parameter<br><br>For the Biological Environment:<br>*Low*: Materially affects 0 to 10 percent of the population that occurs in the Study Area<br>*Medium*: Materially affects 10 to 25 percent of the population that occurs in the Study Area<br>*High*: Materially affects over 25 percent of the population that occurs in the Study Area<br><br>For the Socioeconomic Environment:<br>*Low*: Affects 0 to 5 percent of individuals / users in the Study Area or is otherwise detectable, but does not change overall availability, quality or value of the environmental component or parameter<br>*Medium*: Affects 5 to 25 percent of individuals / users in the Study Area or is otherwise detectable, but is within applicable regulatory standards and guidelines and/or does not change overall availability, quality or value of the environmental component or parameter<br>*High*: Affects over 25 percent of individuals / users in the Study Area or is otherwise detectable, and results in measurable and prolonged exceedances of applicable regulatory standards and guidelines and/or changes the overall availability, quality or value of the environmental component or parameter |
| **Geographic Extent** | The spatial area within which an effect will likely occur and be detectable:<br>*Site*: Effect is confined to the Project Area or a portion thereof |

| | |
|---|---|
| | *Local*: Effect is confined to the Study Area or a portion thereof<br>*Regional*: Effect will likely extend beyond the Study Area |
| **Duration** | The period of time over which an environmental effect will likely occur and be evident (in months). |
| **Frequency** | How often an environmental effect will likely occur:<br>*Once*: Occurs once during the Project<br>*Sporadic*: Occurs sporadically during the Project<br>*Regular*: Occurs on a regular basis throughout the Project<br>*Continuous*: Occurs repeatedly and continuously throughout the Project |
| **Reversibility** | The likely ability of an environmental component to return to an equal or improved condition once the disturbance(s) has ended. |
| **Certainty** | The level of confidence in the environmental effect prediction. |

The current condition of an environmental component as a result of natural and/or anthropogenic factors, and thus, its resulting resiliency or sensitivity to further change (ecological / socioeconomic context) is also considered as part of the assessment and evaluation of environmental effects.

The following Table is then used to summarize the predicted residual environmental effects of the Project on the VEC.

*Table 5.34: Residual Environmental Effects Assessment Summary Table*

| **Potential Effect** | **Environmental Effect Descriptors** | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Nature** | **Magnitude** | **Extent** | **Duration** | **Frequency** | **Reversibility** | **Certainty** |
| **Construction** | | | | | | | |
| Potential Effect 1 | | | | | | | |
| Potential Effect 2 | | | | | | | |
| Potential Effect # | | | | | | | |
| **Operations and Maintenance** | | | | | | | |
| Potential Effect 1 | | | | | | | |
| Potential Effect 2 | | | | | | | |
| Potential Effect # | | | | | | | |
| **Closure and Decommissioning** | | | | | | | |
| Potential Effect 1 | | | | | | | |
| Potential Effect 2 | | | | | | | |
| Potential Effect # | | | | | | | |
| **Potential Accidental Events** | | | | | | | |
| Potential Effect 1 | | | | | | | |
| Potential Effect 2 | | | | | | | |
| Potential Effect # | | | | | | | |
| **Overall, Resulting Effect(s) of Project on the VEC** | | | | **Evaluation of Significance** | | | |

| **Nature / Direction**: | **Magnitude**: | **Geographic Extent**: | **Duration**: | **Frequency**: |
|---|---|---|---|---|
| A = Adverse | N = Negligible | S = Site | 1 = < 1 month | O = Once |
| N = Neutral or No Effect | L = Low | L = Local | 2 = 1-12 months | S = Sporadic |
| P = Positive | M = Medium | R = Regional | 3 = 13-36 months | R = Regular |
| | H = High | | 4 = 37-72 months | C = Continuous |
| | | | 5 = > 72 months | |
| **Reversibility**: | **Certainty in Prediction:** | | | |
| R = Reversible | L = Low | | | |
| I = Irreversible | M = Moderate | | | |
| | H = High | | | |

For the biological VECs (fish and fish habitat, wildlife and their habitats), any associated species at risk are addressed within the larger VECs themselves. Following these VEC sections, however, there is a summary discussion of the various relevant species at risk, including an overview of those that have the potential to interact with the Project, and a species-by-species summary of the Project's potential effects on these (Section 5.6).

#### 5.1.4.3 Cumulative Environmental Effects

The EA also assesses and evaluates any cumulative environmental effects that might result from the Project in combination with other projects or activities that have been or will be carried out. The cumulative environmental effects assessment considers the overall (total) effect on the VECs as a result of the Project's likely residual environmental effects (as summarized above) and those of other relevant projects and activities, using the following approach:

1) Past and on-going projects and activities and their effects are reflected in the existing (baseline) environmental conditions for each VEC (Chapter 3). The current condition of the VEC as a result of these natural or anthropogenic factors, and thus its overall sensitivity or resiliency to further disturbance or change, has been considered throughout the environmental effects assessment.

2) The cumulative effects assessment considers whether and how this existing condition could be changed by the introduction of the Project and its residual (with mitigation) environmental effects.

3) Other likely future projects and activities that are relevant to this VEC and its cumulative effects assessment are then identified and considered. These comprise any reasonably foreseeable future projects or activities whose effects on the VEC would likely overlap or other accumulate in space and time with those of the Project (e.g., overlap with the Project area or its zone of influence, or affecting the same populations / communities as the Project).

4) In any cases where the predicted residual environmental effects of the Project on the VEC will likely accumulate or interact with those of one or more other future projects and activities, the potential cumulative effects of the Project in combination with those of these other relevant

future developments are assessed and evaluated (using the same significance definition and approach as was used for the Project-specific effects assessment, as described above).

### 5.1.5 Environmental Monitoring and Follow-up

Finally, the EA identifies and describes any proposed environmental monitoring or follow-up activities. This includes any such measures that may be required or appropriate to meet regulatory requirements, to demonstrate compliance to relevant environmental requirements or EA commitments, or to address any EA-related issues of uncertainty, such as to verify the environmental effects predictions or the effectiveness of mitigation measures outlined in this EA.

The remainder of this Chapter provides an assessment and evaluation of the potential environmental effects of the Project on the identified VECs, each of which is covered in a separate subsection that follows the overall EA structure and methodology outlined above.

## 5.2 Atmospheric Environment

The environmental effects assessment for this VEC includes consideration of all Project-related air emissions including GHGs, contaminants, noise, vibration and light levels.

### 5.2.1 Potential Environmental Issues and Interactions

The construction phase of the Project will involve the use of heavy equipment and limited blasting which will create noise, vibration and air emissions at a local scale within the Project mine site, and for conveyor installation. Project operation will involve underground mining and processing, and therefore, little interaction with the atmospheric environment. The conveyors used to transport the produced salt product will be routed through the Town of St. George's and have the potential to emit fugitive dust and noise to the atmospheric environment.

An overview of the main possible interactions between each of the Project's components and activities and the various key indicators and parameters that have been identified for this VEC is presented in Table 5.35.

*Table 5.35: Atmospheric Environment: Potential Project-VEC Interactions*

| Project Component / Activity | Key Indicators and Parameters | | | | |
|---|---|---|---|---|---|
| | Air Quality | GHG Emissions | Noise Levels | Light Levels | Vibration Levels |
| **Construction** | | | | | |
| • Site preparation | • | • | • | • | • |
| • Installation of surface mine site infrastructure | • | • | • | • | • |
| • Construction of the underground facilities | • | • | • | • | • |
| • Construction of the overland conveyor | • | • | • | • | • |

| Project Component / Activity | Key Indicators and Parameters | | | | |
|---|---|---|---|---|---|
| | Air Quality | GHG Emissions | Noise Levels | Light Levels | Vibration Levels |
| • Upgrades and modifications at the existing port facility | • | • | • | • | • |
| • Construction of ancillary components (water and sewer, power supply, access roads) | • | • | • | • | • |
| • Project related expenditures | | | | | |
| • Employment (including accommodations and transportation) | | | | | |
| **Operations and Maintenance** | | | | | |
| • Underground mining | • | • | • | | • |
| • Underground processing | • | • | • | | • |
| • Operation of surface components | • | • | • | • | • |
| • Port operations | • | • | • | • | • |
| • Water management | | | | | |
| • Project related expenditures | | | | | |
| • Employment (including accommodations and transportation) | • | • | • | | |
| • Progressive rehabilitation | | | | | |
| **Closure and Decommissioning** | | | | | |
| • Site decommissioning | | | | | |
| • Closure rehabilitation | • | • | • | • | • |
| **Potential Accidental Events** | | | | | |
| • Spills of deleterious substances | | | | | |
| • Fires | • | | | | |

### 5.2.2 Environmental Effects Assessment

As illustrated above, the main potential interactions between Project components and activities and this VEC relate to the use of heavy equipment, the limited blasting that will be required during construction, installation of infrastructure, and the eventual conduct of mining and associated transportation of ore. The Project's potential effects on the atmospheric environment during each of its phases are described below.

#### 5.2.2.1 Construction

The construction of the mine site and surface infrastructure will involve the use of heavy equipment to clear and level land, develop and install infrastructure and construct other required facilities. The use of heavy equipment and light trucks will result in temporary and localized air emissions from the exhausts of these equipment and vehicles. Atmospheric contaminants associated with the incomplete combustion of fuels emitted in vehicle exhaust include particulates, nitrous dioxide, carbon monoxide and sulphur dioxide.

AIR EMISSIONS (INCLUDING GHGS)

Diesel equipment will be used during the construction phase including, excavators, haul trucks, air drillers and loaders. Atmospheric contaminant emissions associated with the use of diesel fired equipment include particulates, carbon monoxide, nitrous oxide, and sulphur dioxide. An equipment maintenance program will be implemented to ensure vehicles and equipment will be maintained in good repair and inspected regularly, and any associated air emissions from equipment and vehicles will conform to applicable regulations and guidelines.

Fugitive dust from construction activities will be controlled as necessary using dust control agents, particularly water. Any potential air emissions or interactions with the atmospheric environment during these initial phases of Project implementation are therefore likely to be negligible (and within existing regulations or standards), localized, short-term and intermittent in nature.

Atlas engaged a consultant to complete a GHG emissions assessment for the Project. Table 5.36 and Table 5.37 identify the various anticipated sources of GHGs during this phase of the Project, as well as the total estimated amounts of GHG emissions during Project construction. The full report is in Appendix N.

During construction, GHG emissions include those from diesel equipment used for development of above ground infrastructure, whereas battery electric equipment and some hydrocarbon-fueled equipment would be used to develop and install the underground equipment and infrastructure. The underground portion of the Project would be heated by temporary propane heaters and some additional propane would be consumed during construction at the temporary camp (if required). Aggregate will be sourced locally and trucked to site using diesel fueled trucks. Total GHG emissions during construction are estimated at 6,166 $CO_2e$ annually including 4,375 tonnes $CO_2e$ per year of Scope 1 emissions and 1,791 tonnes $CO_2e$ per year of Scope 2 emissions. The NL *Management of Greenhouse Gas Act* and *Regulations* have two thresholds that apply to large industrial facilities: one for any regulated facility that emits 15,000 to 25,000 tonnes of GHG emissions in any year; and a second for any regulated facility that emits 25,000 tonnes of GHG emissions in any year. Based on the analysis and estimates completed by Atlas and its consultants, the Project will not reach either threshold during construction and would not be subject to this Act and its regulations.

*Table 5.36: Scopes of GHG Emissions During Construction*

| Scopes | Sources | Construction |
|---|---|---|
| Scope 1 | Direct GHG Emissions | • Stationary combustion (heating underground with propane heaters, propane at temporary construction camp)<br>• Mobile equipment combustion (on-road and off-road mining equipment for site preparation)<br>• Transportation of aggregate to site |

| Scopes | Sources | Construction |
|---|---|---|
| Scope 2 | Indirect GHG Emissions | • Electricity use from the NL electrical grid |
| Scope 3 | Other Indirect GHG Emissions | • Substantive transportation sources (based on the assumption of shipping major equipment to site from Europe during construction (to be confirmed)) |

*Table 5.37: Summary of GHG Emissions During Construction*

| | | GHG Emissions (t $CO_2$e) | | | |
|---|---|---|---|---|---|
| **Phase** | **Activity** | **Scope 1 (Direct)** | **Scope 2 (Indirect)** | **Scope 3 (Other Indirect)** | **Total Scope 1 + Scope 2** |
| Construction (annual) | Site preparation | 282 | - | - | **282** |
| Construction (annual) | Construction camp propane (if required), Underground propane | 4,030 | - | - | **4,030** |
| Construction (annual) | Transportation of aggregate to Project site | 63 | - | - | **63** |
| Construction (annual) | Electricity | - | 1,791 | - | **1,791** |
| **Total Construction (Annual)** | | **4,375** | **1,791** | **-** | **6,166** |

LIGHT

Construction of the mine site surface facilities will occur 24 hours per day, which will require artificial lighting in active work areas for both practical and safety reasons. Depending on the specific location and intensity of such lighting requirements, the light emitted during nighttime work may extend beyond the mine site footprint itself. Light emissions resulting from mine site construction activities will be minimized by having lighting only for planned work areas and by directing construction lights downwards. The nearest residential neighborhood property is several hundred meters from the mine site, and is separated from the site by a wooded area that will provide screening from nighttime lighting. This, in combination with the measures that will be implemented to limit light direction, will ensure that any potential disturbances are negligible, and in any event, these will be short-term and intermittent in nature.

NOISE AND VIBRATION

Construction of the underground mine will begin with excavation of the box cut and declines, which will require some limited blasting. Blasting will emit noise and vibration levels that have the potential to extend beyond the Project mine site footprint. Air drills will be used to develop blast holes, which will emit noise levels that may also extend beyond the Project site itself. It is anticipated that the boxcut construction will require an estimated 3 engineered blasts to be set approximately 12 m below the ground surface. The development of the boxcut will occur during the first year of construction, with drilling and blasting work on surface expected to occur over a period of approximately 45 days. There will be no requirement for further blasting on or near the surface following boxcut completion. Limited and smaller blasts will be required underground as decline construction proceeds.

Any potential effects of noise and vibration from blasting can and will be mitigated. Blasting is a regulated activity, and Atlas will develop and implement its blasting program in collaboration with municipal stakeholders and government regulators. The blasting program will include the following measures to address potential effects to the atmospheric environment:

- Engineered blast designs for surface and underground blasting will minimize vibrations by utilizing a number of blasting techniques, where appropriate including: blasting mats, minimizing charge weight per delay, optimizing drill hole diameter, depth, spacing and burden, stemming, pre-charge decoupling within boreholes, timing, pre-splitting, perimeter blasting, explosive and detonator selection. Noise and vibration pre-screening to identify receptors and to document existing structural conditions and ambient noise levels;
    - No blasting will occur within 300 m of any sensitive receptor.
    - No blasting will occur near a waterbody (the nearest waterbody to the boxcut area being Man o'War Brook located 300 m to the west).
- Establishment of and adherence to acceptable blast noise and vibration levels
- Development and implementation of a blast monitoring plan
- All blasting will be performed in accordance with the NL *Occupational Health and Safety Act* and Regulations and DFO Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters (Wright and Hopky, 1998).

#### 5.2.2.2 Operations and Maintenance

##### Air Emissions (Including GHGs)

The planning of the proposed Project has incorporated a number of important engineering design features which will serve to eliminate or minimize the effects of certain atmospheric emissions during operations, including:

- Electric vehicles will be used during underground operations, thereby minimizing atmospheric contaminants and GHG emissions associated with fossil fuel driven vehicle exhaust.
- Surface operations include only two diesel fired pieces of heavy equipment, which will minimize noise levels and minimize GHG and fugitive exhaust contaminant emissions.

- The planned use of continuous miners to excavate ore underground instead of the use of excavate and blast methods of mining will eliminate any blasting needed for salt production.
- The construction and use of enclosed or covered conveyors to transport ore from the mine site to the marine terminal creates an effective physical barrier to reduce fugitive noise and dust emissions.
- All salt production including crushing and sizing will be completed underground, thereby eliminating atmospheric noise and vibration effects.
- The Project's electrical power requirements (Chapter 2) will be supplied by Newfoundland Power from the provincial electrical grid, thereby minimizing operational GHG emissions.
- There is no surface industrial processing requiring water or tailings management and associated fugitive air emissions.

Project mine site operations will include the use of light vehicles which will generate air emissions from engines and their exhausts, noise, vibrations, light and other possible disturbances. Typical contaminants associated the incomplete combustion of fuels emitted in vehicle exhaust include particulates, carbon monoxide, nitrous dioxide and sulphur dioxide. As described earlier, an equipment maintenance program will be implemented to ensure vehicles and equipment are maintained in good repair and inspected regularly, and any associated air emissions from equipment and vehicles will conform to applicable regulations and guidelines.

Total emissions during Project operations are estimated at 2,373 $CO_2$e annually, including 79 tonnes $CO_2$e per year of Scope 1 emissions and 2,293 tonnes $CO_2$e per year of Scope 2 emissions. The NL *Management of Greenhouse Gas Act* and *Regulations* have two thresholds that apply to large industrial facilities: one for any regulated facility that emits 15,000 to 25,000 tonnes of GHG emissions in any year; and a second for any regulated facility that emits 25,000 tonnes of GHG emissions in any year. Based on the analysis and estimates completed by Atlas and its consultants, the Project will not reach either threshold during operations and would not be subject to this Act and its regulations.

<u>DUST</u>

The Project's operations and maintenance phase will include various components and activities that have inherent dust generation potential. The processing of the salt involves crushing and screening only and there are no point source dust emissions. Fugitive dust for the Project is primarily uncontrolled particulate salt of various size fractions that are suspended in the air from all non-point source discharges. Project activities which may generate fugitive dust include:

- drilling and blasting;
- salt excavation using continuous miner;
- screening and crushing;
- storage areas (including stockpiles);
- handling operations using mechanical loaders;

- transfer of salt along and between conveyors such as drops, chutes, hoppers or bins.

A comprehensive approach to dust management is therefore essential to maintain environmental compliance, operational efficiency and worker safety. This includes measures related to each of the Project components and activities that have the potential to result in dust generation.

A key aspect of dust prevention and control from the Project's mining and processing components relates to the fact that all such equipment and activities will be located underground. To further mitigate dust in the crushing process, a comprehensive approach that includes source control, containment, suppression, and collection strategies will be implemented. This will include implementing a dust management system that includes dust collectors strategically located near primary, secondary and tertiary crushing areas and at screening stations, as well as the planned use of water spray systems for dust suppression on the continuous miner equipment, and ensuring proper ventilation and air filtration systems in the plant (Section 2.7.7). Regular maintenance of dust control equipment and monitoring of dust levels will further ensure compliance with environmental regulations and protect worker health.

As noted, the Project will utilize an enclosed or covered conveyor system, which is the most technically advanced and safest method of ore transport that minimizes noise and fugitive dust emissions. A number of measures are planned in order to help minimize dust emissions from the Project's conveyer system, including adjustable skirt edge sealing systems, dust collection flanges, high-quality conveyor components, and enclosed systems, These measures are being integrated into the design and operational practices of the conveyor, focusing on containment, suppression, and collection (Section 2.5.3).

Further characterization of potential fugitive air emissions levels along the conveyor system (including each of its associated transfer points) can be conducted once its detailed design has been advanced to that stage, including as part of subsequent permitting and approvals processes for these components of the Project. Atlas has also committed to conduct air quality (dust) and noise monitoring during Project construction and operations to evaluate the nature, amount and distribution of any such emissions from the mine and conveyer, as well as their potential to interact with nearby residents. The objective will be to address any environmental issues that may emerge either proactively in Project design, or through an adaptive management approach throughout the various phases of the Project.

LIGHT

Project operations will primarily occur underground, with limited surface activities including those associated with onsite management and administration, personnel and equipment transport, transportation of the salt product by conveyer, and Project related activities at the existing marine terminal. Lighting will be installed and used around the site for work area illumination as required, given the planned 24 hour per day schedule of the mining operations once these have commenced.

Lights have the potential to affect some bird species by attracting them (Section 5.5) and may also cause a nuisance effect at nearby residential areas if not managed properly (Section 5.8). Improperly angled lights can cause unnecessary light emissions to the sky, also called light pollution, while at the same time creating poor conditions of visibility because of glare.

Light pollution is produced by glare, light trespass, and up lighting caused by excessive over-lighting and by lights that are misplaced, misdirected or not properly shielded. The following guidelines will be followed to reduce the potential effects of nighttime lighting during Project operations:

- Minimizing the use and intensity of artificial lighting during Project activities wherever possible based on safety considerations;
- Use of downward-directed fixtures and the installation of on / off switches that activate light only when needed;
- Use of optional glare shields offered by manufacturers to improve visibility and reduce wasted up light;
- Use of advanced lighting technologies that take advantage of light-emitting-diode technology and provide better directionality, reduced energy consumption, and reduced up light; and
- Ensuring that lighting is high enough to provide adequate illumination over the required work areas

As discussed previously, the nearest residential property is approximately several hundred meters from the mine site, and is separated from the site by a wooded area that will provide screening from night time lighting. This, in combination with the measures that will be implemented to limit up light, will ensure that any potential disturbances are negligible (see Section 5.8).

NOISE AND VIBRATION

During Project operations, all excavation and production of salt will be conducted underground. As a result, there will be minimal heavy equipment on the surface during operations that would result in ground vibrations. With the planned use of continuous miners, blasting is not required for salt production which further reduces any potential for noise and vibration effects from mine operations. The enclosed or covered conveyor system is not anticipated to emit vibrations that would affect nearby receptors.

Ore transport from the mine site to the marine terminal will operate 24 hours per day, and has the potential to generate noise emissions that cause a nuisance for nearby residents. As noted, the Project will utilize an enclosed or covered conveyor system, which is the most technically advanced and safest method of ore transport that minimizes noise and fugitive dust emissions. An enclosed system will be used where the conveyor routes through a residential area of the Town of St. George’s. With enclosure on all sides dust is contained within the conveyor system. The engineering design of the enclosure will include sound proofing materials to minimize noise.

The conveyor itself is routed primarily along an existing road that was previously used for conveying ore to the marine port. The conveyor design includes a tunnel section and two bridges to facilitate traffic flow through the Town of St. George's.

Conveyors are mechanical systems that can generate noise levels in the order of 100 dBa (A-weighted decibels) if operated in an open system (Ontario Ministry of Labour, Immigration, Training and Skills Development, 2021). Enclosing or covering conveyors are the most important mitigation approach to isolate machinery from outside receptors by forming a physical barrier. A noise modelling report prepared for Newgold as part of its EIS for the Blackwater Gold Project in British Columbia concluded that enclosing equipment has a high effectiveness mitigation rating for reducing noise associated with material transport using conveyors (NewGold 2015). Engineering design of the conveyor system will include consideration of provincial standards for noise emissions. Other operational mitigations to be used to reduce noise and dust emissions from the enclosed or covered conveyor systems include:

- Engineering design of transfer stations, motors and rollers to minimize noise and vibration and to include capture systems for dust.
- Both transfer stations (often sources of fugitive noise) are not located near residential receptors
- Regular maintenance for bearings, rollers and motors to performance standards.
- Monitoring program to ensure noise and dust levels are within design standards in compliance with appropriate regulatory requirements.

#### 5.2.2.3 Closure and Decommissioning

Closure rehabilitation will involve restoring and/or reclaiming the Project Area as close as reasonably possible to its pre-mining condition (Chapter 2). This may include demolition and removal of site infrastructure, re-vegetation, and any other activities required to achieve the requirements and goals detailed in the Project's eventual Rehabilitation and Closure Plan. Atmospheric emissions during closure activities would be primarily from heavy equipment use including haul trucks, excavators and loaders. There would be no drilling and blasting associated with closure and decommissioning. There will therefore be minor atmospheric emissions and interactions associated with these on-site activities during this phase of the Project.

#### 5.2.2.4 Potential Accidental Events

During the various phases and activities that will be associated with this (or any) Project, an accidental or unplanned event is an unlikely but unfortunately possible outcome. Some of the potential accidental events or malfunctions that may be associated with this Project and which are relevant for the environmental effects assessment for the Atmospheric Environment VEC include a fire at the site, potentially extending into adjacent areas, and an accidental spill of fuels or other deleterious substance into the environment. Either of these events could potentially occur during the Project, the potential environmental effects of which would clearly depend upon the nature, magnitude, location and duration of the event.

A major fire at the Project site could pose a health and safety concern, as well as resulting in a temporary reduction of air quality in the surrounding area. Given the relatively small footprint of the site and the small volumes of volatile chemicals that will be stored on site, potential emissions of GHGs and other air pollutants from a fire or spill of volatile chemicals to the atmospheric environment are anticipated to be relatively low. In addition, the Project Area is bounded on one side by the ocean and is topographically situated such that a fire – and its associated atmospheric emissions - would be unlikely to extend into adjacent areas and communities.

Should an accident or malfunction resulting in a spill or fire occur at the site, Atlas' emergency response plan will be implemented.

### 5.2.3 Residual Environmental Effects Summary

A summary of the predicted (residual) environmental effects of the Project on the Atmospheric Environment is provided in Table 5.38 below.

*Table 5.38: Atmospheric Environment: Residual Environmental Effects Assessment Summary*

| Potential Effect | Environmental Effect Descriptors | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Nature** | **Magnitude** | **Extent** | **Duration** | **Frequency** | **Reversibility** | **Certainty** |
| **Construction** | | | | | | | |
| Change in air quality | A | L-M | L | 4 | R | R | H |
| Change in GHG emissions | A | L-M | L | 4 | R | R | H |
| Change in noise levels | A | L-M | L | 4 | R | R | M |
| Change in light levels | A | L-M | L | 4 | R | R | M |
| Change in vibration levels | A | L-M | L | 4 | S | R | M |
| **Operations and Maintenance** | | | | | | | |
| Change in air quality | A | L | L | 5 | R | R | H |
| Change in GHG emissions | A | L | L | 5 | R | R | H |
| Change in noise levels | A | L | L | 5 | R | R | M |
| Change in light levels | A | L | S-L | 5 | R | R | H |
| Change in vibration levels | A | N-L | L | 5 | S | R | M |
| **Closure and Decommissioning** | | | | | | | |
| Change in air quality | A | L | L | 3 | S | R | H |
| Change in GHG emissions | A | L | L | 3 | S | R | H |
| Change in noise levels | A | L | L | 3 | S | R | H |

| **Potential Effect** | **Environmental Effect Descriptors** | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Nature** | **Magnitude** | **Extent** | **Duration** | **Frequency** | **Reversibility** | **Certainty** |
| Change in light levels | N | L | L | 3 | S | R | H |
| Change in vibration levels | N | N-L | L | 3 | S | R | H |
| **Potential Accidental Events** | | | | | | | |
| Change in air quality | A | L-M | L | 2 | O | R | M |
| Change in GHG emissions | A | L-M | L | 2 | O | R | M |
| Change in noise levels | N | - | - | - | - | - | H |
| Change in light levels | N | - | - | - | - | - | H |
| Change in vibration levels | N | - | - | - | - | - | H |

| **Overall, Resulting Effect(s) of Project on the VEC** | **Evaluation of Significance** |
|---|---|
| • Although planned Project components and activities may result in some small, localized and short-term emissions and disturbances, these will be negligible and within applicable regulations and standards. | • The proposed Project is not likely to result in significant adverse environmental effects on the Atmospheric Environment. |

| **Nature / Direction**: | **Magnitude**: | **Geographic Extent**: | **Duration**: | **Frequency**: |
|---|---|---|---|---|
| A = Adverse | N = Negligible | S = Site | 1 = < 1 month | O = Once |
| N = Neutral or No Effect | L = Low | L = Local | 2 = 1-12 months | S = Sporadic |
| P = Positive | M = Medium | R = Regional | 3 = 13-36 months | R = Regular |
| | H = High | | 4 = 37-72 months | C = Continuous |
| | | | 5 = > 72 months | |
| **Reversibility**: | **Certainty in Prediction:** | | | |
| R = Reversible | L Low | | | |
| I = Irreversible | M Moderate | | | |
| | H High | | | |

### 5.2.4 Cumulative Environmental Effects

Any Project-related air, noise or vibration emissions are, for the most part, expected to be limited to the Project Area itself, and will decrease quickly with distance from the source. The Project will be located in a rural area with a low level of current (and planned) industrial activity, and its emissions are therefore not likely to interact or overlap with any others in the region. There are no other known planned or imminent development projects in the Study Area whose potential effects may accumulate or otherwise interact with those of the Project.

The Project is therefore not likely to result in significant, adverse cumulative environmental effects in combination with other projects or activities that have been or will be carried out.

## 5.3 WATER RESOURCES (SURFACE AND GROUND WATER)

The Water Resources VEC includes consideration of groundwater and surface water resources, both of which are integral and inter-related components of the hydrologic cycle, and which have important connections to, and influences on, key aspects of the biophysical and socioeconomic environments.

An overview of existing environmental conditions for this VEC was provided in Chapter 3, including existing and available information on surface and groundwater resources in and around the Project area. This information has been used to identify and evaluate the key potential interactions of the Project with this VEC, and any resulting environmental effects and required mitigation measures.

### 5.3.1 POTENTIAL ENVIRONMENTAL ISSUES AND INTERACTIONS

The primary potential environmental interactions between the proposed Project and water resources include possible:

- Changes in surface water quality due to site clearing and preparation activities, on-site water and waste management, and the installation and use of other Project-related infrastructure and equipment;
- Changes in surface water quantities resulting from the alternation of water flows due to Project site development and associated water management;
- Changes in groundwater quality due to Project site development and other related construction and operational activities, including blasting, mine dewatering and leaching from stockpiles;
- Changes in groundwater quantities resulting from Project-related development and operational activities, and associated site water management;
- Associated effects on the availability and/or quality of public and private potable water supplies (surface and ground water); and
- Changes in water quality due to accidental spills of fuel or other deleterious materials during their planned use, transportation, storage.

An overview of the potential interactions between each of the main Project components and activities and the various key indicators and parameters that have been identified for this VEC is presented in Table 5.39.

*Table 5.39: Water Resources: Potential Project-VEC Interactions*

| Project Component / Activity | Key Indicators and Parameters | | | |
|---|---|---|---|---|
| | Surface Water Quality | Surface Water Quantity | Ground Water Quality | Ground Water Quantity |
| **Construction** | | | | |
| • Site preparation | • | • | | |
| • Installation of surface mine site infrastructure | • | • | | |
| • Construction of the underground facilities | | | • | • |

| Project Component / Activity | Key Indicators and Parameters | | | |
|---|---|---|---|---|
| | **Surface Water Quality** | **Surface Water Quantity** | **Ground Water Quality** | **Ground Water Quantity** |
| • Construction of the overland conveyor | • | | | |
| • Upgrades and modifications at the existing port facility | • | | | |
| • Construction of ancillary components (water and sewer, power supply, access roads) | • | • | • | • |
| • Project related expenditures | | | | |
| • Employment (including accommodations and transportation) | | | | |
| **Operations and Maintenance** | | | | |
| • Underground mining | | | • | • |
| • Underground processing | | | • | • |
| • Operation of surface components | • | | | |
| • Port operations | • | | | |
| • Water management | • | • | • | • |
| • Project related expenditures | | | | |
| • Employment (including accommodations and transportation) | | | | |
| • Progressive rehabilitation | | | | |
| **Closure and Decommissioning** | | | | |
| • Site decommissioning | • | • | • | • |
| • Closure rehabilitation | • | • | • | • |
| **Potential Accidental Events** | | | | |
| • Spills of deleterious substances | • | • | • | • |
| • Fires | • | • | | |

### 5.3.2 Environmental Effects Assessment

As illustrated above, potential interactions between the Project and water resources may result from both planned components and activities (site development, mining and associated activities) and unplanned events (accidental spills).

#### 5.3.2.1 Construction

**Surface Water (Quality and Quantity)**

The Project's potential effects on water quality resulting from site clearing and other associated construction activities are expected to be limited to suspended solids increases in site runoff. This will be mitigated by implementing erosion and sediment control measures, including minimizing and covering exposed soils, sediment control fences, site ditching complete with check-dams, as well as perimeter berms to control non-contact water entering construction areas, and sediment settling pond(s).

Potential effects on water quantity resulting from the construction of site infrastructure are expected to be limited to the diversion of flows between watersheds. The majority of the Project's surface components (stockpiles and potential temporary accommodations facilities, access road, mine site (containing industrial and administrative facilities), section of the conveyor and associated road to the existing gypsum haul road) is located along the divide between the Dribble Brook watershed, Man O' War Brook watershed and any Mine Site drainage (which does not contain any well-defined watercourses). Due to the relatively small size of the Project footprint (especially as mining and processing is located underground) these required inter-watershed transfers of water will be minor. The remaining Project infrastructure (conveyor system along existing gypsum haul road and port infrastructure) is located within or along existing facilities, and water-related effects are expected to be minor and easily managed.

The potential water quality and water quantity effects of the various phases of the Project will be further defined and analyzed using a hydrologic model of the Project and will be presented in a Water Management Plan to be submitted to the Province for review and approval. This model and plan will include groundwater flows associated with dewatering the underground works, as discussed below. Based on the boundaries and location of the Project, the anticipated water quality and quantity effects in the three affected watersheds are as follows:

1) Dribble Brook watershed:
    a. water quality effects are expected to be zero as no contact water from the Project is discharged into this watershed, and
    b. water quantity effects are expected to be negligible due to the very small area of the Project footprint from which water will be diverted to the Man O' War Brook Watershed, as compared to the total area of the Dribble Brook watershed.
2) Mine Site drainage:
    a. water quality effects are expected to be zero as no contact water from the Project is discharged into this watershed, and
    b. water quantity effects are expected, but the resulting effect on aquatic habitat is expected to be minor as this watershed only contains ephemeral watercourses.
3) Man O' War Brook watershed:
    a. water quality effects are expected to be minor as all water discharged to this watershed will flow through a settling pond with potential water treatment (if needed), and
    b. water quantity effects are expected to be positive overall as the flows from the Project will be attenuated by the settling pond (thus reducing peak flows) and will augment the flows in Man O' War Brook.

Site water control infrastructure (ditches, berms, culverts and the settling pond) will be constructed during the first phases of construction to ensure water quality and quantity control (and protection of downstream aquatic habitat) is provided as early as possible.

Topographic data for the Project area does not indicate that any streams, rivers, lakes or ponds will be crossed by site access roads or the conveyor. Detailed imagery indicates there is a large wetland complex that overlaps the main access road. Local drainage across the site main access road, conveyor and utility easement will be accommodated during detailed engineering and design and permitting, and in consultation with the Water Resources Management Division. Atlas recognizes the various permits required under Section 48 of the Water Resources Act for work within 15 m of a wetland or waterbody, water discharge and dam design (Appendix A) and will consult with the Water Resources Management Division during the detailed engineering phase of the Project and prior to construction.

Water for use during construction will be provided from the St. George's municipal supply or a (temporary) groundwater well, and no associated water quality or quantity effects are therefore expected.

Fuel and chemical use during construction will adhere to industry standard operating procedures and safety protocols.

Planned construction activities at the port facility will occur on land only, and no in water work is therefore being proposed which might have adverse effects upon marine water quality.

**Groundwater Quality and Quantity**

Construction activities that could potentially affect groundwater quality and quantity are expected to primarily be associated with the construction of the mine box cut and declines, which have the potential to lead to changes to water levels and flow and water quality as a result of dewatering. In addition, other activities including grubbing and clearing of existing vegetation and soils, blasting for decline construction, and earthworks for the construction of site buildings and other infrastructure also have the potential to affect groundwater conditions in and around the Project area.

***Groundwater Quantity***

Construction of the Mine Box-Cut and Declines

Access to the underground mine will be achieved through a box cut and two parallel declines driven through the near surface "red beds" to the plant level located at the top of the salt deposit at an elevation of -190 m above sea level (or nominally 240 m below surface). The box cut will be excavated to collar the two declines and will be backfilled as soon as the decline portals are established. The declines will be developed using drill and blast methods. The declines from surface will be approximately 1,400 m in length to the 240 Level and designed at a gradient of -16%. 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.

Water levels have been determined to be shallow (within 4 m of ground surface) in the box cut/decline area (Section 3.1.4) and dewatering will be required from start of construction through to operations to manage groundwater inflows from the overburden soil and red beds. The salt deposit itself is assumed to be of very low permeability with no anticipated groundwater inflow and dewatering requirements. The dewatering system designed for each red bed 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. Ditches will be maintained along one side of the decline roadway that 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. Groundwater inflows collected in the sumps along with water used by mining equipment will be 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.

SLR (2023) developed an initial, steady-state numerical groundwater flow model to simulate baseline Project groundwater levels and flow. While this model was recognized as being based on limited hydrogeological data for its development and calibration, it was used to provide preliminary estimates of groundwater inflow into the fully built-out box cut/decline under operating conditions and to estimate the area of influence (AOI) of Project dewatering on the surrounding groundwater environment. The lack of suitable calibration data prevented transient simulation of inflows and groundwater drawdown (change in water level relative to baseline conditions) during the closure and post-closure stages, as well as during early mine years when groundwater released from storage could result in inflows larger than the predicted steady-state estimates.

Predicted long-term inflows to the box cut/decline were simulated to be approximately 500 $m^3$/day with sensitivity analysis indicating a potential range from 250 to 2,300 $m^3$/day. The predicted maximum extent of drawdown indicates a lowering of the groundwater table by up to 1 m extending approximately 3 km to the northeast and southwest of the boxcut/decline area, 2 km to the southeast, and approximately 1.3 km to the northwest increasing to a maximum drawdown of approximately 120 m in the Project area, located above the intersection of the decline with the salt.

The AOI overlaps the western limits of the St. George's wellfield PPWSA as well as developed areas to the northwest of the Project where private potable wells may be present. The results of modelling indicate that should dewatering occur over an infinite amount of time, the resulting drawdown cone could affect water levels and the yield capacity of these public and private potable water wells. Further, there is also potential for reduction of groundwater baseflow to various surface water resources within the predicted AOI that may lead (at least seasonally) to the lowering of water levels or even to the drying up of these surface water features.

It should be reiterated that the current steady-state groundwater modelling results for the Project are infinite predictions and are considered to provide estimates of drawdown that are more conservative than those which may be observed over the mining timeframe.

To gain a better understanding of whether dewatering will cause effects to water resources within the mining timeframe, transient groundwater modelling will be undertaken during the detailed engineering phase of this Project. This modelling will provide predicted transient estimates of groundwater inflows and drawdown as the cone expands to the steady-state solution. These modeling results will be compared to the mine development schedule to further evaluate potential Project dewatering-related effects to nearby potable water supplies including the St. George's wellfield and surface water resources in the area.

To support the transient modelling , additional hydrogeological investigation programs are planned, and will include in-situ hydraulic conductivity testing of overburden and bedrock lithologies, pump testing, groundwater level measurement and long-term monitoring, and water quality sampling. This effort is part of a future Front-End Engineering Design (FEED) process to support detailed engineering for construction. It will encompass a site-wide collection of in-field data from boreholes, cone penetration test holes, test pits, and pumping tests. This comprehensive site-wide effort, coupled with hydrogeological work for the decline—such as drillhole packer testing and the strategic installation of piezometers in planned geotechnical drillholes—will significantly enhance the understanding of the site's subsurface conditions.

These in-field data collection and investigation efforts will help refine groundwater flow models and ensure the effectiveness of dewatering systems. Moreover, integrating this data into a transient 3D numerical groundwater model will help determine peak inflow values for the early years of mining, model any potential saltwater intrusion, and provide the capability for continuous or long-term monitoring of groundwater levels. This approach incorporates the recommendations resulting from the feasibility studies (Appendices B and H) to increase confidence in the existing groundwater modelling results.

Prior to commencing box cut/decline dewatering activities, a baseline survey of all water wells in the vicinity of the Project will also be conducted and an analysis of potential implications for the wells will be carried out in the context of the findings of the transient modelling. This baseline survey will assess both the quantity and quality of water in these wells.

Based on findings of the transient modelling and the well survey, appropriate mitigation measures to address any dewatering-related effects on water resources will be incorporated into the on-going design of the Project and applicable Project environmental management plans and monitoring programs. In particular a groundwater and surface water monitoring program will be developed to analysis the consequences of dewatering on water wells and surface water resources in the area over the life of the Project.

The above noted additional water baseline, modelling and monitoring studies will be designed and implemented in consultation with the NL Water Resources Management Division and other applicable regulatory authorities, and the resulting study findings will be submitted for government review once available.

Other Construction Activities

Potential changes to groundwater quantity may also be caused by compaction of surfaces, thereby reducing precipitation infiltration and groundwater recharge. Various planned earth works including construction of roads and buildings, and development of the pre-production salt and waste rock stockpiles may lead to the compaction of subsurface soils in these areas. This may reduce the area within the Project footprint that is available for groundwater recharge, and contribute to a temporary lowering of the groundwater table relative to baseline conditions. Conversely, clearing, and grubbing activities for site development may increase groundwater recharge, thereby potentially causing a small increase in local groundwater levels. Dewatering of excavations below the water table to keep them dry for construction of various site infrastructure will also temporarily lower the groundwater table in these areas (for example, along the underground tunnel section of the overland conveyor system). These construction-related activities are expected to have limited localized effects on groundwater.

Blasting activities will be carried out as part of construction of the declines (and possibly for construction of the underground section of the conveyor system) and have the potential to increase fracture frequency in the bedrock near the blast holes, thereby potentially increasing its permeability leading to enhanced groundwater inflows and dewatering requirements.

A pre-blast survey and the well survey noted above will be used to further evaluate the potential for blasting-related effects on potable wells in the area. Based on this evaluation, appropriate mitigation measures to address any blasting-related effects will be incorporated into the on-going design of the Project and applicable Project environmental management plans and monitoring programs.

**Groundwater Quality**

Construction of the Mine Box-Cut and Declines

The limited baseline groundwater quality data that are available indicate freshwater conditions in the shallow groundwater system in the Project area. However, a trend of increasing groundwater salinity concentrations with depth attributed to formational brines has been identified within similar bedrock units outside the Project area, and it is possible that saline conditions may also be encountered in groundwater inflows originating from deeper sections of the declines.

Additional baseline characterization of shallow and deep groundwater quality will be carried out as part of future hydrogeological investigation programs for the Project, to further understand overall water quality and in particular to determine the salt content of dewatering groundwater inflows. Based on the findings of these investigations, mitigation measures to address any higher than acceptable concentrations of salt in dewatering inflows will be incorporated into the on-going design of the Project.

The results of SLR's (2023) steady-state groundwater modelling suggest that given the shape and extent of the drawdown cone, marine-derived saltwater may be induced to flow towards the Project area during dewatering, and could affect intervening potable wells located in coastal areas northwest of the Project, as well as affecting dewatering inflow water quality.

As noted above, the estimates of drawdown and extent of the AOI in the steady-state model are more conservative than what may be observed over the mining timeframe, and the potential for and the extent of landward migration of the saltwater/freshwater interface (wedge) towards the Project is not known at this time. To gain a better understanding of whether or not Project dewatering could cause saltwater intrusion-related water quality effects to coastal wells and Project dewatering inflows within the mining timeframe, transient groundwater modelling will be undertaken that considers the potential for saltwater intrusion and density-dependent groundwater flow.

If the potential for saltwater intrusion and associated effects to potable groundwater resources and Project dewatering inflows are identified, appropriate measures will be incorporated into the on-going design of the Project and applicable Project environmental management plans and monitoring programs.

Other Construction Activities

Potential changes to groundwater quantity may also be caused by the stockpiled salt, overburden and rock materials due to interactions with water (precipitation). Precipitation falling on these stockpiles may leach potential constituents of concern that may infiltrate into the subsurface and affect groundwater quality. Further blasting activities may increase concentrations of nitrogen in groundwater which may adversely affect groundwater quality.

These construction-related activities are expected to have limited localized effects to groundwater and will be monitored as part the Project's groundwater and surface water monitoring programs.

#### 5.3.2.2 Operations and Maintenance

**Surface Water Quality and Quantity**

Potential effects on surface water quality and quantity resulting from the operation and maintenance of the Project will be similar to those described above for the construction of the Project. However, as water control infrastructure (ditches, berms, culverts, settling pond) will be well-established during Project operations, and because all salt processing will be conducted underground, the magnitude of any water quality and quantity effects during operations are expected to be less than during the construction phase of the Project.

The Project's is not expected to have any effect on surface water supplies, as the designated surface water supply watershed for St. George's is located on Dribble Brook upstream of the Project, and no other registered surface water supplies are present within either the Man o'War Brook watershed or near the proposed Mine site.

Potable and process water to the Project during operation and maintenance will be provided from the St. George's municipal water supply, while sanitary sewage will be treated by the St. George's municipal wastewater treatment facility. No effects on water quality and quantity resulting from the supply of potable and process water and the treatment and discharge of sanitary sewage are therefore expected.

Fuel and chemical use during operation and maintenance will adhere to industry standard operating procedures and safety protocols.

Planned operational activities at Turf Point will be in keeping with those that have occurred at the terminal for years, including standard loading and transit of marine vessels at this well established facility. No adverse effects on marine water quality are anticipated.

**Groundwater Quality and Quantity**

The predicted effects of Project construction on groundwater quality and quantity discussed above will generally continue through the operations stage of the Project, with the exception of there being no blasting activities during mining operations for salt production.

Dewatering of the box cut/declines will continue through operations to facilitate extraction of the underlying salt deposit. The potential groundwater quantity and quality effects associated with dewatering during construction are presented above, and these may continue through operations depending on the transient expansion of the drawdown cone in relation to the mining timeframe. Furthermore, potential saltwater intrusion and related groundwater quality effects may also occur depending on the final dewatering AOI. Transient groundwater modelling planned for the Project will further evaluate the potential for these dewatering effects to occur during mine development, and if potential effects are predicted during operational dewatering the appropriate measures will be incorporated into the design of the Project and applicable Project environmental management plans and monitoring programs.

Salt will be mined using continuous miners and truck haulage in a room and pillar mining operation. As noted above the salt deposit is currently understood to be dry and no dewatering activities are anticipated to be associated with mine development. The extracted salt will be processed to produce de-icing salt in a processing plant that will be located underground within the mine at thee 240 Level. Conventional dry crushing and screening methods will be used for processing with no chemical processing requirements.

A small amount of water will be used for make-up of an anti-caking agent, yellow prussiate of soda (YPS), that will be applied to the salt intended for the local market as it enters the onsite salt storage building. This water will be supplied from the potable water system. YPS is a commonly used anti-caking agent applied to salt, and its use and on-site storage is not anticipated to affect groundwater quality.

#### 5.3.2.3 Closure and Decommissioning

**Surface Water Quality and Quantity**

The eventual closure and decommissioning of the Project will include removal of water control infrastructure not required post-closure, and the restoration of the site drainage dynamics to predevelopment conditions. Any surface water quality effects resulting from these activities are expected to be limited to suspended solids increases in site runoff. This potential effect will be mitigated by implementing erosion and sediment control measures, and sequencing the removal of water control infrastructure from upstream to downstream. The overall effect of these activities is expected to be positive as the site drainage and water balance of the general Project area will be restored to predevelopment conditions.

No residual surface water quality or quantity impacts are expected post-closure following the revegetation of the Project footprint and the re-establishment of the predevelopment water balance.

**Groundwater Quality and Quantity**

In terms of the amount of water that will be released daily from the settling pond to the receiving environment the flows are very low. Man O'War Brook has existing flows of 0.071 m3/s as measured at the culvert located where the brook crosses Flintkote road (SW-001) and 0.268 m3/s further downstream where the brook crosses Main Road before reaching the ocean (SW-002) (see Section 3.1.6). The quantity of water that will leave the settling basin has been calculated to be on average 0.0168 m3/s (see section 2.7.5 and Appendix B) which represents approximately 23% of the flow of Man O'War Brook at SW-001, and 6.2% of its flow further downstream at SW-002. In addition, the water leaving the settling basin will be directed to the wetland that leads to Man O'War Brook thereby providing opportunity for any natural groundwater discharge. The quantity of water to be released is not expected to significantly change the water flows of Man O'War Brook. As such, no negative environmental effects are predicted to either fish or fish habitat as a result of Project operational activities.

It is possible that post-mining flooding will lead to some degree of salt dissolution of mine void walls and pillars, the potential for and degree of which is currently unknown. The potential for stability issues related to this salt dissolution in flood water will be addressed as part of mine design and closure planning.

Closure plans for other areas of the Project will involve the removal of infrastructure (buildings, conveyor system, transmission lines and roads), backfilling of the conveyor underground tunnel section, and capping of the waste rock pile with stockpiled topsoil completed with a vegetated cover. No further effects on groundwater levels or water quality are anticipated related to these closure activities.

#### 5.3.2.4 Potential Accidental Events

Potential accidental events that could conceivably occur and affect water resources in or around the Project include a spill of fuel or other deleterious substances.

Atlas' planned measures and approaches for helping prevent accidental spills during planned (routine) Project activities, such as fuel and chemical handling and use at the site, will be as described previously. The potential effects of any such accidental event on surface water quality will be further mitigated by water control infrastructure (berms, ditches, culverts, settling pond), and by collecting and attenuating all site runoff and providing an opportunity to contain and treat flow from the Project site before discharge to the environment.

As noted in Section 3.0, a supply of spill response equipment and materials will be maintained at the Project site in an accessible location, including absorbents and containers for collection of any contaminated ground or other debris. In the unlikely event that fuels or oils are spilled at site, they will be recovered, stored in metal containers, and transported to an approved site for disposal by a certified contractor. Personnel working on the Project will be appropriately trained and knowledgeable about these spill response procedures, and any such incidents will be reported to environmental authorities as applicable. Any contaminated soil, absorbents or other materials will also be recovered and stored as outlined above, and will be removed from the area by the contractor, who will transport these materials to an approved facility in Newfoundland and Labrador or elsewhere for proper disposal.

As described in Section 2.13, a number of environmental protection and response plans will be developed by Atlas in relation to the Project, including contingency plans related to various potential accidental and emergency events, each of which will be implemented and adhered to throughout the life of the Project. All on-site Project personnel, including Atlas employees, contractors and others, will be required to understand and adhere to the provisions of these documents.

Generally, in the unlikely event of a spill, the response strategy will be as follows:

- Immediately take steps to control the spill at, or as close to, the source as possible, with safety of personnel being the number one priority;
- Contain the spill on land and intercept / recover spilled material to prevent it from flowing unabated to the aquatic or marine environment;
- Recover as much spilled material as possible; and
- Remediate any contaminated areas.

### 5.3.3 Residual Environmental Effects Summary

A summary of the predicted (residual) environmental effects of the Project on the Water Resources VEC is provided in Table 5.40 below.

*Table 5.40: Water Resources: Residual Environmental Effects Assessment Summary*

| Potential Effect | Environmental Effect Descriptors | | | | | | |
|---|---|---|---|---|---|---|---|
| | Nature | Magnitude | Extent | Duration | Frequency | Reversibility | Certainty |
| **Construction** | | | | | | | |
| Change in surface water quality | A | N | S-L | 1 | S | R | H |
| Change in surface water quantity / | N | N | L | 2 | C | R | H |

| Potential Effect | Environmental Effect Descriptors | | | | | | |
|---|---|---|---|---|---|---|---|
| | Nature | Magnitude | Extent | Duration | Frequency | Reversibility | Certainty |
| drainage patterns Dribble Brook | | | | | | | |
| Change in surface water quantity / drainage patterns Man O' War Brook | P | M | L | 2 | C | R | H |
| Change in surface water quantity / drainage patterns Unnamed Watershed | N | N-L | L | 2 | C | R | H |
| Change in groundwater quality | A | L | L | 3 | C | R | L-M |
| Change in groundwater levels (quantity) | A | M | L-R | 3 | C | R | L-M |
| **Operations and Maintenance** | | | | | | | |
| Change in surface water quality | A | N | S-L | 5 | S | R | M |
| Change in surface water quantity / drainage patterns Dribble Brook | N | N | L | 5 | C | R | H |
| Change in surface water quantity / drainage patterns Man O' War Brook | P | M | L | 5 | C | R | H |
| Change in surface water quantity / drainage patterns Unnamed Watershed | N | N-L | L | 5 | C | R | H |
| Change in groundwater quality | A | L | L | 3-4 | C | R | L-M |
| Change in groundwater levels (quantity) | A | M | L-R | 3-4 | C | R | L-M |
| **Closure and Decommissioning** | | | | | | | |
| Change in surface water quality | A | N | S-L | 2 | S | R | H |
| Change in surface water quantity / drainage patterns Dribble Brook | N | N | L | 3 | C | R | H |
| Change in surface water quantity / | N | L | L | 3 | C | R | H |

| **Potential Effect** | **Environmental Effect Descriptors** | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Nature** | **Magnitude** | **Extent** | **Duration** | **Frequency** | **Reversibility** | **Certainty** |
| drainage patterns Man O' War Brook | | | | | | | |
| Change in surface water quantity / drainage patterns Unnamed Watershed | N | N-L | L | 3 | C | R | H |
| Change in groundwater quality | N | L | L | 5 | C | R | L-M |
| Change in groundwater levels (quantity) | N | N-L | L-R | 5 | C | R | L-M |
| **Potential Accidental Events** | | | | | | | |
| Change in surface water quality | A | N | S-L | 1 | S | R | M |
| Change in surface water quantity / drainage patterns | N | - | - | - | - | - | H |
| Change in groundwater quality | A | N | S | 1 | S | R | H |
| Change in groundwater levels (quantity) | N | - | - | - | - | - | H |

**Overall, Resulting Effect(s) of Project on the VEC**

- Planned Project components and activities will have some potential to interact with and affect surface and groundwater resources in the area through surface (ground) disturbance and associated implications for water volumes and flows.
- Further study, modelling and monitoring work is planned which will be factored into on-going project planning and design.
- Potential accidental events (such as spills) will be prevented due to Project equipment and procedures, with appropriate response plans and procedures in place.

**Evaluation of Significance**

- The proposed Project is not likely to result in significant adverse environmental effects on Water Resources.

**Nature / Direction**:
A = Adverse
N = Neutral or No Effect
P = Positive

**Magnitude**:
N = Negligible
L = Low
M = Medium
H = High

**Geographic Extent**:
S = Site
L = Local
R = Regional

**Duration**:
1 = < 1 month
2 = 1-12 months
3 = 13-36 months
4 = 37-72 months
5 = > 72 months

**Frequency**:
O = Once
S = Sporadic
R = Regular
C = Continuous

**Reversibility**:
R = Reversible
I = Irreversible

**Certainty in Prediction**:
L Low
M Moderate
H High

### 5.3.4 Cumulative Environmental Effects

Current (baseline) environmental conditions for water resources in the region (Section 3.1.4 and 3.1.5) reflect the effects and influences of other natural conditions and processes and past and on-going human developments and activities the area and elsewhere, in both the on-land and marine environments. Although there are examples of past and current human developments and activities within and around the Project Area and surrounding locations, including some municipal, commercial and recreational land and resources use activities throughout the area, the region is not one that has been subject to large scale industrial development to date. As such the quality of the local surface and ground water resources is generally good. Moreover, as described above, the proposed Project is not expected to significantly and negatively affect water resources in the area, and its planned components or activities will not occur in or interact with the marine environment. There are no other known planned or imminent development projects in the Study Area whose potential effects may accumulate or otherwise interact with those of the Project.

The Project is therefore not likely to result in significant, adverse cumulative environmental effects on ground or surface waters in combination with other projects or activities that have been or will be carried out.

## 5.4 Fish and Fish Habitat

Fish and fish habitat are important considerations in any EA of proposed projects and activities that occur within or near, and which may affect, the aquatic (freshwater and/or marine) environments, given the ecological and socioeconomic importance of these environmental components. This VEC includes relevant fish species (all life stages) found in the EA Study Areas and their habitats.

An overview of the existing environment for this VEC in the Study Area was provided in Chapter 3, including information (where available) on the likely presence, abundance and distribution of fish and their habitats. This information has been used to identify and evaluate the key potential interactions of the Project with this VEC and any resulting environmental effects and required mitigation measures.

### 5.4.1 Potential Environmental Issues and Interactions

The key potential environmental interactions between the Project and fish and fish habitat include:

- Possible effects on fish (presence, abundance, health) and habitat availability or quality due to site clearing and preparation, other construction or operational activities (eg, blasting, waste management), and the installation and use of Project infrastructure and equipment;
- Potential changes in surface water patterns due to Project infrastructure and activities (including dewatering), resulting in alterations to watercourse bank stability, increased erosion, as well as changes in flow, water temperature and sediment load; and

- Possible accidental spills of fuel or other materials during their planned transportation, storage and/or use , and associated interactions with the aquatic environment.
- An overview of the potential interactions between each of the main Project components and activities and the various key indicators and parameters that have been identified for this VEC is presented in Table 5.41.

*Table 5.41: Fish and Fish Habitat: Potential Project-VEC Interactions*

| Project Component / Activity | Key Indicators and Parameters | | | |
|---|---|---|---|---|
| | **Fish Presence and Abundance** | **Fish Health** | **Fish Habitat (Availability and Quality)** | **Activities and Requirements (Feeding, Migration, Reproduction)** |
| **Construction** | | | | |
| • Site preparation | • | • | • | • |
| • Installation of surface mine site infrastructure | • | • | • | • |
| • Construction of the underground facilities | | | | |
| • Construction of the overland conveyor | • | • | • | • |
| • Upgrades and modifications at the existing port facility | • | • | • | • |
| • Construction of ancillary components (water and sewer, power supply, access roads) | • | • | • | • |
| • Project related expenditures | | | | |
| • Employment (including accommodations and transportation) | | | | |
| **Operations and Maintenance** | | | | |
| • Underground mining | | | | |
| • Underground processing | | | | |
| • Operation of surface components | • | • | • | • |
| • Port operations | • | • | • | • |
| • Water management | • | • | • | • |
| • Project related expenditures | | | | |
| • Employment (including accommodations and transportation) | | | | |
| • Progressive rehabilitation | | | | |
| **Closure and Decommissioning** | | | | |
| • Site decommissioning | • | • | • | • |
| • Closure rehabilitation | • | • | • | • |
| **Potential Accidental Events** | | | | |
| • Spills of deleterious substances | • | • | • | • |

| Project Component / Activity | Key Indicators and Parameters | | | |
|---|---|---|---|---|
| | **Fish Presence and Abundance** | **Fish Health** | **Fish Habitat (Availability and Quality)** | **Activities and Requirements (Feeding, Migration, Reproduction)** |
| • Fires | • | • | | |

### 5.4.2 Environmental Effects Assessment

As illustrated above, potential interactions between the Project and fish and fish habitat may result from both planned components and activities (including site development, mining and associated activities) and unplanned events (such as accidental spills).

#### 5.4.2.1 Construction

Standard mitigation measures will be implemented throughout the construction phase of the Project to avoid or minimize potential adverse effects to freshwater fish and fish habitat. Wherever possible, a minimum 30 m naturally vegetated buffer will be maintained around freshwater aquatic habitats (ie waterbodies, watercourses and wetlands), and erosion protection procedures (as described in an EPP for construction) will be followed to prevent sedimentation of freshwater habitats in and surrounding the Project area. Downstream fish and fish habitat will be protected through site water control infrastructure (ditches, berms, culverts and the settling pond) which will be developed during the first phases of construction. This will ensure the protection of downstream aquatic habitat as early as possible.

It is anticipated that the boxcut construction will require an estimated 3 engineered blasts to be set approximately 12 m below the ground surface. The development of the boxcut will occur during the first year of construction, with drilling and blasting work on surface expected to occur over a period of approximately 45 days. There will be no requirement for further blasting on or near the surface following boxcut completion. Limited and smaller blasts will be required underground as decline construction proceeds.

The blasting program will include the following measures to address potential effects to fish and fish habitat:

- Engineered blast designs for surface and underground blasting will minimize vibrations by utilizing a number of blasting techniques, where appropriate including: blasting mats, minimizing charge weight per delay, optimizing drill hole diameter, depth, spacing and burden, stemming, pre-charge decoupling within boreholes, timing, pre-splitting, perimeter blasting, explosive and detonator selection. Noise and vibration pre-screening to identify receptors and to document existing structural conditions and ambient noise levels;

    - No blasting will occur within 300 m of any sensitive receptor.
    - No blasting will occur near a waterbody (the nearest waterbody to the boxcut area being Man o'War Brook located 300 m to the west).
- Establishment of and adherence to acceptable blast noise and vibration levels
- Development and implementation of a blast monitoring plan
- All blasting will be performed in accordance with the NL *Occupational Health and Safety Act* and Regulations, and DFO Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters (Wright and Hopky, 1998).

A water quality monitoring program will be implemented prior to the start of, and for the duration of the construction phase, to evaluate the quality of water within and leaving the site, to help prevent any adverse effects to fish and fish habitat downstream of the Project site.

All on-site equipment will be maintained in good working order. Fuel and chemical use during construction will adhere to industry standard operating procedures and safety protocols.

Planned construction activities at the port facility will occur on land only, and no in water work is therefore being proposed which might have adverse effects upon marine fish and fish habitat.

**Man o' War Brook**

There is potential for minor interaction with Man o' War Brook during the construction phase of the Project. Specifically, the stripping of overburden and other site clearing and construction activities could lead to an increase in suspended solids in Man o' War Brook from site runoff. This potential effect will be mitigated by implementing erosion and sediment control measures, including minimizing and covering exposed soils, sediment control fences, site ditching complete with check-dams, as well as perimeter berms to control non-contact water entering construction areas, and sediment settling pond(s). No direct habitat interference with Man o' War Brook is expected during the construction phase of the Project.

**Seasonal Drainage Features**

The two ephemeral drainage features discussed in Section 3.1 are expected to be removed during the construction phase. As discussed, these features were identified to contain no fish bearing habitat and thus, fish populations and fish habitat are not expected to be adversely affected by their planned removal.

**Barachois Pond**

There is potential for minor interaction with Barachois Pond during the construction phase of the Project. As outlined in Section 2.5, a proposed covered conveyer is to be constructed along the causeway of Barachois Pond, and it is possible that there will be some minor disturbances of the current causeway structure during these activities. These disturbances have the potential to increase siltation to Barachois Pond. There is, however, no planned expansion or instream work associated with construction activity at the causeway. Best practices for managing construction will occur including adherence to DFO's best management practices for the Protection of Freshwater Fish Habitat in Newfoundland and Labrador (DFO 2022).

**Dribble Brook**

As discussed in above in Section 5.3, water quality effects are not expected as no contact water from the Project is discharged into this watershed, and water quantity effects are expected to be negligible due to the very small area of the Project footprint to be diverted to the Man O' War Brook Watershed compared to the total area of the Dribble Brook watershed. Water quantity and quality to Dribble Brook has the potential to be affected by construction activities due to upstream wetlands being altered. Thus, affecting water quality and quantity has the potential to affect fish and fish habitat. Dribble Brook is approximately 1.6 km from the mine site and 1.2 km from the proposed construction camp location. Best practices for managing construction will occur including adherence to DFO's best management practices for the Protection of Freshwater Fish Habitat in Newfoundland and Labrador (DFO 2022).

**Wetlands**

Some wetlands are expected to be affected by construction of the Project. The south and southeastern areas of the Project site have been identified as wetland (Figure 3.40). Construction in these areas will require the removal of organics and infilling with aggregate. The main access road that overlaps this wetland area is over 350 meters from the intermittent stream that flow seasonally into Dribble Brook. The accommodations facility area, if required, is over 200 meters from these same intermittent streams. Environmental protection measures will be used to prevent siltation to any standing waterbody or tributary. There is no fish habitat within the Project Area and the proposed construction in the wetlands is sufficient distance away from Dribble Brook that there is no anticipated interaction.

#### 5.4.2.2 Operations and Maintenance

During operations as part of the Water Management Plan water will be released from the settling pond into a ditch leading towards Man o'War Brook. Section 2.7.5 describes the sources and nature of the water that will be pumped and diverted to the settling basin. There will be no tailings management required for this project or any effluent produced from processing salt. The quality of the water leaving the settling basin will be tested regularly to ensure compliance with Schedule A of the NL Environmental Control and Sewage Regulations.

In terms of the amount of water that will be released daily from the settling pond to the receiving environment the flows are very low. Man o'War Brook has existing flows of 0.071 m3/s as measured at the culvert located where the brook crosses Flintkote road (SW-001) and 0.268 m3/s further downstream where the brook crosses Main Road before reaching the ocean (SW-002) (see Section 3.1.6). The quantity of water that will leave the settling basin has been calculated to be on average

0.0168 m3/s (see section 2.7.5 and Appendix B) which represents approximately 23% of the flow of Man o'War Brook at SW-001, and 6.2% of its flow further downstream at SW-002. In addition, the water leaving the settling basin will be directed to the wetland that leads to Man o'War Brook thereby providing opportunity for any natural groundwater discharge. The quantity of water to be released is not expected to significantly change the water flows of Man o'War Brook. As such, no negative environmental effects are predicted to either fish or fish habitat as a result of Project operational activities.

Planned operational activities at Turf Point will be in keeping with those that have occurred at the terminal for years, including standard loading and transit of marine vessels at this well-established facility. No adverse effects on marine fish and fish habitat are therefore anticipated.

#### 5.4.2.3 Closure and Decommissioning

Progressive reclamation activities will occur over the life of the Project. Closure and rehabilitation activities associated with the Project will take place after operations have ceased and will endeavour to rehabilitate the site to as close to its pre-mining condition as practicable. This may include complete demolition and removal of site infrastructure, re-vegetation of disturbed areas, removal of contaminated materials if applicable, water management and reshaping the landscape with the Project area.

Once closure and rehabilitation activities have been completed, post-closure monitoring will be undertaken to confirm that these activities have been successful and that any mine discharges meet compliance standards. This may include, for example, the monitoring of slopes for long-term stability, re-vegetation success, and environmental monitoring. Any post closure monitoring activities will be carried out in accordance with the Project's eventual l Reclamation and Closure Plan, that will be developed and submitted to provincial regulatory authorities for approval.

No additional, residual adverse effects to fish and fish habitat are expected post-closure following the planned rehabilitation of the Project footprint and the re-establishment of the predevelopment water balance.

#### 5.4.2.4 Potential Accidental Events

Potential accidental events that could conceivably occur and affect the aquatic environment in or around the Project site include a spill of fuel or other deleterious substances. Atlas' planned measures and approaches for helping prevent accidental spills during planned Project activities, such as fuel and chemical handling and use at the site, will be as described previously. As noted in Section 2.14 a supply of spill response equipment and materials will be maintained at the site in an accessible location, including absorbents and containers for collection of any contaminated ground or other debris. In the unlikely event that fuels or oils are spilled at site, they will be recovered, stored in metal containers, and transported to an approved site for disposal by a certified contractor. Personnel working on the Project will be appropriately trained and knowledgeable about these spill response procedures, and any such incidents will be reported to environmental authorities as applicable. Any contaminated soil, absorbents or other materials will also be recovered and stored as outlined above, and will be removed from the area by the contractor, who will transport these materials to an approved facility in Newfoundland or elsewhere for proper disposal.

As indicated in Section 2.14 a number of environmental protection and response plans will be developed by Atlas in relation to the Project, including contingency plans related to a spill event or fire, and other accidental and emergency events, each of which will be implemented and adhered to throughout the life of the Project. All on-site Project personnel, including Atlas employees, contractors and others, will be required to understand and adhere to the provisions of these documents.

### 5.4.3 Residual Environmental Effects Summary

A summary of the predicted (residual) environmental effects of the Project on Freshwater Fish and Fish Habitat is provided in Table 5.42 below.

*Table 5.42: Fish and Fish Habitat: Residual Environmental Effects Assessment Summary*

| **Potential Effect** | **Environmental Effect Descriptors** | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Nature** | **Magnitude** | **Extent** | **Duration** | **Frequency** | **Reversibility** | **Certainty** |
| **Construction** | | | | | | | |
| Change in fish presence / abundance | N-A | N | L | 2 | O | R | M |
| Change in fish health | N-A | N | L | 2 | O | R | M |
| Change in fish habitat (availability / quality) | N-A | N | L | 2 | O | R | M |
| Change in fish activities and requirements | N-A | N | L | 2 | O | R | M |
| **Operations and Maintenance** | | | | | | | |
| Change in fish presence / abundance | N-A | N | L | 5 | R | R | M |
| Change in fish health | N-A | N | L | 5 | R | R | M |
| Change in fish habitat (availability / quality) | N-A | N | L | 5 | R | R | M |
| Change in fish activities and requirements | N-A | N | L | 5 | R | R | M |
| **Closure and Decommissioning** | | | | | | | |

| Potential Effect | Environmental Effect Descriptors | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Nature** | **Magnitude** | **Extent** | **Duration** | **Frequency** | **Reversibility** | **Certainty** |
| Change in fish presence / abundance | N | - | - | - | - | - | H |
| Change in fish health | N | - | - | - | - | - | H |
| Change in fish habitat (availability / quality) | N | - | - | - | - | - | H |
| Change in fish activities and requirements | N | - | - | - | - | - | H |
| **Potential Accidental Events** | | | | | | | |
| Change in fish presence / abundance | A | L | L | 5 | S | R | M |
| Change in fish health | A | L | L | 5 | S | R | M |
| Change in fish habitat (availability / quality) | A | L | L | 5 | S | R | M |
| Change in fish activities and requirements | A | L | L | 5 | S | R | M |

| Overall, Resulting Effect(s) of Project on the VEC | Evaluation of Significance |
|---|---|
| • Planned Project components and activities have minimal potential to interact with and affect waterbodies and watercourses in the area.<br>• The implementation of erosion and sediment control measures and other planned mitigations will further help avoid or reduce any potential adverse effects.<br>• Potential accidental events (such as spills) will be prevented due to Project equipment and procedures, with appropriate response plans and procedures in place. | • The proposed Project is not likely to result in significant adverse environmental effects on Fish and Fish Habitat. |

**Nature / Direction**:
A = Adverse
N = Neutral or No Effect
P = Positive

**Magnitude**:
N = Negligible
L = Low
M = Medium
H = High

**Geographic Extent**:
S = Site
L = Local
R = Regional

**Duration**:
1 = < 1 month
2 = 1-12 months
3 = 13-36 months
4 = 37-72 months
5 = > 72 months

**Frequency**:
O = Once
S = Sporadic
R = Regular
C = Continuous

**Reversibility**:
R = Reversible
I = Irreversible

**Certainty in Prediction:**
L Low
M Moderate

| Potential Effect | Environmental Effect Descriptors | | | | | | |
|---|---|---|---|---|---|---|---|
| | Nature | Magnitude | Extent | Duration | Frequency | Reversibility | Certainty |
| | H High | | | | | | |

### 5.4.4 Cumulative Environmental Effects

Current (baseline) environmental conditions for freshwater fish and fish habitat in the region (Section 3.1.6) reflect the effects and influences of other natural conditions and processes and past and on-going human developments and activities the area and elsewhere, in both the freshwater and marine environments. Although there are examples of past and current human activities within and around the Project Area and surrounding locations, including various other municipal, commercial and recreational land and resources use activities, the Study Area itself is not one that has been subject to large scale industrial development to date. Moreover, as described above, the proposed Project is not expected to significantly affect freshwater fish and fish habitat in the area. The water quality of discharges or runoff from the Project will be managed via a site-wide water management plan. Sampling and monitoring will provide information on discharges and their compliance with federal and provincial requirements. There are no other known planned or imminent development projects in the Study Area whose potential effects may accumulate or otherwise interact with those of the Project.

The Project is not likely to result in significant, adverse cumulative environmental effects on fish and fish habitat in combination with other projects or activities that have been or will be carried out.

## 5.5 Wildlife and Their Habitats

The proposed mine site is located on lands that are within a municipal area and adjacent to existing industrial activities and as such can be characterized as partially disturbed and proximal to a number of existing and on-going industrial and commercial activities (Section 3.1.7). Certain wildlife species can be found in or near the Project site at various times of the year, often moving in and out of the area at different times according to their life histories, habitat requirements and seasonal activities.

Project interactions with wildlife are predicted to be limited and localized to individuals rather than at a population level. The Project is not expected to interact with known caribou populations associated with the Lapoile Herd located further east of the region.

### 5.5.1 Potential Environmental Issues and Interactions

The key potential environmental interactions between the Project and wildlife and their habitats include:

- Possible effects on wildlife (presence, abundance, health) and the availability or quality of their habitats due to site clearing and preparation, and other construction or operational activities and associated disturbances (eg, lights and noise, blasting, waste management, traffic, human presence); and
- Possible accidental events, such as spills of fuel or other materials or fires.

An overview of the potential interactions between each of the main Project components and activities and the various key indicators and parameters that have been identified for this VEC is presented in Table 5.43.

*Table 5.43: Wildlife and Their Habitats: Potential Project-VEC Interactions*

| Project Component / Activity | Key Indicators and Parameters | | | |
|---|---|---|---|---|
| | **Wildlife Presence and Abundance** | **Wildlife Health** | **Wildlife Habitat (Availability and Quality)** | **Activities and Requirements (Feeding, Migration, Reproduction)** |
| **Construction** | | | | |
| • Site preparation | • | • | • | • |
| • Installation of surface mine site infrastructure | • | • | • | • |
| • Construction of the underground facilities | | | | |
| • Construction of the overland conveyor | • | • | • | • |
| • Upgrades and modifications at the existing port facility | • | • | • | • |
| • Construction of ancillary components (water and sewer, power supply, access roads) | • | • | • | • |
| • Project related expenditures | | | | |
| • Employment (including accommodations and transportation) | | | | |
| **Operations and Maintenance** | | | | |
| • Underground mining | | | | |
| • Underground processing | | | | |
| • Operation of surface components | • | • | • | • |
| • Port operations | • | • | • | • |
| • Water management | | | | |
| • Project related expenditures | | | | |

| Project Component / Activity | Key Indicators and Parameters | | | |
|---|---|---|---|---|
| | **Wildlife Presence and Abundance** | **Wildlife Health** | **Wildlife Habitat (Availability and Quality)** | **Activities and Requirements (Feeding, Migration, Reproduction)** |
| • Employment (including accommodations and transportation) | | | | |
| • Progressive rehabilitation | • | | • | |
| **Closure and Decommissioning** | | | | |
| • Site decommissioning | • | • | • | • |
| • Closure rehabilitation | • | • | • | • |
| **Potential Accidental Events** | | | | |
| • Spills of deleterious substances | • | • | • | • |
| • Fires | • | • | • | • |

### 5.5.2 Environmental Effects Assessment

As illustrated above, potential interactions between the Project and wildlife may result from both planned components and activities (site development, mining and associated activities) and unplanned events (such as accidental spills or fires).

#### 5.5.2.1 Construction

During the construction phase of the Project, wildlife may be affected due to site clearing and the associated removal or alternation of terrestrial and aquatic habitats. The planned construction of the Project mine site and access roads, transmission and water and sewer lines, and the various surficial components of the mine site and potential camp will result in the disturbance of approximately 70 ha of previously undisturbed land area. This existing habitat within the Project footprint is comprised of a mix of forested, thicket and wetland habitats (Section 3.1.3.4), which is known to be (or may be) utilized by a variety of wildlife including bats, passerine birds, waterfowl, furbearers and small mammals and other species. The removal of this habitat will result in the long-term displacement of any wildlife utilizing the area, including its potential use for breeding, migration, foraging or other life history activities. Vegetation clearing and other ground disturbance activities will be confined to only those areas where it is necessary to do so, limits of clearing will be marked in advance, and only designated areas will be cleared. The surrounding landscape contains similar vegetation types to those found within the Project footprint, and so alternate habitat is available in the adjacent area. This, and the relatively small size of the Project's proposed development footprint, means that any potential effects – while long term in nature – will be localized and are not likely to have overall effects on the size or health of wildlife populations in the region.

The potential effects of vegetation clearing and grubbing are often of most concern when these activities take place during time periods when wildlife may be denning / breeding/ nesting, as they may result in direct mortality of eggs, unfledged nestlings, and young mammals. The killing of birds or the destruction of their nests, eggs, or young is in contravention of the *Migratory Bird Convention Act*. Standard mitigations to avoid or minimize adverse effects to wildlife as a result of clearing activities during construction. If, for example, clearing is required during the known bird breeding season in this area, Atlas will implement the following mitigations, which will be outlined in an EPP for construction:

- Monitoring for bird nests will be conducted in advance of any planned site clearing during the breeding season (May 1 - August 15), and efforts will be made to avoid trees with nests during that time. Non-intrusive surveys for nests will be conducted in accordance with Section 2.2.3.1, “Specific Considerations Related to Determining the Presence of Nests” of the document *Incidental Take of Migratory Birds in Canada* (Canadian Wildlife Service, EC 2014).
- Should a nest of a migratory bird be found, the following steps will be taken (in accordance with guidelines outlined in the MBCA):
    - All activities in the nesting area will be halted until nesting is completed and the young have left the vicinity of the nest;
    - Any nest found will be protected with a buffer zone appropriate for the species and the surrounding habitat until the young have left their nest; and
    - Nests will not be marked using flagging tape or other similar material as these increase the risk of nest predation.

Raptors, although not protected under the MBCA, are protected under Newfoundland and Labrador’s *Wildlife Act*. In accordance with provincial guidelines, should a nest of a raptor be found, Atlas will endeavor to follow the following guidance:

- A buffer zone of 800 m is to be maintained while the nest is active;
- After the young have left their nest, a buffer zone of 200 m should be maintained; and
- If work within the appropriate buffer zone cannot be avoided, the NL Wildlife Division should be contacted for advice on how to limit disturbance of the nest.

One of these species, the Boreal felt lichen is a species at risk. Boreal felt lichen is an epiphytic lichen that grows primarily on balsam fir trees. In Newfoundland and Labrador, the known population is concentrated in two areas: 1) the central Avalon Peninsula and 2) Bay D’Espoir. Its distribution appears to be limited by climatic factors as it is found in cool, moist, and often foggy nature forests. It is frequently found near the edges of wetlands (NL Wildlife Division, undated). The boreal population of this species, whose range includes Newfoundland and Labrador, is currently designated as being of ‘special concern” under the SARA, and as “vulnerable” under the NL ESA.  Typical Boreal Felt Lichen habitat is absent within the Project area as noted in the AC CDC report.

The following mitigative measures will be implemented to further reduce the potential for interactions between Project construction activities and any wildlife that may be present in the area:

- Work areas will be kept clear of garbage and all waste materials will be stored and disposed of properly and regularly;
- Project personnel will not hunt or harass wildlife, and pets will not be permitted on the Project site;
- Equipment and vehicles will yield the right-of-way to wildlife; and
- Any nuisance animals will be dealt with in consultation with the provincial Wildlife Division.

A particular concern regarding development activities in coastal locations is the potential attraction of night-flying birds, including their lights or other emissions, which can result in possible injury or mortality due to strikes, strandings, disorientation, and energy expenditure. The distance at which Project-related lighting will be visible (and thus, its likely zone of influence) can vary considerably based on site and time specific factors. Such disturbances appear to occur most frequently during periods of drizzle and fog, where moisture droplets in the air during conditions of drizzle and fog refract the light and increase the illuminated area, enhancing the attraction of lighting for certain birds (Wiese et al 2001).

As described in the C-NLOPB's Western NL SEA Update (Amec 2014), seabirds are generally least abundant in the region in the fall of the year. The greatest concentration of pelagic seabirds in the region occurs in the winter months and through the summer breeding season, and in summer the greatest abundance of seabirds is concentrated around coastal nesting colonies. Shorebirds are most abundant during migration, particularly from July to September when Western Newfoundland supports a significant proportion of the province's migrating shorebirds as Arctic-nesting species migrate through the area to their wintering areas, with many species utilizing coastal habitats. Waterfowl breeding in coastal and estuarine environments, particularly the colonial Common Eider, are most vulnerable in the summer months. In the fall staging period and in the winter, species such as eiders, scoters and mergansers can be found in large numbers in coastal waters (Amec 2014). Landbird species move also through coastal and offshore habitats in large numbers between late July and October during their fall migration.

To prevent or reduce the potential for any associated adverse effects on avifauna, the use of artificial lighting will be avoided or minimized wherever possible with consideration of safety and associated regulatory requirements. Overall, however, the presence of construction equipment at this site will be a small, highly localized and short term source of lighting in the region, the zone of influence of which would be limited to within a radius of a few hundred meters of the source. Routine checks of the Project equipment and site will be undertaken, however, and protocols for the collection and release of any birds that become stranded will be implemented, in accordance with applicable governmental guidance, requirements and permits.

Indirect effects to surrounding habitats may also occur during construction, including possible changes to surface hydrology or sedimentation which could adversely alter adjacent aquatic habitats. Erosion protection and encroachment prevention procedures as described in the EPP will be followed to prevent indirect effects to wetlands and terrestrial habitats in and around the Project area.

As discussed in Section 5.2, Project related air emissions from equipment use and other sources will be negligible and quickly dispersed, and so will not result in health related effects to any wildlife. Increase in fugitive dust and pollutants can cause impacts to wildlife health and result in a reduction of the quality of habitat. At this time, substantially high levels of emissions are not expected, and mitigations for fugitive dust control will be implemented and detailed in the EPP including regular road watering.

Waste materials generated as a result of Project construction activities will be removed from the site and disposed of at an approved facility. Non-hazardous refuse will be stored in covered metal receptacles, and will be transported to and disposed of on a regular basis at an existing landfill site. Waste materials will be reused / recycled where possible. Any hazardous wastes will be stored in sealed, labelled containers and disposed of according to applicable regulations and Atlas practices. These include procedures for the characterization / identification, storage, inspection, labelling and transportation of hazardous wastes produced at the site, as well as emergency preparedness / prevention and training. There will therefore be no adverse interaction between waste materials and the environment. As described earlier, the use, storage, handing and transportation of fuel and other chemicals will be undertaken by trained personnel using approved facilities and equipment, and in accordance with applicable regulations, guidelines and environmental protection procedures.

Planned construction activities at the port facility will occur on land only, and no in water work is therefore being proposed which might have adverse effects upon marine wildlife and their habitats.

#### 5.5.2.2 Operations and Maintenance

Once the initial site preparation is completed, and while mining operations and other associated activities are being undertaken, there will be little or no additional vegetation or soil disturbance at the Project site. In the unlikely event that any additional site clearing is required during the operations phase, the various mitigations outlined above will continue to be implemented. No additional effects to these aspects of the terrestrial or aquatic environments, and to the wildlife species that use them, are therefore anticipated.

During Project operations, the planned use of underground mining and processing techniques (with no required blasting, use of chemicals or tailings generation) and the development and operation of a covered conveyer system will significantly reduce the potential for disturbances to wildlife resulting from planned Project components and activities. While there will be on-going human presence, vehicular traffic and equipment use, and associated light and noise, the nature and scale of the Project's on surface activities, coupled with the continued implementation of the mitigation measures described above, will minimize the potential for disturbances to wildlife. Indeed, it is anticipated that any affected wildlife will have either moved out of the area during the construction phase, or will habituate to Project activities and disturbances.

Planned operational activities at Turf Point will be in keeping with those that have occurred at the terminal for years, including standard loading and transit of marine vessels at this well-established facility. No adverse effects on marine wildlife or their habitats are therefore anticipated.

#### 5.5.2.3 Closure and Decommissioning

Progressive reclamation activities will occur over the life of the Project. Closure and rehabilitation activities associated with the Project will take place after operations have ceased and will endeavour to rehabilitate the site to as close to its pre-mining condition as practicable. This may include complete demolition and removal of site infrastructure, re-vegetation of disturbed areas, removal of contaminated materials if applicable, water management and reshaping the landscape with the Project area.

Once closure and rehabilitation activities have been completed, post-closure monitoring will be undertaken to confirm that these activities have been successful and that any mine discharges meet compliance standards. This may include, for example, the monitoring of slopes for long-term stability, re-vegetation success, and environmental monitoring. Any post closure monitoring activities will be carried out in accordance with the Project's eventual l Reclamation and Closure Plan, that will be developed and submitted to provincial regulatory authorities for approval.

No additional, residual adverse effects to wildlife and their habitats are expected post-closure following the planned rehabilitation of the Project footprint.

#### 5.5.2.4 Potential Accidental Events

Potential accidental events resulting from planned Project activities that could affect wildlife and their habitats include a spill of fuel or other materials or a fire. The resulting environmental effects of such an incident would clearly depend upon the nature, magnitude, location and timing of the accidental event.

A localized fuel or chemical spill could have implications for exposed habitats and any birds or mammals that utilize it, although the likely effect on overall habitat availability and function and on the health of any wildlife populations in the area would likely be negligible. Atlas' planned measures (equipment and procedures) to help prevent any such spills and to respond to one in the unlikely event of its occurrence were described previously, and are equally applicable to preventing or reducing potential effects on this VEC. These measures will be applied throughout the various phases of this Project, and further reinforced through the various provincial and/ federal government permits, other authorizations and regulations and compliance standards that will be relevant to the Project.

A large scale fire originating from the Project could alter terrestrial or aquatic habitat availability, quality and composition across some area and extent, as well as directly affecting wildlife through direct injury or mortality, although most wildlife would have the ability to avoid or move out of areas affected which would reduce the potential for effects. Project-specific environmental and emergency response plans will be prepared and implemented for the various phases of the Project, which will include identifying and establishing measures to respond to any potential accidental events or emergency situations, such as a fire or the accidental release of fuel or other materials.

### 5.5.3 Residual Environmental Effects Summary

A summary of the predicted (residual) environmental effects of the Project on wildlife and their habitats is provided in Table 5.44 below.

*Table 5.44: Wildlife and Their Habitats: Residual Environmental Effects Assessment Summary*

| Potential Effect | Environmental Effect Descriptors | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Nature** | **Magnitude** | **Extent** | **Duration** | **Frequency** | **Reversibility** | **Certainty** |
| **Construction** | | | | | | | |
| Change in wildlife presence / abundance | A | L-M | L | 5 | O | R | M |
| Change in wildlife health | N-A | N | L | 5 | S | R | M |
| Change in wildlife habitat (availability / quality) | A | L-M | S | 5 | O | R | M |
| Change in wildlife activities and requirements | N-A | L | L | 5 | S | R | M |
| **Operations and Maintenance** | | | | | | | |
| Change in wildlife presence / abundance | A | L | L | 5 | C | R | M |
| Change in wildlife health | N-A | N | L | 5 | C | R | M |
| Change in wildlife habitat (availability / quality) | A | L | S | 5 | C | R | M |
| Change in wildlife activities and requirements | N | N | L | 5 | C | R | M |
| **Closure and Decommissioning** | | | | | | | |
| Change in wildlife presence / abundance | N | N | L | 5 | O | R | M |
| Change in wildlife health | N | N | L | 5 | O | R | M |
| Change in wildlife habitat (availability / quality) | N | N | S | 5 | O | R | M |
| Change in wildlife activities and requirements | N | N | L | 5 | O | R | M |

| Potential Effect | Environmental Effect Descriptors | | | | | | |
|---|---|---|---|---|---|---|---|
| | Nature | Magnitude | Extent | Duration | Frequency | Reversibility | Certainty |
| **Potential Accidental Events** | | | | | | | |
| Change in wildlife presence / abundance | A | M | L | 5 | S | R | M |
| Change in wildlife health | A | L | S | 5 | S | R | M |
| Change in wildlife habitat (availability / quality) | A | M | L | 5 | S | R | M |
| Change in wildlife activities and requirements | A | M | L | 5 | S | R | M |
| **Overall, Resulting Effect(s) of Project on the VEC**<br>• Planned Project components and activities have potential to interact with and affect wildlife and their habitats through site clear (habitat removal / alteration) and associated disturbances such as noise, lighting, etc The implementation of planned mitigations will help avoid or reduce any potential adverse effects.<br>• Potential accidental events (such as spills or fires) will be prevented due to Project equipment and procedures, with appropriate response plans and procedures in place. | | | **Evaluation of Significance**<br>• The proposed Project is not likely to result in significant adverse environmental effects on Wildlife and Their Habitats. | | | | |
| **Nature / Direction**:<br>A = Adverse<br>N = Neutral or No Effect<br>P = Positive | **Magnitude**:<br>N = Negligible<br>L = Low<br>M = Medium<br>H = High | | **Geographic Extent**:<br>S = Site<br>L = Local<br>R = Regional | **Duration**:<br>1 = < 1 month<br>2 = 1-12 months<br>3 = 13-36 months<br>4 = 37-72 months<br>5 = > 72 months | **Frequency**:<br>O = Once<br>S = Sporadic<br>R = Regular<br>C = Continuous | | |
| **Reversibility**:<br>R = Reversible<br>I = Irreversible | | | **Certainty in Prediction:**<br>L=Low<br>M=Moderate<br>H=High | | | | |

### 5.5.4 Cumulative Environmental Effects

The current (baseline) environmental conditions for wildlife and their habitats in the region (Section 3.1.7) reflect the effects and influences of other natural conditions and processes and past and on-going human developments and activities the area and elsewhere, in both the terrestrial and aquatic environments. Although there are examples of past and current human activities within and around the Project Area and surrounding locations, including various other municipal, commercial and recreational / traditional land and resources use activities, the Study Area itself is not one that has been subject to large scale industrial development to date. Moreover, as described above, the proposed Project is not expected to significantly affect wildlife and their habitats in the area. There are no other known planned or imminent development projects in the Study Area whose potential effects may accumulate or otherwise interact with those of the Project.

The Project is not likely to result in significant, adverse cumulative environmental effects on wildlife and their habitats in combination with other projects or activities that have been or will be carried out.

## 5.6 Species at Risk

A number of species that are known to be found, or which may occur within the Project Area or larger surrounding Study Area have been designated as being at risk and are therefore protected under provincial and/or federal legislation.

### 5.6.1 Legislative and Management Context

The Canadian *Species at Risk Act* (SARA) provides for the protection of species at the national level to prevent extinction and extirpation, facilitate the recovery of endangered and threatened species, and to promote the management of other species to prevent them from becoming at risk in the future. Designations under the Act follow the recommendations and advice provided by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC).

There are currently a number of schedules associated with the SARA. Species that have formal protection are listed on Schedule 1, which includes the following potential designations:

- *Extirpated*: A species that no longer exists in the wild in Canada, but exists elsewhere;
- *Endangered*: A species that is facing imminent extirpation or extinction;
- *Threatened*: A species that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction; and
- *Special Concern*: A species that may become threatened or endangered because of a combination of biological characteristics and identified threats.

Schedule 1 of SARA is the official federal list of species at risk in Canada. Once a species is listed, measures to protect and recover a listed species are established and implemented, including the development of a Recovery Strategy. Action Plans summarize the activities required to meet recovery strategy objectives and goals, and Management Plans set goals and objectives for maintaining sustainable population levels of one or more species that are particularly sensitive to environmental factors.

At the provincial level, the Newfoundland and Labrador *Endangered Species Act* (NL ESA) provides protection for indigenous species, sub-species and populations considered to be endangered, threatened, or vulnerable within the province. These potential designations under the legislation are defined as follows:

- *Endangered*: A species that is facing imminent extirpation or extinction;
- *Threatened*: A species that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction; and
- *Vulnerable*: A species that has characteristics which make it particularly sensitive to human activities or natural events.

Designations are based on recommendations from COSEWIC and/or the provincial Species Status Advisory Committee (SSAC). Habitat that is important to the recovery and survival of endangered or threatened species can also be designated as critical habitat or recovery habitat, and protected under the NL ESA.

### 5.6.2 Consideration of Species at Risk within this EA

Species at risk have been identified, and their known or likely presence, abundance and geographic and temporal distribution are evaluated, as part of the description of the existing biophysical environment (Chapter 3). The potential effects of the Project on these species are assessed and evaluated within each of the previous biophysical VECs themselves, along with species that are considered stable and any that have been identified as being of special conservation concern (but which do not currently have legal protections).

Species at risk, and any potential effects of the Project on them, are however given special (and individual) attention and emphasis in the assessment, including in the identification and analysis of potential environmental effects and mitigation.

Therefore, while the overall content and findings of the preceding effects assessments for each of the other biophysical VECs are applicable to the individual species at risk within them - and, for the purposes of efficiency, this information and analysis is not repeated in its entirely here – the following sections provide an overview and “species-specific” analysis and summary of the potential effects of the Project on each such species.

A total of 10 species at risk with confirmed (five) and probable/possible (five) presence within the Study Area are included in the discussion below. Five such species and their associated habitat were observed and reported during baseline studies to have confirmed presence within the Study Area including American Eel, Mummichog, Barn Swallow, Little Brown Myotis and Northern Myotis (Appendix D). An additional five species at risk with probable or possible presence were identified through historical records, including Olive-sided Flycatcher, Piping Plover, Bank Swallow, Newfoundland Marten and Banded Killifish (Appendix D).

### 5.6.3 Plant Species

As discussed in Section 3.1.9, the available AC CDC data indicate that within the identified search area (defined as a 5 km buffer around the centre of the Project area), a total of 29 location-sensitive plant species of conservation concern were recorded (Appendix D).

One of these species, the Boreal felt lichen is a species at risk. Boreal felt lichen is an epiphytic lichen that grows primarily on balsam fir trees. In Newfoundland and Labrador, the known population is concentrated in two areas: 1) the central Avalon Peninsula and 2) Bay D'Espoir. Its distribution appears to be limited by climatic factors as it is found in cool, moist, and often foggy nature forests. It is frequently found near the edges of wetlands (NL Wildlife Division, undated). The boreal population of this species, whose range includes Newfoundland and Labrador, is currently designated as being of 'special concern" under the SARA, and as "vulnerable" under the NL ESA. Typical Boreal Felt Lichen habitat is absent within the Project area as noted in the AC CDC report.

### 5.6.4 Fish Species

A summary of the potential presence of various fish species at risk that are or may be found in the EA Study Areas, and the potential for the Project to interact with, and affect, each of these species, is provided in Table 5.45.

*Table 5.45: Fish Species at Risk: Summary of Potential Environmental Effects*

| Species | *SARA* | *NL ESA* | Summary of Presence and Potential Interactions |
|---|---|---|---|
| Mummichog | | Vulnerable | • The species resides in coastal habitats, and is euryhaline meaning they live in both fresh and salt water and can adapt to a wide range of salinities.<br>• Normally found in shallow brackish waters of estuaries, salt marshes, or tidal streams but can occasionally be found in freshwater streams and rivers<br>• Mummichog were identified in the Barachois Pond through eDNA metabarcoding analysis.<br>• It is likely that they inhabit the coastal waters and Barachois Pond.<br>• Man o' War Brook and Blanchard's Brook are connected to coastal waters around the Study Area, but this species was not found in these watercourses during the 2022 baseline surveys.<br>• During construction, it is anticipated that minor disturbances of the current causeway will be untaken to construct the conveyor. These disturbances have the |

| Species | *SARA* | *NL ESA* | Summary of Presence and Potential Interactions |
|---|---|---|---|
| | | | potential to increase siltation and introduction of pollutants to Barachois Pond.<br>• The planned mitigation measures outlined previously (Table 5.28 and Section 5.4), including erosion and sediment control plans, spill prevention and response, etc. will help ensure Barachois Pond remains undisturbed and will avoid or reduce interactions with other watercourses and potential habitat |
| Banded Killifish (Newfoundland Population) | Special Concern | Vulnerable | • In Newfoundland and Labrador the species has scattered distribution with 10 known locations, including St. George's Bay.<br>• They are generally found in fresh water but can inhabit estuaries, requiring shallow water, slow currents, soft substrates and abundant aquatic vegetation.<br>• Banded killifish were identified through AC CDC records, which identify seven records of the species within the search area.<br>• No banded killifish were identified during any field surveys.<br>• During construction, it is anticipated that minor disturbances of the current causeway will be untaken to construct the conveyor. These disturbances have the potential to increase siltation and introduction of pollutants to Barachois Pond.<br>• The planned mitigation measures outlined previously (Table 5.28 and Section 5.4), including erosion and sediment control plans, spill prevention and response, etc. will help ensure Barachois Pond remains undisturbed and will avoid or reduce interactions with other watercourses and potential habitat. |
| American eel | | Vulnerable | • Spawn in the Sargasso Sea<br>• During their oceanic migrations their sole habitat is salt water.<br>• During continental phases the species occupies all salinity zones, including shallow and sheltered marine waters, estuaries, and freshwater rivers and lakes.<br>• Leptocephali move through the marine environment through the winter (up to April) to reach rivers throughout Newfoundland and Labrador.<br>• American eel were identified in the Barachois Pond through eDNA metabarcoding analysis. Based on the results of the eDNA analysis, it is likely that American Eels are inhabiting the coastal waters and Barachois Pond. |

| Species | *SARA* | *NL ESA* | Summary of Presence and Potential Interactions |
|---|---|---|---|
| | | | • Although Man o' War Brook and Blanchard's Brook are connected to coastal waters their presence in these watercourses was not evident during field surveys.<br>• During construction, it is anticipated that minor disturbances of the current causeway will be untaken to construct the conveyor. These disturbances have the potential to increase siltation and introduction of pollutants to Barachois Pond.<br>• The planned mitigation measures outlined previously (Table 5.28 and Section 5.4), including erosion and sediment control plans, spill prevention and response, etc. will help ensure Barachois Pond remains undisturbed and will avoid or reduce interactions with other watercourses and potential habitat. |

The main potential environmental interactions between the Project and these species are the same as those for the Water Resources and Fish and Fish Habitat VECs as a whole (Sections 5.3 and 5.4), as are the planned mitigation measures to avoid or reduce any such adverse interactions (Table 5.28).

As all planned Project construction activities will be situated on land and will not extend into, interact with or otherwise adversely affect any aspect of the marine environment, including any marine fish species or their habitats. Similarly, planned operational activities at Turf Point will be in keeping with those that have occurred at the terminal for years, including standard loading and transit of marine vessels at this well-established facility. No adverse effects on marine fish or their habitats are therefore anticipated during this phase of the Project.

The Project will not affect identified critical habitat for either of these species, or otherwise affect the residences of other key habitats of any individual or populations.

### 5.6.5 Wildlife Species

A summary of the potential presence of various wildlife (birds and mammals) species at risk that are or may be found in the EA Study Areas, and the potential for the Project to interact with, and affect, each of these species, is provided in Table 5.46.

*Table 5.46: Wildlife Species at Risk: Summary of Potential Environmental Effects*

<table>
<tr><th>Species</th><th>SARA</th><th>NL ESA</th><th>Summary of Presence and Potential Interactions</th></tr>
<tr><td colspan="4">Mammals</td></tr>
<tr><td>Little brown myotis</td><td>Endangered</td><td>Endangered</td><td rowspan="2">• Although these species were not identified in any historical records within or surrounding the Project Area, they are known to occur throughout the province, and their presence was confirmed in the bat acoustic detection study.<br>• Mitigation measures outlined earlier for wildlife in general (Table 5.28, Section 5.1.2), including those related to vegetation clearing, lighting and noise, will avoid or reduce potential interactions with these species.<br>• Review of aerial imagery and topographic mapping indicates the landscape surrounding the Project contains forested habitat and wetland complexes that could act as alternate habitat for these species.</td></tr>
<tr><td>Northern myotis</td><td>Endangered</td><td>Endangered</td></tr>
<tr><td>American marten</td><td>Threatened</td><td>Threatened</td><td>• This species is known to occupy areas throughout the Island of Newfoundland, including parts of western Newfoundland.<br>• No marten were identified in the Project Area.<br>• While the Project site does not contain critical habitat as identified by the Newfoundland Marten Recovery Team, field studies confirmed the presence of semi-mature coniferous, mixed-wood, and regeneration forest habitat that has the potential to support this species, although such habitat is also found throughout the surrounding region.<br>• Potential effects on this species relate primarily to the direct loss of terrestrial habitat and fragmentation or edge habitat effects.<br>• Mitigation measures outlined earlier for wildlife in general (Table 5.28, Section 5.1.2), including those related to vegetation clearing, lighting and noise, will avoid or reduce potential interactions with these species.</td></tr>
<tr><td colspan="4">Birds</td></tr>
<tr><td>Barn swallow</td><td>Threatened</td><td>Vulnerable</td><td>• The species was not identified through background review of NBBA records or AC CDC reports.<br>• They were observed during the 2022 breeding bird studies, during which several individuals were observed along a gravel road adjacent to a residential area.<br>• No nesting habitat appears to be present within the Project Area itself.</td></tr>
</table>

| Species | *SARA* | *NL ESA* | Summary of Presence and Potential Interactions |
|---|---|---|---|
| | | | • The species' utilization of the wetlands within the Project footprint for foraging is likely.<br>• Adverse effects on barn swallow and their habitats re not expected, as the Project construction will not involve removal of structures typically associated with nesting habitat.<br>• Although removal of wetland habitat may reduce foraging habitat for this species, review of aerial imagery and topographic mapping indicates the landscape surrounding the Project contains wetland complexes that could act as alternate foraging habitat.<br>• Mitigation measures outlined earlier for avifauna in general (Table 5.28, Section 5.1.2), including those related to vegetation clearing (and its scheduling), lighting and noise, will avoid or reduce potential interactions with these species. |
| Bank swallow | Threatened | Threatened | • Although the potential presence of Bank Swallows was identified through the AC CDC report on historical records within the search area, no bank swallows were observed during any field visits.<br>• The ELC study suggests there is a lack of nesting habitat present within the Study Area to support Bank Swallows.<br>• Shoreline habitat adjacent to the conveyor system and port facility may support suitable nesting conditions. However, construction is not expected to alter any shoreline habitat as the conveyor and port upgrades are planned within the limits of the existing roadway and port facility.<br>• Mitigation measures outlined earlier for avifauna in general (Table 5.28, Section 5.1.2), including those related to vegetation clearing (and its scheduling), lighting and noise, will avoid or reduce potential interactions with these species. |
| Olive-sided flycatcher | Threatened | Threatened | • Although olive-sided flycatchers were identified through background review of NBBA records, no individuals or pairs were identified during the breeding bird studies completed in 2022.<br>• Potential habitat for the species is found throughout the area, and the ELC findings suggests that the region contains suitable nesting habitat, foraging areas and perching snags. |

| Species | *SARA* | *NL ESA* | Summary of Presence and Potential Interactions |
|---|---|---|---|
| | | | • Mitigation measures outlined earlier for avifauna in general (Table 5.28, Section 5.1.2), including those related to vegetation clearing (and its scheduling), lighting and noise, will avoid or reduce potential interactions with these species. |
| Piping plover | Endangered | Endangered | • Piping Plover were identified in the AC CDC records.<br>• Sandy Point (Flat Island) is known as a nesting area, and is located approximately 3 km north of the Project area.<br>• No individuals were observed during any field visits and the ELC study found no suitable breeding or nesting habitat for the species within the ELC study area itself.<br>• Mitigation measures outlined earlier for avifauna in general (Table 5.28, Section 5.1.2), including those related to vegetation clearing (and its scheduling), lighting and noise, will avoid or reduce potential interactions with these species. |

The main potential environmental interactions between the Project and these species are the same as those for the Wildlife and Their Habitats VEC as a whole (Section 5.5), as are the planned mitigation measures to avoid or reduce any such adverse interactions (Table 5.28).

As all planned Project construction activities will be situated on land and will not extend into, interact with or otherwise adversely affect any aspect of the marine environment, including any marine wildlife species or their habitats. Similarly, planned operational activities at Turf Point will be in keeping with those that have occurred at the terminal for years, including standard loading and transit of marine vessels at this well-established facility. No adverse effects on marine wildlife or their habitats are therefore anticipated during this phase of the Project.

The Project will not affect identified critical habitat for either of these species, or otherwise affect the residences of other key habitats of any individual or populations.

### 5.6.6 Summary and Conclusion

As a result of the above, and with the implementation of the various mitigations outlined in the previous sections, the proposed Project is not likely to result in significant adverse effects upon any species at risk.

Based on the information and analysis provided in this EA Report, the Project and its likely environmental effects are not expected to contravene any of the requirements, provisions or prohibitions of the SARA of the NL ESA.

## 5.7 Protected and Special Areas

A number of onland, marine and coastal areas in Western Newfoundland have been designated as protected under provincial, federal and/or other legislation and processes, or have been formally identified through relevant forums and processes as being otherwise special or sensitive due to their ecological, historical and/or socio-cultural characteristics and importance.

### 5.7.1 Potential Environmental Issues and Interactions

Environmental interactions between development activities and any adjacent protected and sensitive areas may be both direct and indirect in nature. Conducting an activity within or near such an area may, for example, have adverse implications through the presence of equipment, personnel and activities in the area and the associated emissions and other disturbances. Any resulting decrease in the real or perceived integrity of these sites in the short or long term may, in turn, affect their ecological or socio-cultural value and (where applicable) the use and enjoyment of these areas. Biophysical effects resulting from human activities may also indirectly affect protected and sensitive areas by affecting the environmental features or processes that are relevant to their designation, integrity or value, such as water, fish or wildlife resources and habitats.

An overview of the potential interactions between each of the Project components and activities and the various key indicators and parameters that have been identified for this VEC is presented in Table 5.47.

*Table 5.47: Protected and Special Areas: Potential Project-VEC Interactions*

| **Project Component / Activity** | **Key Indicators and Parameters *** | |
|---|---|---|
| | **Biophysical Features and/or Processes** | **Human Use and/or Value** |
| **Construction** | | |
| • Site preparation | • | • |
| • Installation of surface mine site infrastructure | • | • |
| • Construction of the underground facilities | | |
| • Construction of the overland conveyor | • | • |
| • Upgrades and modifications at the existing port facility | • | • |
| • Construction of ancillary components (water and sewer, power supply, access roads) | • | • |
| • Project related expenditures | | |
| • Employment (including accommodations and transportation) | | |
| **Operations and Maintenance** | | |
| • Underground mining | | |
| • Underground processing | | |
| • Conveyor system operations | • | • |

| Project Component / Activity | Key Indicators and Parameters * | |
|---|---|---|
| | Biophysical Features and/or Processes | Human Use and/or Value |
| • Port operations | • | • |
| • Water management | • | • |
| • Project related expenditures | | |
| • Employment (including accommodations and transportation) | | |
| • Progressive rehabilitation | | |
| **Closure and Decommissioning** | | |
| • Site decommissioning | • | • |
| • Closure rehabilitation | • | • |
| **Potential Accidental Events** | | |
| • Spills of deleterious substances | • | • |
| • Fire | • | • |
| * Where project activities occur within or may otherwise extend to existing protected or special areas | | |

### 5.7.2 Environmental Effects Assessment

A description of relevant areas in Western Newfoundland that have been designated as protected or otherwise identified as special or sensitive was provided in Section 3.1.8. The following provides an assessment and evaluation of any potential effects of the Project on these areas, including each of the components and activities that will be associated with the Project during its various phases.

#### 5.7.2.1 Planned Project Components and Activities (All Phases)

The proposed Project Area is not located within, or immediately adjacent to, any identified and designated protected or sensitive area in Western Newfoundland. As shown in Table 5.48, the closest that any aspect of the proposed Project will be to any such designated area is over 1.1 km.

*Table 5.48: Protected and Special Areas and their Distance from the Project*

| Jurisdiction | Protected / Special Area | Minimum Distance from Project |
|---|---|---|
| Parks / Reserves / Natural Areas | Provincial Trailway | 600 m North of Surface Mine Site Crosses Conveyor at Flintkote Road and Beach Lane |
| | Barachois Pond Provincial Park | 13 km |
| | Barachois South Transitional Reserve | 6 km |
| Biologically Sensitive Lands | Waterfowl | 2 km |
| | Pine Martin | 5 km |
| | Wetland Stewardship | 6,5 km |
| | Flat Bay Peninsula | 6 km |

| Jurisdiction | Protected / Special Area | Minimum Distance from Project |
|---|---|---|
| Town of St. George's Environmental Protection | Sandy Point | 2 km |
| | Lands along Flat Bay Brook, | 2.8 km |
| | Little Barachois Brook | 2.4 km |
| | Eastern shores of Barachois Pond | 1 km NE of Surface Mine Site Adjacent to Conveyor Route |

As described for the various preceding VECs and those which follow, the Project is not expected to result in significant adverse effects upon any aspect of the environment, due to the overall nature, location and extent of the various components and activities that comprise it, and given the various planning and mitigation measures that have been identified and committed to by Atlas (Table 5.28). It will therefore not adversely affect the key ecological features, processes and integrity of any onland, coastal or marine areas, including the protected and special areas that are the subject of this VEC.

#### 5.7.2.2 Potential Accidental Events

Potential accidental events resulting from the Project, such as a fire, a fuel spill, or a spill of other materials into the environment could, depending upon the nature, magnitude and location of the event, affect protected or sensitive areas in the region. However, as illustrated and discussed above, all of the currently identified areas are located over 1 km from the proposed Project. It is therefore considered very unlikely that, in the event of such an incident during this Project, its effects would extend into one or more of these locations.

Atlas' planned measures (equipment and procedures) to help prevent any such accidental events, and to respond to one in the unlikely event of its occurrence, were described previously (Section 2.13) and will further help to prevent any adverse effects upon this VEC.

### 5.7.3 Residual Environmental Effects Summary

A summary of the predicted (residual) environmental effects of the Project on Protected and Special Areas is provided in Table 5.49 below.

*Table 5.49: Protected and Special Areas: Residual Environmental Effects Assessment Summary*

| Potential Effect | Environmental Effect Descriptors | | | | | | |
|---|---|---|---|---|---|---|---|
| | Nature | Magnitude | Extent | Duration | Frequency | Reversibility | Certainty |
| **Construction** | | | | | | | |
| Change in biophysical features and/or processes | N | - | - | - | - | - | H |
| Change in human use and/or value | N | - | - | - | - | - | H |
| **Operations and Maintenance** | | | | | | | |

| **Potential Effect** | **Environmental Effect Descriptors** | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Nature** | **Magnitude** | **Extent** | **Duration** | **Frequency** | **Reversibility** | **Certainty** |
| Change in biophysical features and/or processes | N | - | - | - | - | - | H |
| Change in human use and/or value | N | - | - | - | - | - | H |
| **Closure and Decommissioning** | | | | | | | |
| Change in biophysical features and/or processes | N | - | - | - | - | - | H |
| Change in human use and/or value | N | - | - | - | - | - | H |
| **Potential Accidental Events** | | | | | | | |
| Change in biophysical features and/or processes | N | - | - | - | - | - | H |
| Change in human use and/or value | N | - | - | - | - | - | H |
| **Overall, Resulting Effect(s) of Project on the VEC**<br>• The Project is not anticipated to have adverse effects upon this VEC. | | | | **Evaluation of Significance**<br>• The proposed Project is not likely to result in significant adverse environmental effects on Protected and Special Areas. | | | |

| | | | | |
|---|---|---|---|---|
| **Nature / Direction**:<br>A = Adverse<br>N = Neutral or No Effect<br>P = Positive | **Magnitude**:<br>N = Negligible<br>L = Low<br>M = Medium<br>H = High | **Geographic Extent**:<br>S = Site<br>L = Local<br>R = Regional | **Duration**:<br>1 = < 1 month<br>2 = 1-12 months<br>3 = 13-36 months<br>4 = 37-72 months<br>5 = > 72 months | **Frequency**:<br>O = Once<br>S = Sporadic<br>R = Regular<br>C = Continuous |
| **Reversibility**:<br>R = Reversible<br>I = Irreversible | **Certainty in Prediction:**<br>L = Low<br>M = Moderate<br>H = High | | | |

As described above, the proposed Project is not likely to result in significant adverse environmental effects on protected and special areas.

### 5.7.4 Cumulative Environmental Effects

As the proposed Project will not result in adverse effects upon protected or special areas, it will not result in or contribute to any cumulative environmental effects on this VEC in combination with other projects and activities that have been or will be carried out.

## 5.8 People and Communities

The proposed Project will occur in the Bay St. George area of Western Newfoundland, within the boundaries of the Town of St. George's, and adjacent to various other communities and human activities found in the surrounding region. Development projects may affect people and communities in a number of ways, as a result of their associated activities, emissions and requirements, which may have both positive and negative socioeconomic consequences.

### 5.8.1 Potential Environmental Issues and Interactions

Potential interactions between the various phases of the proposed Project and people and communities in the Study Area and beyond may include disturbances due to Project-related noise, dust, light and other emissions, the presence of Project personnel, and Project-related demands for community services and infrastructure.

It will be important to ensure that the various phases of the Project do not have negative implications for human health and safety as a result of possible injuries or accidents, as well as environmental contaminants and exposure pathways that may affect human health. In addition, on-going Project planning and its eventual implementation will place a high degree of emphasis on ensuring that it does not negatively affect social health and well-being, including residents' (real or perceived) quality of life.

Human health and well-being are influenced by and reflected in the physical, social, emotional and mental characteristics and conditions of individuals, families and communities, including personal wellness, quality of life, and residents' perceptions of these factors. This section includes an analysis of whether, and how, the health and well-being of persons who live in local communities and surrounding regions may interact with, and be affected by, the proposed Project, including consideration of: 1) physical human health; 2) social health and well-being; and 3) community services and infrastructure.

An overview of the potential interactions between each of the main Project components and activities and the various key indicators and parameters that have been identified for this VEC is presented in Table 5.50.

*Table 5.50: People and Communities: Potential Project-VEC Interactions*

| Project Component / Activity | Key Indicators and Parameters | | |
|---|---|---|---|
| | **Physical human health** | **Social health and well-being** | **Community services and infrastructure (availability, quality, cost)** |
| **Construction** | | | |
| • Site preparation | • | • | • |
| • Installation of surface mine site infrastructure | • | • | • |
| • Construction of the underground facilities | • | • | • |

| Project Component / Activity | Key Indicators and Parameters | | |
|---|---|---|---|
| | **Physical human health** | **Social health and well-being** | **Community services and infrastructure (availability, quality, cost)** |
| • Construction of the overland conveyor | • | • | • |
| • Upgrades and modifications at the existing port facility | • | • | • |
| • Construction of ancillary components (water and sewer, power supply, access roads) | • | • | • |
| • Project related expenditures | | • | • |
| • Employment (including accommodations and transportation) | • | • | • |
| **Operations and Maintenance** | | | |
| • Underground mining | • | • | • |
| • Underground processing | • | • | • |
| • Operation of surface components | • | • | • |
| • Port operations | • | • | • |
| • Water management | • | | • |
| • Project related expenditures | | • | • |
| • Employment (including accommodations and transportation) | • | • | • |
| • Progressive rehabilitation | • | | • |
| **Closure and Decommissioning** | | | |
| • Site decommissioning | • | • | • |
| • Closure rehabilitation | • | • | • |
| **Potential Accidental Events** | | | |
| • Spills of deleterious substances | • | • | • |
| • Fires | • | • | • |

### 5.8.2 Environmental Effects Assessment

As illustrated above, potential interactions between the Project and people and communities may result from both planned components and activities in either of the Project's phases, as well as potential unplanned (accidental) events.

#### 5.8.2.1 Construction

During the construction phase of the Project, public safety will be protected through site access restrictions, including installation of security fencing around the perimeter of the site, and a gate house with 24-hour security at the entrance to the Project Area. Atlas will also engage in regular communications with the Town and other authorities and organizations throughout this phase of the Project, including when mobilizing large equipment along public roadways, or when planning to undertake construction work near existing facilities or infrastructure. Through on-going engagement with community officials, organization and residents, Atlas will ensure that residents are informed of the nature and planning timing of key Project works in order to prevent negative interactions and any associated safety concerns.

Public health and safety considerations have been paramount in Project planning, which will continue as future design and eventual implementation work progresses. To minimize Project-related vehicular traffic through the Town of St. George's, for example, the primary mine site access road will extend from Steel Mountain Road to the western side of the Project Area (rather than through the community itself) (Section 2.5.5). This road will be the main access route to the site during both construction and operations for the transport of personnel, materials and supplies, and for the eventual trucking of salt to the local market.

Atmospheric emissions during Project construction will include those resulting from the use (exhausts) of on-site equipment, which will be maintained in good repair and regularly inspected, as well as dust which will be controlled as necessary using water or other dust control agents. While construction of the mine site surface facilities will require artificial lighting in active work areas, the amount and intensity of lighting used will be minimized and directed downwards. As noted previously, the nearest residential property is several hundred meters from the mine site, and is separated from the site by a wooded area that will provide a degree of screening from nighttime lighting. Construction of the underground mine will begin with excavation of the box cut and declines, which will require some limited blasting that will emit noise and vibrations. Figure 5.80 shows the distance between the mine site, and specifically the boxcut, to potential residential receptors that may hear and feel atmospheric noise and vibrations associated with Project-related blasting. These residential receptors include:

- Residences on Muises Land, located approximately 1 km east of the boxcut;
- Residences on Parsons Lane, approximately 900 m to the northeast of the boxcut; and
- Residences along Main Street and Boyds Lane, approximately 750 m north of the boxcut site.

As noted, the development of the boxcut will occur during the first year of construction, with drilling and blasting work on surface expected to occur over a period of approximately 45 days. Limited and smaller blasts will be required underground as decline construction proceeds. There will be no requirement for further blasting on or near the surface following boxcut completion. An overview of planned measures to reduce and otherwise address potential blasting effects was provided in Section 5.2, and will help prevent the potential for associated effects on nearby residents. In addition, Atlas' proposed measures, and planned further analysis and design approaches, to avoid the potential to interact with and adversely affect local surface and groundwater supplies, are as presented in Section 5.4.

Overall, therefore, Project construction activities are not expected to have negative implications for people and their health and safety. Most Project activities and any associated disturbances will not likely be seen or heard by local residents or others, which limits the potential for potential nuisance effects, and there is low likelihood that any planned environmental emissions would reach, and negatively affect, human receptors. The Project is therefore not expected to have any negative implications for human health and well-being in the local communities or elsewhere.

Construction activity can also affect local residents through the presence of project personnel within these communities and associated social interactions. Construction projects can also place demands on local services and infrastructure, thereby affecting the availability, quality or cost of these for the local population. This can include both direct, project-related requirements, such as the planned use of local transportation systems, water and sewage systems, waste disposal facilities, and others, as well as demands from construction workers and possibly their families. These requirements, and any resulting issues, can vary in nature and magnitude according to the type and level of demand, and the capacities of these services and infrastructure to accommodate additional use.

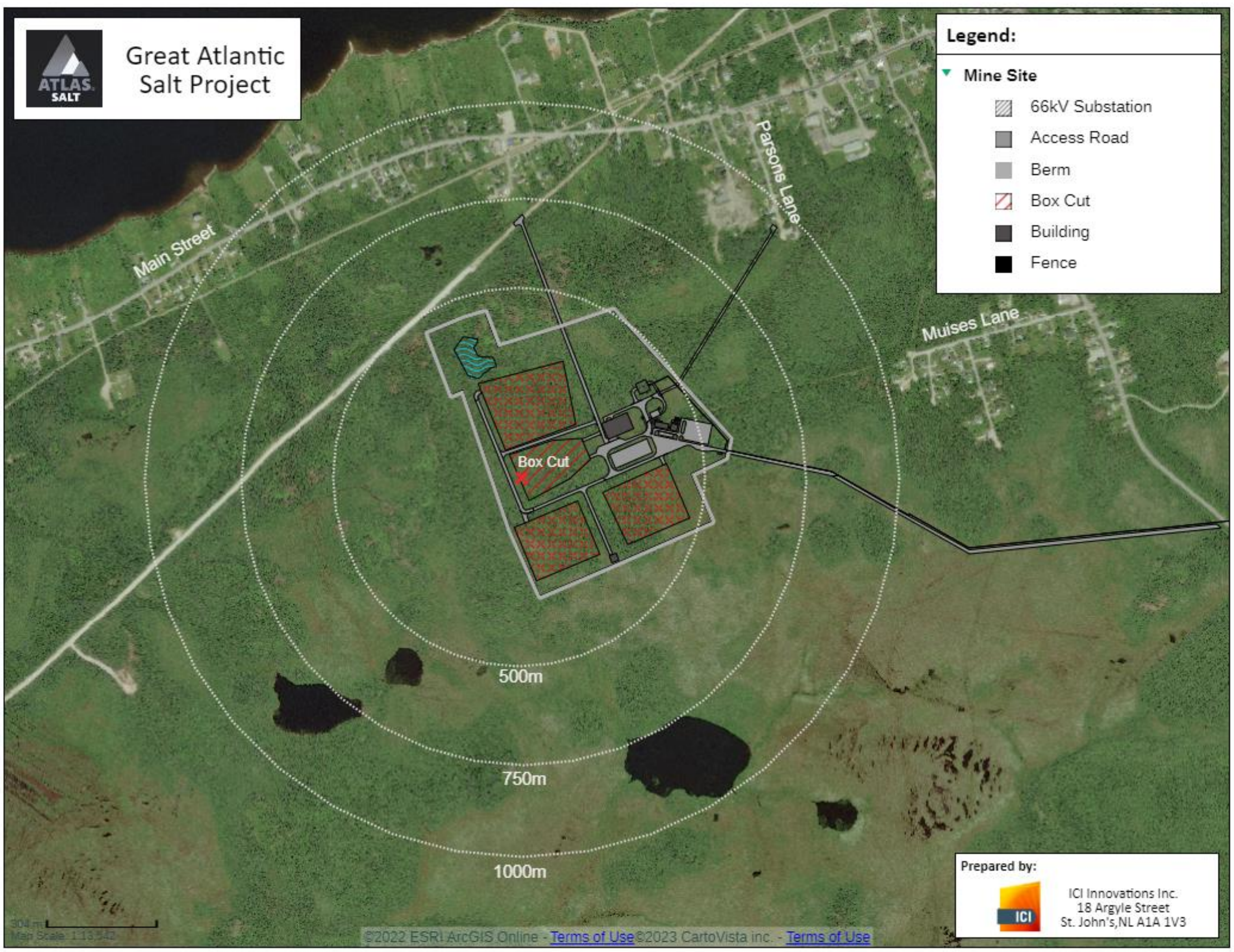


*Figure 5.80: Proximity of the Box-cut Area to Nearby Residences*

As described in Section 2.9, the Project's construction phase will involve a workforce of several hundred persons that is comprised of Western Newfoundland residents, as well as temporary construction workers which are drawn from other areas of Newfoundland and Labrador and elsewhere. Non-resident workers will commute to and from the region according to their roles and work rotations, and will be transported by bus from nearby airports (in Stephenville or Deer Lake). Several options for temporary accommodation of the non-resident construction workforce are currently being considered and evaluated:

1) Workers will be housed in existing accommodations in nearby communities and transported to and from the worksite daily; and/or
2) Atlas will establish and use a temporary, onsite construction camp.

As discussed in Section 2.9, at this stage of Project planning it is not known exactly what proportion of the construction workforce will be comprised of local residents (who would commute to and from the worksite each day) vs those from outside the area for which Project accommodations will be required during this phase of the Project. Further information is also required regarding the availability and capacity of local accommodations to house the non-resident construction workforce.

Atlas recognizes that each of these worker accommodation approaches can have both positive and negative environmental implications, which can themselves vary based on specific interests and objectives. On the one hand, the housing and overall presence of large numbers of transient workers within small towns can create social issues, and negatively affect the availability, cost or quality of local services and infrastructure (including rental housing) for local residents. Alternatively, and if adequate and appropriate capacity exists, housing and feeding non-resident workers in nearby communities can present business opportunities and important potential economic benefits for local individuals and businesses.

As part of its on-going Project planning and design, Atlas will continue its definition and analysis of the Project's construction accommodation requirements for its non-resident workforce. This will include further analysis and discussions with local authorities and businesses around the availability and capacity of local accommodations in accordance with the Project's requirements and schedule, as well as to further understand the communities' priorities and preferences in that regard. Once available, this information will be used in an eventual decision by Atlas around the accommodations approach that will be implemented for Project construction. At this stage, therefore, each of the options listed above are being brought forward for EA review and approval.

In any event, the short-term nature of the construction phase will likely mean that most if not all non-resident workers will commute to the Project Area according to their work rotations rather than relocating with their families, which will prevent significant new demands on local housing and health, education, social and other services.

In terms of direct Project-related demands for local services and infrastructure, waste generated during Project construction will be transported to, and disposed of in an approved manner at, the Bay St. George Waste Disposal Site, located just south of the Steel Mountain Road. Atlas is also currently in discussions with the Town of St. George's regarding the potential for the Project to connect to the community's water supply and sewage systems and will do so if capacity is confirmed and appropriate municipal approvals are obtained. This will include analysis and discussions with the Town to confirm the capacity of the systems to accommodate the Project's water requirements, both in general and to ensure that any such interconnection will not have negative effects on distribution system pressures within the Town. Should this not be the case, Atlas or its contractors will implement other approaches, such as the supply of water by truck to the Project site, or from new, approved groundwater wells.

#### 5.8.2.2 Operations and Maintenance

Throughout the operations and maintenance phase of the Project, public safety will continue to be protected through site access restrictions (including a perimeter fence), signage and communication protocols. Vehicle traffic on the access road to the site will be limited to the transportation of employees, equipment and materials to and from the work area, which will have "no access" signs posted at the beginning of the property to restrict use to authorized personnel only. A gatehouse with on-site security officers will be in place, and only personnel and vehicles involved in the Project will be allowed on the site during the 24 hour / day operations. Speed limits appropriate to this size and class of access road will also be established and adhered to. Again, Atlas will coordinate, schedule and communicate the planned transportation of any large equipment and other loads in order to address potential traffic and safety concerns.

As discussed in Chapter 2 and Section 5.2, the planning of the Project to date has incorporated a number of important design features which will serve to eliminate or minimize potential emissions or other disturbances or interactions that may have adverse implications for people and communities. These include the use of underground mining techniques, where all salt production and processing will occur below surface (and without drilling and blasting requirements), as well as the use of electric vehicles and equipment, and a lack of required water or chemicals use during processing and associated waste generation and disposal. The various Project design approaches and mitigation measures related to artificial lighting and noise and dust control discussed previously will also help prevent negative interactions with nearby residents.

The conveyor itself is routed primarily along an existing road that was previously used for conveying ore to the marine port, and which is not located immediately adjacent to human receptors. In the Town of St. George's the conveyor will travel through a residential area with approximately 20 residences within 100 m of the proposed route. Of these all but two are greater than 35 meters away from the conveyor route. The nearest residence is approximately 25 m away and is adjacent to the intersection of Flintkote Road and Main Street. Other community features in the Town are presented in Figure 5.81 below and the distances to the conveyor presented in Table 5.51 below.

The conveyor design includes a tunnel section and several bridges to facilitate traffic flow through the Town of St. George's. The Project will utilize an enclosed / covered conveyor system, which is the most technically advanced and safest method of ore transport that minimizes noise and fugitive dust emissions. Along the conveyor route that is adjacent to human receptors the conveyor will utilize the enclosed conveyor designs, including the tunnel and bridge. A number of key design features are planned for the conveyer and other Project components to reduce the potential for dust and any associated effects on nearby people and other receptors (Sections 2.5.3 and 2.7.7).


*Figure 5.81: Town of St. George's Community Features*

*Table 5.51: Distances from Community Features to Conveyor Route*

| Community Feature | Distance to Conveyor |
|---|---|
| Church 1 | 125 m |
| Seniors Centre | 100 m |
| Parish Hall | 225 m |
| Town Hall | 325 m |
| Church 2 | 350 m |
| School | 275 m |

| | |
|---|---|
| Museum | 350 m |
| Legion | 525 m |
| Post Office | 450 m |
| Stadium | 700 m |

Project operations (mining and processing) will not involve the use of chemicals, with the exception of applying an anti-caking agent (yellow prussiate of soda, or YPS) at the salt storage building and port facility. YPS is a non-toxic substance that is a food additive approved by Health Canada and is often used in table salt.  The various environmental protection measures outlined previously to prevent the introduction of Project related materials or emissions into surface or ground water, the air or nearby lands will also serve to mitigate any potential implications for human health. Project operations are therefore not expected to have any negative implications for human health and safety in the local communities or elsewhere.

During the operations and maintenance phase of the Project, the estimated workforce will reach up to 169 persons, with the mine operating 24 hours per day on a full 365-day year basis. The operations workforce will be comprised of Atlas employees, most of whom will work on a 12-hour shift basis. Because of the long-term lifespan of the Project (estimated at 34 years, but with significant potential to operate longer as additional resources are delineated), most of the workforce will reside in Western Newfoundland and drive to the Project Area for their shifts. This will likely result in some in migration of Project workers and their families to the region, although the specific proportion of the workforce that will move to the area from elsewhere cannot be known at this stage.

Atlas will continue to communicate and cooperate with local municipalities and other regional service providers to keep them informed about Project planning and scheduling, which will allow them to plan appropriately for any future, Project-related population increases. Through good communication with, and planning by, the appropriate municipal and provincial authorities, there are not anticipated to be adverse effects on the availability, quality or cost of services and infrastructure in the region during the operations phase of the Project. Indeed, the taxation and other revenues that will accrue to municipal and provincial governments as a result of the Project can be used to ensure that appropriate adjustments are made to the delivery and capacity of these services and infrastructure in the region.

#### 5.8.2.3 Closure and Decommissioning

Upon conclusion of Project operations, the type and level of activity within the Project Area will change significantly and decrease considerably, and this phase of the Project will involve the removal of infrastructure and the rehabilitation of the Project area, as reflected in the eventual Closure Plan developed by Atlas. No new or increased effects on people and communities are expected during this phase of the Project, and therefore, significant adverse effects are not likely.

#### 5.8.2.4 Potential Accidental Events

Potential accidental events or malfunctions such as a fire or a spill of fuel or other materials could affect people and communities in or around the Project Area and possibly beyond, either directly or indirectly through any resulting biophysical effects and associated pathways. Although such an event could conceivably occur during either phase of the Project, they are unlikely to do so, and in any case the resulting effects of such an incident would clearly depend upon the nature, magnitude, location and timing of the event.

An accidental spill of fuels or other deleterious substances has the potential to adversely affect the quality of water, soils, vegetation, fish and wildlife or other components of the biophysical environment, as well as the health of any users and consumers of same. Similarly, a large-scale forest fire that originated within the Project Area could affect air and water quality, wildlife and other environmental components and resources, and could also potentially pose direct risks to human health and safety. Such an accidental event may also place associated demands on local safety and security services, including fire, emergency response and policing, as well as medical facilities and others. An accidental event such as a Project-related fire could also affect community infrastructure such as buildings and transportation routes.

Atlas' planned measures and procedures to help prevent any such accidental events and to respond in the unlikely event of their occurrence were described previously (Section 5.1) and will help to prevent adverse effects upon the various aspects of the socioeconomic environment that are included in this VEC. Should an accidental event occur at the Project site that requires medical, fire or other emergency response that is beyond the capabilities of on-site equipment and personnel, assistance would be sought from nearby community services. Atlas will continue its discussions with nearby municipalities and service providers to ensure that appropriate arrangements are in place to avail of such support in the unlikely event that they are required in an emergency situation.

### 5.8.3 Residual Environmental Effects Summary

A summary of the predicted (residual) environmental effects of the Project on People and Communities is provided in Table 5.52 below.

In addition to the avoidance or reduction of any potential adverse effects of the Project on people and communities, it is also important to highlight that, from an economic perspective, the Project will create direct, indirect and induced employment and business opportunities and other economic benefits. These will positively affect local residents and communities (Section 5.11) and in doing so, help contribute to the well-being and quality of life of people and communities in the region and beyond.

*Table 5.52: People and Communities: Residual Environmental Effects Assessment Summary*

| **Potential Effect** | **Environmental Effect Descriptors** | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Nature** | **Magnitude** | **Extent** | **Duration** | **Frequency** | **Reversibility** | **Certainty** |
| **Construction** | | | | | | | |
| Changes in physical human health | N-A | N | L | 3 | S | R | H |
| Changes in social health and well-being | A-P | N-L | R | 3 | S | R | H |
| Changes in community services and infrastructure (availability, quality, cost) | N-A | N-L | R | 3 | S | R | H |
| **Operations and Maintenance** | | | | | | | |
| Changes in physical human health | N-A | N | L | 5 | S | R | H |
| Changes in social health and well-being | A-P | N-L | R | 5 | S | R | H |
| Changes in community services and infrastructure (availability, quality, cost) | N-A | N-L | R | 5 | S | R | H |
| **Closure and Decommissioning** | | | | | | | |
| Changes in physical human health | N | - | - | - | - | - | H |
| Changes in social health and well-being | N | - | - | - | - | - | H |
| Changes in community services and infrastructure (availability, quality, cost) | N | - | - | - | - | - | H |
| **Potential Accidental Events** | | | | | | | |
| Changes in physical human health | A | L | L | 2 | O | R | M |
| Changes in social health and well-being | A | L | R | 2 | O | R | M |
| Changes in community services and infrastructure (availability, quality, cost) | A | L | R | 2 | O | R | M |

| **Overall, Resulting Effect(s) of Project on the VEC** | **Evaluation of Significance** |
|---|---|
| • The Project is not expected to have adverse effects upon public safety or the physical or social health and well-being of local residents and communities. | • The proposed Project is not likely to result in significant adverse environmental effects on People and Communities. |

| Potential Effect | Environmental Effect Descriptors | | | | | | |
|---|---|---|---|---|---|---|---|
| | Nature | Magnitude | Extent | Duration | Frequency | Reversibility | Certainty |
| • It will create positive economic benefits for the region which will contribute to residents' quality of life.<br>• Potential accidental events (such as a fire or spills) will be prevented through planned Project equipment and procedures, with appropriate response plans and procedures in place | | | | | | | |
| **Nature / Direction**:<br>A = Adverse<br>N = Neutral or No Effect<br>P = Positive | **Magnitude**:<br>N = Negligible<br>L = Low<br>M = Medium<br>H = High | **Geographic Extent**:<br>S = Site<br>L = Local<br>R = Regional | **Duration**:<br>1 = < 1 month<br>2 = 1-12 months<br>3 = 13-36 months<br>4 = 37-72 months<br>5 = > 72 months | **Frequency**:<br>O = Once<br>S = Sporadic<br>R = Regular<br>C = Continuous | | | |
| **Reversibility**:<br>R = Reversible<br>I = Irreversible | **Certainty in Prediction:**<br>L Low<br>M Moderate<br>H High | | | | | | |

### 5.8.4 Cumulative Environmental Effects

The characteristics of the existing (baseline) socioeconomic environment in the Study include, and have been shaped and influenced by, the effects (both positive and negative) of past and on-going human activities in the area, including both onland and offshore environments, as well as other influences.

The proposed Project will be characterized by relatively straightforward (mining, processing and transportation) activities, occurring within a localized area, and will not adversely affect human safety or the health and quality of life of residents, visitors or their associated activities, infrastructure or other aspects of the socioeconomic environment. Although there are examples of past and current human developments and activities and around the Study Area and throughout the larger region, this area is not one that has been (or is currently proposed to be) subject to large scale industrial development to date, and particularly, any whose environmental effects would overlap in space and time with any that may result from this Project. While other issues and occurrences (such as the COVID-19 pandemic) have had implications for health and well-being in the overall region and the province as a whole, the self-reported health and quality of life of the regional population is generally high (Section 3.2), and the Project is not likely to negatively affect this. To the contrary, the new and long-term economic activity and associated employment and business opportunities that the Project will bring to this rural area will have a positive effect on the health and well-being of these communities and their residents.

The Project is therefore not likely to materially contribute to adverse cumulative effects on this VEC, and will therefore not result in significant, adverse cumulative environmental effects in combination with other projects that have been or will be carried out.

## 5.9 Land and Resource Use

The proposed Project will occur in the Bay St. George area of Western Newfoundland, within the boundaries of the Town of St. George's and in the general vicinity of other communities and human activities located throughout the surrounding region.

### 5.9.1 Potential Environmental Issues and Interactions

The various components and activities associated with the Project may interact with, and potentially negatively affect, nearby lands and resources and their use for municipal, commercial, recreational or traditional purposes. These interactions may occur through the required Project site access restrictions throughout its various phases, which may make certain locations unavailable for such purposes, or as a result of associated ground disturbance, noise, traffic, light, visual intrusions or other emissions and disturbances which may change the nature, distribution, value or quality of land and resource use by local residents or visitors.

An overview of the potential interactions between each of the main Project components and activities and the various key indicators and parameters that have been identified for this VEC is presented in Table 5.53.

*Table 5.53: Land and Resource Use: Potential Project-VEC Interactions*

| Project Component / Activity | Key Indicators and Parameters | | | |
|---|---|---|---|---|
| | Municipal land use | Commercial land and resource use | Recreational / traditional land and resource use | Historic resources |
| **Construction** | | | | |
| • Site preparation | • | • | • | • |
| • Installation of surface mine site infrastructure | • | • | • | • |
| • Construction of the underground facilities | | | | • |
| • Construction of the overland conveyor | • | • | • | • |
| • Upgrades and modifications at the existing port facility | | • | • | • |
| • Construction of ancillary components (water and sewer, power supply, access roads) | • | • | • | • |
| • Project related expenditures | | | | |
| • Employment (including accommodations and transportation) | | | | |
| **Operations and Maintenance** | | | | |

| Project Component / Activity | Key Indicators and Parameters | | | |
|---|---|---|---|---|
| | **Municipal land use** | **Commercial land and resource use** | **Recreational / traditional land and resource use** | **Historic resources** |
| • Underground mining | | | | |
| • Underground processing | | | | |
| • Operation of surface components | • | • | • | |
| • Port operations | • | • | • | |
| • Water management | • | | | |
| • Project related expenditures | | | | |
| • Employment (including accommodations and transportation) | | | | |
| • Progressive rehabilitation | | | | |
| **Closure and Decommissioning** | | | | |
| • Site decommissioning | • | • | • | • |
| • Closure rehabilitation | • | • | • | • |
| **Potential Accidental Events** | | | | |
| • Spills of deleterious substances | • | • | • | |
| • Fires | • | • | • | • |

### 5.9.2 Environmental Effects Assessment

As illustrated above, potential interactions between Project components and activities and local land and resource use may be both direct and indirect in nature, and occur through direct interference with such activities, as well as by adversely affecting the land areas and resources that are used for these purposes. They may also result from both planned components and activities during either phase of the Project, and due to possible unplanned (accidental) events.

#### 5.9.2.1 Construction

The Project will occur within the municipal boundaries of the Town of St. George's, and will overlap with areas currently zoned as rural, residential, mixed development and industrial uses. The future development of this will therefore require an amendment to the current municipal plan, which the Town of St. George's has recognized and is supportive of, and for which the required amendment process has already been initiated (Section 3.2.2). This municipal plan amendment will be completed prior to the planned start of the construction phase.

Other municipal and regional land uses in the region include the Town's protected groundwater and surface water supply areas, the Bay St. George regional waste disposal area and others, neither of which overlap with or are immediately adjacent to the Project Area itself (Section 3.1.4 and 3.1.5). The surface facilities and mine site for the Project are located 1.8 km away from the Dribble Brook Water Supply and 1.5 km away from the Wellfield Public Water Supply. Atlas' proposed measures, and planned further analysis and design approaches, to avoid the potential to interact with and adversely affect local surface and groundwater supplies are presented in Section 5.3.

The Project overlaps previously granted land and crown land. Atlas is currently in the process of acquiring, through the Mineral Lands Division of the Department of Industry, Energy and Technology, a mining lease for the subsurface mining rights and a surface lease for the crown lands areas of the Project. Atlas has also engaged a legal firm, surveying company, and title search firm to define the current state of the granted lands, with the intent to purchase the required lands if they are deemed private, or include them in the surface lease, is the granted lands are returned to the Crown. These initiatives are on-going, and while it would not be prudent for Atlas to purchase land prior to the receipt of key Project approvals (including EA release), the Proponent commits to have all necessary land rights in place prior to moving forward with Project development. It is also recognized that this may become a condition of any forthcoming EA approval.

Although there are a number of commercial establishments in the general area, as well as land areas designated for commercial and industrial purposes (such as forestry / silviculture, oil exploration, peat development, commercial outfitting), none of these occur directly within or immediately adjacent to the Project Area itself. A variety of recreational and traditional land and resource use activities occur throughout the overall region, including hunting, trapping, fishing, cabins, wood cutting, boating and berry-picking, and others. However, the existing and available information (Section 3.2.4) or the public engagement activities completed by Atlas as part of this EA (Chapter 4) do not indicate that the Project site itself is a core area of local land and resource use activity.

Beginning with the commencement of the construction phase of the Project, public safety will be protected through Project site access restrictions (including fencing and on-site security). This will result in an area of approximately 70 ha being off limits for local land and resource use pursuits. Given the overall size of the region, and the number of alternative locations available in which to undertake such activities, no measurable adverse effect on the nature, intensity, value or enjoyment of these activities is anticipated as a result of the Project. Atlas will regularly communicate with the Town and other applicable individuals and organizations to keep them informed of the nature, location and planned timing of key Project works, and to ensure that adverse interactions and any associated effects are avoided.

During its 2023 public engagement program (Chapter 4) some residents advised Atlas that the proposed access road routing would interact with an existing ATV/snowmobile crossing near Muises Lane. To help preserve this important throughway, Atlas has decided to incorporate safe crossing points in the detailed design of the access route to ensure that residents can continue to access the area west of Muises Lane. As Atlas continues its engagement with residents and other parties, it will continue to seek to address their concerns and priorities into the Project planning and design wherever possible.

Historic resources include sites and objects of historic and archaeological, cultural, spiritual and paleontological importance, which may be protected under the Newfoundland and Labrador *Historic*

*Resources Act* administered by the Provincial Archaeology Office (PAO). Ownership of all archaeological objects is vested in the Crown. Construction activities and associated ground disturbance have the potential to disturb or destroy archaeological sites and other historic resources if these are present within a development project's footprint.

There are no known historic resources within or near the Project area (Section 3.2.5). The proposed Project site itself is relatively small, and it is unlikely that the Project will result in the disturbance or destruction of historic resources. During Project site development, however, standard precautionary and reporting procedures will be implemented. Should an accidental discovery of historic resources occur, all work will cease in the immediate area of the discovery until authorization is given for the resumption of the work. Any archaeological materials encountered will be reported to the PAO, including information on the nature of the material discovered and the location and date of the find. Once site preparation is completed, there will be no additional ground disturbance during operations and maintenance (Section 2.7), and therefore, little or no potential for effects to historic resources. The precautionary and reporting procedures described above will, however, continue to be in place throughout the life of the Project.

#### 5.9.2.2 Operations and Maintenance

The required site access restrictions and landscape disturbance associated with the Project will occur primarily during its construction, and the operation and maintenance phase will essentially represent a continuation of these, albeit over a longer time period. Given the anticipated 34-year lifespan of the Project, it is expected that its operational components and activities will become a known, accepted and integrated element of the regional landscape, and local land and resource use patterns will adapt and adjust accordingly over the long term.

As discussed in Chapter 2 and Section 5.2, the planning of the Project to date has incorporated a number of important design features which will serve to eliminate or minimize potential emissions that may have adverse implications for land and resources in the Study Area, and thus, their availability or quality for use by residents or visitors. These include the use of underground mining techniques, where all salt production and processing will occur below surface (and without drilling and blasting requirements), as well as the use of electric vehicles and equipment, a covered / enclosed conveyer system, and a lack of required water or chemicals use during processing and associated waste generation and disposal. The various mitigations related to artificial lighting and noise and dust control discussed previously will also help prevent negative interactions with adjacent land and resource users. Atlas' proposed measures, and planned further analysis and design approaches, to avoid the potential to interact with and adversely affect local surface and groundwater resource are presented in Section 5.3. There is natural vegetation and forest cover between the residential areas adjacent to the Mine Site Surface Facilities that will limit visibility and disturbance to residents. The various environmental protection measures outlined previously to prevent the introduction of Project-related materials or emissions into surface or ground water, the air or nearby lands will therefore also serve to mitigate any potential implications for human health stemming from the local use of lands and resources (Section 5.8).

To address any emerging or ongoing concerns regarding the Project's effects on land and resource use, Atlas will continue to communicate regularly with communities, Indigenous groups, other organizations and the general public throughout the life of the Project. This will include the provision of Project information and regular updates on on-going and planned activities, as well as discussion of any issues and potential means of addressing them.

#### 5.9.2.3 Closure and Decommissioning

Once operations activities cease at the end of the mine life, the decommissioning and reclamation phase of the Project will commence. Site decommissioning will include removal of infrastructure, and the filling, contouring and re-vegetation of disturbed areas. Although there will be access restrictions while decommissioning and rehabilitation are in progress, these activities will ultimately lead to restoration of a degree of public access across parts of the Project Area. Thus, for the most part the Project Area will become progressively available to land and resource users. The environmental monitoring program that will likely be part of Atlas' required closure plan will help to evaluate the future suitability of local lands and resources for such activities over time.

#### 5.9.2.4 Potential Accidental Events

Potential accidental events or malfunctions could affect land and resource use either directly, by rendering areas unavailable for such pursuits, or indirectly through any resulting biophysical effects and associated pathways. A fire at the Project site spreading into adjacent areas could affect land areas and resources, making them unsuitable for certain uses and activities. Similarly, an accidental spill of fuel or other deleterious substances into adjacent waterbodies or land areas may prevent their use for certain (particularly consumptive) activities for periods of time. Although either of these accidental events could conceivably occur during either phase of the Project, they are unlikely to do so, and in any event the resulting environmental effects of such an incident would clearly depend upon the nature, magnitude, location and timing of the event.

Atlas' planned measures (equipment and procedures) to help prevent any such events, and to respond to one in the unlikely event of its occurrence, were described previously and will further help to prevent adverse effects upon the various aspects of the socioeconomic environment that are included in this VEC.

### 5.9.3 Residual Environmental Effects Summary

A summary of the predicted (residual) environmental effects of the Project on Land and Resource Use is provided in Table 5.54 below.

*Table 5.54: Land and Resource Use: Residual Environmental Effects Assessment Summary*

| Potential Effect | Environmental Effect Descriptors | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Nature** | **Magnitude** | **Extent** | **Duration** | **Frequency** | **Reversibility** | **Certainty** |
| **Construction** | | | | | | | |

| **Potential Effect** | **Environmental Effect Descriptors** | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Nature** | **Magnitude** | **Extent** | **Duration** | **Frequency** | **Reversibility** | **Certainty** |
| Change in municipal land use | N | - | - | - | - | - | H |
| Change in commercial land and resource use | N-A | N | L | 3 | S | R | H |
| Change in recreational / traditional land and resource use | N-A | N | L | 3 | S | R | H |
| Change in historic resources | N | - | - | - | - | - | H |
| **Operations and Maintenance** | | | | | | | |
| Change in municipal land use | N | - | - | - | - | - | H |
| Change in commercial land and resource use | N-A | N | L | 4 | S | R | H |
| Change in recreational / traditional land and resource use | N-A | N | L | 4 | S | R | H |
| Change in historic resources | N | - | - | - | - | - | H |
| **Closure and Decommissioning** | | | | | | | |
| Change in municipal land use | N | - | - | - | - | - | H |
| Change in commercial land and resource use | N | - | - | - | - | - | H |
| Change in recreational / traditional land and resource use | N | - | - | - | - | - | H |
| Change in historic resources | N | - | - | - | - | - | H |
| **Potential Accidental Events** | | | | | | | |
| Change in municipal land use | A-N | N | L | 3 | O | R | H |
| Change in commercial land and resource use | A-N | N | R | 3 | O | R | H |
| Change in recreational / traditional land and resource use | A-N | N | R | 3 | O | R | H |
| Change in historic resources | N | - | - | - | - | - | M |
| **Overall, Resulting Effect(s) of Project on the VEC**<br>• Planned components and activities are not expected to have material adverse effects land and resource use in the Project or Study Areas during any phase of the Project. | | | | **Evaluation of Significance**<br>• The proposed Project is not likely to result in significant adverse environmental effects on Land and Resource Use. | | | |

| Potential Effect | Environmental Effect Descriptors | | | | | | |
|---|---|---|---|---|---|---|---|
| | Nature | Magnitude | Extent | Duration | Frequency | Reversibility | Certainty |
| • Potential accidental events (such as a fire or spills) and their possible effects on this VEC will be prevented through planned Project equipment and procedures, with appropriate response plans and procedures in place | | | | | | | |

**Nature / Direction**:
A = Adverse
N = Neutral or No Effect
P = Positive

**Magnitude**:
N = Negligible
L = Low
M = Medium
H = High

**Geographic Extent**:
S = Site
L = Local
R = Regional

**Duration**:
1 = < 1 month
2 = 1-12 months
3 = 13-36 months
4 = 37-72 months
5 = > 72 months

**Frequency**:
O = Once
S = Sporadic
R = Regular
C = Continuous

**Reversibility**:
R = Reversible
I = Irreversible

**Certainty in Prediction**:
L Low
M Moderate
H High

### 5.9.4 Cumulative Environmental Effects

The characteristics of the existing (baseline) socioeconomic environment in the Study include, and have been shaped and influenced by, the effects (both positive and negative) of past and on-going human activities in both the on-land and coastal environments., as well as other influences.

The proposed Project will be characterized by a relatively straightforward and localized activity that will not interfere significantly with local land and resource use activities, including municipal, commercial or recreational / traditional pursuits, and it will not likely interact with historic resources. Although there are examples of past and current human developments and activities around the Study Area, it is not one that has been (or is currently proposed to be) subject to large scale industrial development to date, and particularly, any whose on-going environmental effects would overlap in space and time with any that could result from this Project. As noted above, the Project and its various components and activities will eventually become part of the local landscape, and land and resource use patterns will adjust to its presence and other influences over time.

The Project is therefore not likely to result in significant, adverse cumulative environmental effects in combination with other projects that have been or will be carried out.

## 5.10 Fisheries and Other Marine Activities

Marine fisheries are an important element of the socioeconomic environment of Western Newfoundland and other parts of the province, including the various communities within and adjacent to the Study Area. A number of other human activities also occur throughout the marine environment in Bay St. George, including various commercial and recreational / traditional pursuits.

### 5.10.1 Potential Environmental Issues and Interactions

Possible interactions between the various components and activities that are associated with this Project and fisheries and other marine activities in the Study Area include:

- Interference with fishing or other marine activities, with possible resulting decreases in the success, efficiency, enjoyment or value of these pursuits;
- Potential damage to fishing gear, vessels or other components as a result of direct interactions with Project equipment, activities or environmental discharges (routine or accidental); and
- Indirect effects on fisheries or other uses of the marine environment due to possible biophysical effects on marine resources (abundance, distribution or quality – whether real or perceived) resulting from planned activities or accidental events such as spills.

An overview of the potential interactions between each of the main Project components and activities and the various key indicators and parameters that have been identified for this VEC is presented in Table 5.55.

*Table 5.55: Fisheries and Other Marine Activities: Potential Project-VEC Interactions*

| Project Component / Activity | Key Indicators and Parameters: Distribution and Intensity of Marine Use / Activity | Effectiveness and Efficiency of Marine Use / Activity | Abundance, Location and Quality of Marine Resources | Quality and Value of Marine Activities (Economic) | Quality and Value of Marine Uses (Socio-cultural) |
|---|---|---|---|---|---|
| **Construction** | | | | | |
| • Site preparation | | | | | |
| • Installation of surface mine site infrastructure | | | | | |
| • Construction of the underground facilities | | | | | |
| • Construction of the overland conveyor | | | | | |
| • Upgrades and modifications at the existing port facility | • | • | • | • | • |
| • Construction of ancillary components (water and sewer, power supply, access roads) | | | | | |
| • Project related expenditures | | | | | |
| • Employment (including accommodations and transportation) | | | | | |
| **Operations and Maintenance** | | | | | |

| Project Component / Activity | Key Indicators and Parameters | | | | |
|---|---|---|---|---|---|
| | Distribution and Intensity of Marine Use / Activity | Effectiveness and Efficiency of Marine Use / Activity | Abundance, Location and Quality of Marine Resources | Quality and Value of Marine Activities (Economic) | Quality and Value of Marine Uses (Socio-cultural) |
| • Underground mining | | | | | |
| • Underground processing | | | | | |
| • Operation of surface components | | | | | |
| • Port operations | • | • | • | • | • |
| • Water management | | | | | |
| • Project related expenditures | | | | | |
| • Employment (including accommodations and transportation) | | | | | |
| • Progressive rehabilitation | | | | | |
| **Closure and Decommissioning** | | | | | |
| • Site decommissioning | | | | | |
| • Closure rehabilitation | | | | | |
| **Potential Accidental Events** | | | | | |
| • Spills of deleterious substances | • | • | • | • | • |
| • Fires | | | | | |

### 5.10.2 Environmental Effects Assessment

#### 5.10.2.1 Planned Project Components and Activities (All Phases)

The proposed Project will deliver salt to an existing marine port facility at Turf Point for shipment to market. That facility is currently operated by a third party, and the construction phase of the Project will include making a number of required additions and modifications to it to facilitate its use for that purpose, including:

- Refinements to the existing storage building and the construction of an additional storage facility
- Construction of reclaim tunnels, feeders, and conveyors underneath the new building to feed salt to the ship loader
- Installation of various types of on-land storage and sampling equipment
- Refurbishment and replacement of the existing ship loading and load-out conveyor systems

There are no required modifications or additions to the “in water” components of the Turf Point facility, nor to the causeway leading to Turf Point.

During Project operations, salt will be shipped by bulk carriers from the Turf Point facility, with shipment sizes ranging from 25,000 t to 40,000 t. The existing terminal currently accommodates vessels ranging from 25,000 to 40,000 dwt, which are similar in size to those that will be required and used for this Project. The existing storage and ship loading facilities at Turf Point has, until recently, been used for shipping gypsum, with approximately 1 ship every two weeks departing from the facility for that purpose. The Project will require approximately two vessel trips per week, for a total of 2.5 Mtpa.

Planned construction activities will therefore occur onland and will not extend into or otherwise affect the marine environment, and thus, will not interfere with marine activities within the Study Area.

Similarly, during operations the nature of Project-related marine (shipping) activity will be very similar to that which currently takes place from the Turf Point port facility, with shipping levels not being materially different from those that have been undertaken to and from the terminal in the past. Ship loading and movements at Turf Point will be undertaken in strict compliance with applicable legislation and other regulatory requirements. These shipping activities from the Turf Point facility have been on-going for years and are thus well integrated into the suite of marine activities that take place in St. George's Bay. There is limited potential for new or additional effects on fisheries or other marine activities in Bay St. George or beyond as a result of this Project.

#### 5.10.2.2 Potential Accidental Events

Potential accidental events within or near the marine environment include a spill of fuel or other materials, such as salt product, during loading activities at the port facility. An overview of Atlas' planned approaches to preventing such an event through its associated equipment and procedures, and for responding to one in the unlikely of its occurrence, were described in earlier sections of this EA Registration.

### 5.10.3 Residual Environmental Effects Summary

A summary of the predicted (residual) environmental effects of the Project on Fisheries and Other Marine Activities is provided in Table 5.56 below.

*Table 5.56: Fisheries and Other Marine Activities: Residual Environmental Effects Assessment Summary*

| Potential Effect | Environmental Effect Descriptors | | | | | | |
|---|---|---|---|---|---|---|---|
| | Nature | Magnitude | Extent | Duration | Frequency | Reversibility | Certainty |
| **Construction** | | | | | | | |
| Distribution and intensity of marine use / activity | N | - | - | - | - | - | H |
| Effectiveness and efficiency of marine Use / Activity | N | - | - | - | - | - | H |

| **Potential Effect** | **Environmental Effect Descriptors** | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Nature** | **Magnitude** | **Extent** | **Duration** | **Frequency** | **Reversibility** | **Certainty** |
| Abundance, location and quality of marine resources | N | - | - | - | - | - | H |
| Quality and value of marine activities (economic) | N | - | - | - | - | - | H |
| Quality and value of marine uses (socio-cultural) | N | - | - | - | - | - | H |
| **Operations and Maintenance** | | | | | | | |
| Distribution and intensity of marine use / activity | N | - | - | - | - | - | H |
| Effectiveness and efficiency of marine Use / Activity | N | - | - | - | - | - | H |
| Abundance, location and quality of marine resources | N | - | - | - | - | - | H |
| Quality and value of marine activities (economic) | N | - | - | - | - | - | H |
| Quality and value of marine uses (socio-cultural) | N | - | - | - | - | - | H |
| **Closure and Decommissioning** | | | | | | | |
| Distribution and intensity of marine use / activity | N | - | - | - | - | - | H |
| Effectiveness and efficiency of marine Use / Activity | N | - | - | - | - | - | H |
| Abundance, location and quality of marine resources | N | - | - | - | - | - | H |
| Quality and value of marine activities (economic) | N | - | - | - | - | - | H |
| Quality and value of marine uses (socio-cultural) | N | - | - | - | - | - | H |
| **Potential Accidental Events** | | | | | | | |
| Distribution and intensity of marine use / activity | N | - | - | - | - | - | H |

| Potential Effect | Environmental Effect Descriptors | | | | | | |
|---|---|---|---|---|---|---|---|
| | Nature | Magnitude | Extent | Duration | Frequency | Reversibility | Certainty |
| Effectiveness and efficiency of marine Use / Activity | N | - | - | - | - | - | H |
| Abundance, location and quality of marine resources | N | - | - | - | - | - | H |
| Quality and value of marine activities (economic) | N | - | - | - | - | - | H |

| Overall, Resulting Effect(s) of Project on the VEC | Evaluation of Significance |
|---|---|
| • All planned Project construction activities will be situated on land, and existing operations (storage, loading and vessel traffic) at the port facility will not materially change as a result of Project operations.<br>• There will be no interaction with, or adverse effects upon, fisheries or other marine activities. | • The proposed Project is not likely to result in significant adverse environmental effects on Fisheries and Other Marine Activities. |

| **Nature / Direction**: | **Magnitude**: | **Geographic Extent**: | **Duration**: | **Frequency**: |
|---|---|---|---|---|
| A = Adverse | N = Negligible | S = Site | 1 = < 1 month | O = Once |
| N = Neutral or No Effect | L = Low | L = Local | 2 = 1-12 months | S = Sporadic |
| P = Positive | M = Medium | R = Regional | 3 = 13-36 months | R = Regular |
| | H = High | | 4 = 37-72 months | C = Continuous |
| | | | 5 = > 72 months | |
| **Reversibility**: | **Certainty in Prediction**: | | | |
| R = Reversible | L = Low | | | |
| I = Irreversible | M = Moderate | | | |
| | H = High | | | |

### 5.10.4 Cumulative Environmental Effects

As the proposed Project will not likely result in adverse effects upon fisheries and other marine activities, it will not result in or contribute to any cumulative environmental effects on this VEC in combination with other projects and activities that have been or will be carried out.

## 5.11 Economy, Employment and Business

The Project will make a strong contribution to local and provincial economies as a result of the employment and business activity it will create over its various phases. The following sections assess and evaluate the potential implications of the Project for the economy of, and associated employment and business activity in, the Study Area, larger Western Newfoundland region, and in the province of Newfoundland and Labrador as a whole. For the purposes of this assessment:

- *Economy* refers to a system consisting of the production, distribution or trade, and consumption of goods and services by individuals, businesses or other organizations within a particular geographic region;

- *Employment* refers to the activities of those persons in the labour force who are engaged in the production, distribution and servicing of those goods and services; and
- *Business* refers to the presence, characteristics and activities of the companies or other entities that are involved in organizing those production, distribution and service activities, and which employ the labour force referenced above.

### 5.11.1 Potential Environmental Issues and Interactions

The construction and operation of the proposed Project will provide a range of important economic benefits at the local, regional and provincial scales. This will include the creation of employment and business opportunities, and associated income, taxation and gross domestic product (GDP) benefits through direct, indirect and induced economic effects throughout the life of the Project.

Conversely, new resource developments in rural areas, and the resulting availability of new and often relatively high paying jobs, can create problems for existing businesses and organizations through labor force competition and wage inflation.

*Table 5.57: Economy, Employment and Business: Potential Project-VEC Interactions*

| Project Component / Activity | Key Indicators and Parameters | | | |
|---|---|---|---|---|
| | Change in Economy | Change in Employment | Change in Business | Interference with Other Economic Sectors |
| **Construction** | | | | |
| • Site preparation | | | | |
| • Installation of surface mine site infrastructure | | | | |
| • Construction of the underground facilities | | | | |
| • Construction of the overland conveyor | | | | |
| • Upgrades and modifications at the existing port facility | | | | |
| • Construction of ancillary components (water and sewer, power supply, access roads) | | | | |
| • Project related expenditures | • | • | • | • |
| • Employment (including accommodations and transportation) | • | • | • | • |
| **Operations and Maintenance** | | | | |
| • Underground mining | | | | |
| • Underground processing | | | | |
| • Operation of surface components | | | | |
| • Port operations | | | | |
| • Water management | | | | |

| Project Component / Activity | Key Indicators and Parameters | | | |
|---|---|---|---|---|
| | Change in Economy | Change in Employment | Change in Business | Interference with Other Economic Sectors |
| • Project related expenditures | • | • | • | • |
| • Employment (including accommodations and transportation) | • | • | • | • |
| • Progressive rehabilitation | | | | |
| **Closure and Decommissioning** | | | | |
| • Site decommissioning | | | | |
| • Closure rehabilitation | | | | |
| **Potential Accidental Events** | | | | |
| • Spills of deleterious substances | • | • | • | • |
| • Fires | • | • | • | • |

### 5.11.2 Environmental Effects Assessment

#### 5.11.2.1 Construction

The various phases of the Project will represent hundreds of millions of dollars in capital investment for the region (Section 2.12). Project construction will occur over approximately four and a half years, during which significant employment opportunities in a wide variety of occupations will be created.

As described in Section 2.9, the construction phase of the Project will require approximately 250 on-site workers in a variety of occupations (Table 2.6). Most, if not all these positions, will be full-time in nature. Project construction will be carried out on a contractual basis, with workers hired at the discretion of the contractor(s) and in accordance with their own hiring practices and policies. It is therefore not known at this stage what proportion of these positions will be filled locally, as this depends on such factors as local labour availability and interest, the location and specific hiring practices of the contractor, unionization and other factors. However, it is anticipated that local hiring will be preferred wherever possible to help minimize costs, especially given the skilled and experienced workforce that is currently available in the Western Newfoundland area (Section 3.2.3).

As part of its Project planning activities to date, Atlas has developed a labour force estimate for the Project at the National Occupational Classification (2021) level (Section 2.9). These data will be made available to appropriate agencies and organizations to help identify employment needs and opportunities, as well any key labour supply gaps so that the responsible authorities can take appropriate planning actions.

During this phase of the Project, a variety of business opportunities will also be created through Project-related requirements for equipment, materials and other goods and services. Newfoundland and Labrador businesses will have full and fair opportunity to provide supplies and services to the Project, some of the key requirements for which will include, for example, various services such as vegetation clearing, earth moving and excavation, equipment supply, infrastructure supply and installation, drilling and blasting services and others. The nature and magnitude of these business benefits will be a function of the degree to which local, regional and provincial companies secure contracts to provide goods and services to the Project. The awarding of contracts will be based on commercial and technical requirements, while also considering factors such as experience, creditworthiness, price, quality, service, safety and delivery. It is the responsibility of local and provincial businesses to identify and respond to the opportunities generated by the Project in an effective and timely manner.

Atlas' procurement and contracting policies and procedures will provide for full and fair opportunity for participation by qualified and competitive Newfoundland and Labrador companies. The contracting and purchasing processes for the Project will include:

- Providing information and updates on upcoming Project activities and opportunities to relevant organizations;
- Obtaining and reviewing information on regional and provincial firms and their capabilities on an on-going basis, and the design and sizing of bid packages, where possible and appropriate, to fit the capabilities of local companies;
- Obtaining and reviewing information on Indigenous firms and their capabilities on an on-going basis, and the design and sizing of bid packages, where appropriate, to fit the capabilities of these companies; and
- Where required goods and services are not available locally on a competitive basis, bidders will be encouraged to involve Newfoundland and Labrador-based firms

In summary, the construction phase of the Project will provide important opportunities for Newfoundland and Labrador workers and businesses. These direct and indirect economic benefits will be supplemented by "spin-off" benefits as these incomes and revenues move through the regional, provincial and national economies.

#### 5.11.2.2 Operations and Maintenance

The operations phase of the Project will commence upon achieving commercial production in Q4 2029 and is expected to extend for a period of at least 34 years (Section 2.1). The underground development and construction will commence with boxcut and decline Development commencing in Q3 2025 and extending until Q2 2028. This will be followed by the salt capital development and installation of underground conveyor systems and processing plant, after which mine production ramp up will begin in Q2 2029 achieving commercial production levels in Q4 2029. The mine will operate 24 hours per day on a full 365-day year basis and will be operated by company employees on a 12-hour shift basis.

During Project operations, a significant number (currently estimated at 169) of long-term positions will be created in a variety of occupations (Section 2.9.2, Table 2.9). Atlas supports employment and gender equity in its hiring and contracting practices. It is anticipated that the Project will draw employees from many areas and sources, including attracting Newfoundlanders and Labradorians that are currently living and working away, but who want to come home and would choose to do so for a long-term, sustainable opportunity such as this.

In addition, the requirement for goods and services during Project operations will provide significant business opportunities in a number of areas. Atlas' procurement and contracting policies and procedures during this phase of the Project will likewise provide for full and fair opportunity for participation by qualified and competitive Newfoundland and Labrador companies, in keeping with the principles and approaches described in the preceding section.

In addition to the employment and business opportunities and associated economic benefits that are often associated with a development project, there is also the potential for local companies and organizations to be adversely affected through labour force competition, and potential wage inflation. As described in Section 3.2.3, the current labour force statistics for the region indicate that there is available capacity in the local labour force.

#### 5.11.2.3 Closure and Decommissioning

The closure of the Project and associated decommissioning and reclamation activities will provide employment and contractual opportunities in earth moving, landscaping, erosion control, building and facility demolition and removal, waste disposal, recycling and other products and services. Estimates regarding the labour force requirements that may be associated with eventual Project rehabilitation and closure will be developed and progressively updated as new information is available over the life of the mine. Atlas will continue to communicate with industry and other organizations to identify and communicate such opportunities as they become defined.

#### 5.11.2.4 Potential Accidental Events

An accidental event such as a Project-related fire, fuel or chemical spill or a vehicle/equipment accident may have negative effects on employment and business activity in the Study Area and surrounding region, depending on the nature, scale, location and timing of the incident. This is especially so if an event results in the destruction and/or closure of any businesses or other infrastructure in the region (such as transportation routes) and subsequent loss of employment and revenues. If construction or operations activities are halted, Project workers and firms supplying goods and services may also be negatively affected.

Human health and safety and environmental protection have been paramount considerations by Atlas in the planning and design of the Project, and these will continue to be the main priorities during the construction and operation of the development. Atlas will have comprehensive systems, plans and procedures in place for the various phases of the Project, to help prevent, and respond to as required, any such accidental event.

### 5.11.3 Residual Environmental Effects Summary

A summary of the predicted (residual) environmental effects of the Project on this VEC is provided in Table 5.58 below.

*Table 5.58: Economy, Employment and Business: Residual Environmental Effects Assessment Summary*

| **Potential Effect** | **Environmental Effect Descriptors** | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Nature** | **Magnitude** | **Extent** | **Duration** | **Frequency** | **Reversibility** | **Certainty** |
| **Construction** | | | | | | | |
| Change in economy | P | L-M | R | 4 | C | R | H |
| Change in employment | P | L-M | R | 4 | C | R | H |
| Change in business | P | L-M | R | 4 | C | R | H |
| Interference with other economic sectors | N | N | R | 4 | O-S | R | M |
| **Operations and Maintenance** | | | | | | | |
| Change in economy | P | M | R | 5 | C | R | H |
| Change in employment | P | M | R | 5 | C | R | H |
| Change in business | P | M | R | 5 | C | R | H |
| Interference with other economic sectors | N | N | R | 5 | O-S | R | M |
| **Closure and Decommissioning** | | | | | | | |
| Change in economy | P-N | N | R | 4 | S | R | H |
| Change in employment | P-N | N | R | 4 | S | R | H |
| Change in business | P-N | N | R | 4 | S | R | H |
| Interference with other economic sectors | N | - | - | - | - | - | H |
| **Potential Accidental Events** | | | | | | | |
| Change in economy | A | N | L-R | 2 | O | R | H |
| Change in employment | A | N | L-R | 2 | O | R | H |
| Change in business | A | N | L-R | 2 | O | R | H |
| Interference with other economic sectors | A | N | L-R | 2 | O | R | H |

| **Overall, Resulting Effect(s) of Project on the VEC** | **Evaluation of Significance** |
|---|---|
| • The proposed Project will result in important, positive socioeconomic effects in Western Newfoundland and throughout the province as a whole, including significant employment and business opportunities during its various phases.<br>• These direct and indirect economic benefits will be supplemented by "spin-off" benefits as these | • The proposed Project is not likely to result in significant adverse environmental effects on Economy, Employment and Business. |

| Potential Effect | Environmental Effect Descriptors | | | | | | |
|---|---|---|---|---|---|---|---|
| | Nature | Magnitude | Extent | Duration | Frequency | Reversibility | Certainty |
| incomes and revenues move through the regional, provincial and national economies. | | | | | | | |

| | | | | |
|---|---|---|---|---|
| **Nature / Direction**:<br>A = Adverse<br>N = Neutral or No Effect<br>P = Positive | **Magnitude**:<br>N = Negligible<br>L = Low<br>M = Medium<br>H = High | **Geographic Extent**:<br>S = Site<br>L = Local<br>R = Regional | **Duration**:<br>1 = < 1 month<br>2 = 1-12 months<br>3 = 13-36 months<br>4 = 37-72 months<br>5 = > 72 months | **Frequency**:<br>O = Once<br>S = Sporadic<br>R = Regular<br>C = Continuous |
| **Reversibility**:<br>R = Reversible<br>I = Irreversible | **Certainty in Prediction**:<br>L = Low<br>M = Moderate<br>H = High | | | |

### 5.11.4 Cumulative Environmental Effects

The proposed Project will, throughout its various phases, result in important, positive economic effects. This will include creating significant direct employment, as well as business opportunities for local and provincial businesses in the supply of goods and services. These direct and indirect economic benefits will be supplemented by “spin-off” economic outcomes, as these incomes and revenues move throughout the regional, provincial and national economies.

Other on-going and future development projects in Western Newfoundland and Labrador and elsewhere may have similar, positive effects on the economy, employment and business throughout the region and province. These will contribute further to the regional and provincial economies by providing important employment and business benefits for the next several decades. The direct result will be the generation of higher individual and business income levels and government revenues, increased employment and training opportunities and opportunities for business activity and growth. These cumulative outcomes will generate immediate benefits to the economy but may also lead to longer-term indirect changes. For example, a labour force with higher skills and experience levels can command better wages and positions. Similarly, project experience can help local businesses to become more competitive locally, nationally and internationally.

## 5.12 Environmental Monitoring and Follow-up

Atlas is committed to obtaining all required permits, approvals and authorizations for the proposed Project, and the company and its contractors will comply with these and all relevant regulations and guidelines in planning and implementing the proposed Project that is the subject of this EA Registration. This includes the various mitigations identified and committed to in the preceding sections, the implementation and effectiveness of which will be planned, managed and tracked in accordance with Atlas’ internal plans and procedures.

Atlas has also committed to undertake, in parallel with its on-going and planned detailed engineering design work for the Project, a number of additional environmental studies, analyses, plans and monitoring initiatives. These include:

- Design and completion of a detailed groundwater assessment, including fieldwork and modelling, that will build upon the preliminary and conceptual analyses presented herein. This will involve further hydrogeological investigations which will include in-situ hydraulic conductivity testing of overburden and bedrock lithologies, pump testing, groundwater level measurement and long-term monitoring, and water quality sampling.

- Development of a Water Management Plan addressing site water management, discharge and associated monitoring to ensure regulatory compliance.

- Development and implementation of a Blasting Management Plan designed to reduce air emissions, and noise and vibration levels and to ensure adequate clearance areas / evacuations and public notifications. This will include a pre-blast impact study of nearby infrastructure, as well as monitoring during and after blasting activity.

- Air quality (dust) and noise monitoring during Project construction and operations to evaluate the nature, amount and distribution of any such emissions from the mine and conveyer, as well as their potential to interact with nearby residents.

- Monitoring for bird nests will be conducted in advance of any planned site clearing during the breeding season (May 1 - August 15).

- Development and implementation of Environmental Protection Plan(s) and Emergency Response Plans (Appendix C).

Each of these additional environmental studies, analyses, plans and monitoring initiatives will be developed in cooperation with, and their eventual designs and results submitted to, the appropriate regulatory authorities. Atlas will also actively engage the Town of St. George's and other local organizations in the development and conduct of these future studies, as well as in their use in future Project planning and implementation. The objective will be to address any environmental issues that may emerge either proactively in Project design, or through an adaptive management approach throughout the various phases of the Project.

As part of the EA, Atlas has also identified and committed to on-going communication with local communities, Indigenous groups, other organizations and the general public throughout the life of this Project, as a key approach to managing any adverse effects and maximizing benefits. This is intended to allow for continued discussion of Project activities and any issues as they may arise during its implementation, as well as to cooperatively and collaboratively plan and implement any required (adaptive) management measures that may be required to address these throughout the life of the Project.

Atlas and its contractor(s) will also apply for, receive, and adhere to the terms and conditions of, any subsequent (post EA) regulatory approvals and authorizations that are required for specific Project components and activities in its construction, operations and maintenance, and decommissioning and closure phases. These subsequent regulatory review processes will facilitate the provision of more detailed information on key Project components, activities and potential environmental emissions and interactions to the various applicable regulatory authorities for review and approval, as such information becomes progressively available through Atlas' on-going engineering work. These include, for example, required permits from the Government of Newfoundland and Labrador related to: Project construction and operations (industrial processing works); water use and water management; any activities located in proximity to or which may otherwise alter waterbodies; overall Project development, rehabilitation and closure; and others (see Appendix A).

# 6.0 SUMMARY AND CONCLUSIONS

Atlas Salt Inc. (Atlas) is proposing to develop the Great Atlantic Salt Project (the Project), located on the west coast of the Island of Newfoundland within the municipal boundaries of the Town of St. George's.

The proposed Project will consist of an underground salt mine and associated surface facilities and infrastructure in Western Newfoundland, the primary components of which include:

- An underground salt mine and ore processing (crushing and screening) facilities;
- Mine site surface infrastructure;
- An overland conveyor system routed along the existing Flintkote Road;
- Use of the existing Turf Point marine facility, with some planned modifications and upgrades (onland only); and
- Associated, ancillary infrastructure including access roads, water and sewer systems, and power supply.

The Project will produce and export crushed salt for the road de-icing market, with an initial production capacity of 2.5 million tonnes of rock salt per year. All mining, crushing and sizing facilities and activities will be located underground, and the resulting product will be transported by covered or enclosed conveyor to a dedicated storage and port facility at Turf Point. From there, it will be loaded onto ships for destination markets in the Maritime Provinces, Quebec and Eastern United States.

Commencing Q4 2024 with detailed permitting, engineering and the procurement of key long-lead components, the current Project schedule would see construction activity in the field beginning in Q2 2025 and continuing year-round. The operations phase of the Project will commence upon completion of construction and associated commissioning, with initial (capital development) mining commencing in Q4 2025 and extending to approximately Q2 2029. This will be followed by the installation of underground infrastructure, after which mine production will ramp up to commercial production levels in Q4 2029 and extend for an operational period of at least 34 years.

This Project represents an important aspect of the continued growth and – as the province’s first ever salt mine – future diversification of Newfoundland and Labrador’s mining sector. It will continue and further build upon the mining history of the St. George’s region, where mining and associated shipping activities dating back to the 1950s have helped sustain the community and have led to generations of workers and families being familiar with and skilled at these activities. This industrial legacy establishes a solid foundation for the further expansion and diversion of the area’s mining sector, through the proposed salt mining and shipping project that is the subject of this EA Registration.

The Project will be an important and significant contributor to the local, regional and provincial economies as a result of the employment and business activity that it will create throughout its various phases. It will represent hundreds of millions of dollars in capital investment for the region, and over its construction phase will create considerable employment and business opportunities. During operations, a large number of new positions in a variety of occupations will be created and maintained over several decades, and the requirement for goods and services during this phase of the Project will again provide significant business opportunities for local and provincial businesses. These direct and indirect economic benefits will be supplemented by "spin-off" effects as these incomes and revenues move through the regional, provincial and national economies.

Residents, communities and organizations have expressed a strong interest in these economic opportunities, and in seeing the local social and economic benefits of the Project maximized, which has led to an overwhelming level of local support for the Project. Maximizing local social and economic benefits will be facilitated through the development and implementation of hiring, procurement and human resources policies, plans and procedures throughout the various phases of the Project, as well as on-going communication and cooperation between Atlas and all applicable agencies and organizations.

Atlas is very encouraged by the social and economic benefits that will be realized through this Project and is confident that any environmental considerations that may be associated with it can be addressed through sound Project planning, design and implementation, including the various environmental protection measures and future analyses and plans that have been identified and committed to in this EA Registration document. The Project will therefore help facilitate the continued growth and diversification of the province's mining sector, but also do so with a very small environmental footprint – including minimal GHG emissions.

The Project is being planned, and will be undertaken, in a manner that avoids or reduces adverse environmental effects. This includes various approaches and characteristics that have been "built-in" to the Project in order to proactively address potential environmental issues, such as:

- the planned location and layout of the Project site to avoid interactions with environmentally sensitive areas;
- the planned conduct of all mining and processing activities underground;
- equipment used in the underground operations will be electrical, thereby minimizing atmospheric / GHG emissions from Project activities;
- the design of Project access routes to avoid vehicular traffic through the Town; and
- the planned development and use of a covered or enclosed conveyer system to avoid dust, reduce noise and other emissions and any associated public health concerns.

These measures, along with the rather straightforward and environmentally benign nature of the planned mining and processing operations, which will not include the use of chemicals nor result in the generation of tailings, will help ensure that the Project is undertaken in a safe and environmentally responsible manner.

The Project will also be carried out in full compliance with applicable legislation and regulations, including the environmental protection measures defined and committed to by Atlas in this EA Registration. These include a variety of plans, processes and mitigation measures addressing site water management, the control of noise, light and dust, and other issues and requirements. Atlas has also committed to undertake, in parallel with its on-going and planned detailed engineering design work for the Project, a number of additional environmental studies, analyses, plans and monitoring initiatives. Atlas and its contractor(s) will also apply for, and adhere to the terms and conditions of, any subsequent regulatory approvals and authorizations that are required for specific Project components and activities in its construction, operations and maintenance, and decommissioning and closure phases.

In conclusion, the proposed Project represents a technically feasible, economically viable, attractive, and environmentally and socially responsible means of developing the salt resources in the Project Area, addressing an important market demand while at the same time providing significant socioeconomic benefits.

With the implementation of the various mitigation measures identified and proposed throughout this document, the Project is not likely to result in significant adverse effects to any aspect of the biophysical or socioeconomic environments, during either of its phases.

# REFERENCES

AECOM. 2013. Hydrogeology of Western Newfoundland. Prepared for Newfoundland and Labrador Department of Environment and Conservation – Water Resources Management Division.

AMEC. 2013. Hydrogeology of Western Newfoundland. Report TF8312717. Retrieved from www.env.gov.nl.va/env/waterres/cycle/groundwater/Hydrogeology_Western_NL.pdf

AMEC Environment & Infrastructure. 2014. Western Newfoundland & Labrador Offshore Area Strategic Environmental Assessment Update. 2014. Final Report. April 2014. Prepared for the Canada[1] Newfoundland and Labrador Offshore Petroleum Board

Bay St. George South Area Development Association, 2019. Habitat Restoration Flat Bay Brook. pp 73

Bergerud, A.T. 1969. The status of pine marten in Newfoundland. Canadian Field-Naturalist 83: 128-131.

Bergerud, A.T. 1971. The population dynamics of Newfoundland caribou. Wildlife Monographs. No. 25. 55 pp.

Bourgeois et al, 1995. https://waves-vagues.dfo-mpo.gc.ca/library-bibliotheque/187711.pdf

Canadian Wildlife Service, EC. 2014. https://www.ceaa-acee.gc.ca/050/documents/p80054/121249E.pdf

COSEWIC. 2012. COSEWIC assessment and status report on the American Eel Anguilla rostrata in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xii + 109 pp. (www.registrelep-sararegistry.gc.ca/default_e.cfm).

COSEWIC. 2013a. COSEWIC assessment and status report on the Bank Swallow Riparia riparia in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 48 pp. (www.registrelep-sararegistry.gc.ca/default_e.cfm).

COSEWIC. 2013b. COSEWIC assessment and status report on the Little Brown Myotis Myotis lucifugus, Northern Myotis Myotis septentrionalis and Tri-colored Bat Perimyotis subflavus in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp. (www.registrelep-sararegistry.gc.ca/default_e.cfm).

COSEWIC. 2013c. COSEWIC assessment and status report on the Piping Plover circumcinctus subspecies (Charadrius melodus circumcinctus) and the melodus subspecies (Charadrius melodus melodus) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xiv + 39 pp. (www.registrelep-sararegistry.gc.ca/default_e.cfm).

COSEWIC. 2014. COSEWIC assessment and status report on the Banded Killifish Fundulus diaphanus in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 22 pp. (www.registrelep-sararegistry.gc.ca/default_e.cfm).

COSEWIC. 2018. COSEWIC assessment and status report on the Olive-sided Flycatcher Contopus cooperi in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 52 pp. (http://www.registrelep-sararegistry.gc.ca/default.asp?lang=en&n=24F7211B-1).

COSEWIC. 2021. COSEWIC assessment and status report on the Barn Swallow Hirundo rustica in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xii + 60 pp. (https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry.html).

COSEWIC. 2022. COSEWIC assessment and status report on the American marten (Newfoundland population) Martes americana atrata in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xii + 42 pp. (https://www.canada.ca/en/environment-climate-change/services/species-risk-publicregistry.html).

COSEWIC. 2023. COSEWIC assessment and status report on the Hoary Bat Lasiurus cinereus, Eastern Red Bat Lasiurus borealis and Silver-haired Bat, Lasionycteris noctivagans, in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxi + 100 pp. (https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry.html).

Damman. 1983. Damman, A.W.H. 1983. An ecological subdivision of the island of Newfoundland. In G.R. South (ed.) Biogeography and ecology of the island of Newfoundland. Junk Publishers. The Hague, The Netherland

Department of Environment and Conservation. 2015. A report on the Newfoundland caribou. 90 pp.

DFO (Fisheries and Oceans Canada). 2009. Conservation objectives for the Ecologically and Biologically Significant Areas (EBSA) of the Estuary and Gulf of St. Lawrence. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2009/049

DFO. 2013. Identification of additional Ecologically and Biologically Significant Areas (EBSAs) within the Newfoundland and Labrador Shelves Bioregion. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2013/048.

DFO. 2015. Coral & Sponge Conservation Strategy for Eastern Canada. https://www.dfo-mpo.gc.ca/oceans/publications/cs-ce/index-eng.html

DFO. 2017. Delineation of significant areas of coldwater corals and sponge-dominated communities in Canada's Atlantic and Eastern Arctic Marine Waters and their overlap with fishing activity. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2017/007.

DFO. 2022. Small Craft Harbours. https://www.dfo[1]mpo.gc.ca/sch-ppb/index-eng.html.

DFO. 2022. https://www.dfo-mpo.gc.ca/pnw-ppe/ffhpp-ppph/publications/nfl-freshwater-protection-eau-douce-tnl-eng.html

Domenico, P. A., and F. W. Schwartz. 1998. Physical and Chemical Hydrogeology, 2nd ed., New York: John Wiley, 506 pp.

Donovan, V. M., Brown, G. S., and F. Mallory. 2017. The impacts of forest management strategies for woodland caribou vary across biogeographic gradients. PLoS One 12.2: e0170759.

Environment Canada. 2013. Recovery Strategy for the American Marten (*Martes americana atrata*), Newfoundland population, in Canada. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. xi pp. + appendix.

EC (Environment Canada). 2019a. Canadian Climate Normals: 1981-2010 Climate Normals & Averages. Accessed online at http://climate.weather.gc.ca/climate_normals/index_e.html

ECCC. 2023. https://www.cer-rec.gc.ca/en/data-analysis/energy-markets/provincial-territorial-energy-profiles/provincial-territorial-energy-profiles-newfoundland-labrador.html.

ESA (Endangered Species Act). 2001 https://www.assembly.nl.ca/legislation/sr/statutes/e10-1.htm

Forsey, O., J. Bissonette, J. Brazil, K. Curnew, J. Lemon, L. Mayo, I. Thompson, L. Bateman, and L. O'Driscoll. 1995. National Recovery Plan for the Newfoundland Marten. Rep. No. 14. Recovery of Nationally Endangered Wildlife Committee, Ottawa, Ont.

Fracflow Consultants, Inc and Newfoundland and Labrador Consulting Engineers. 2003. Exploratory Well Drilling Programme, Town of St. George's, NL; dated October 6, 2003.

Freeze, R., & Cherry, J. 1979. Groundwater. NJ, USA: Prentice Hall; Englewood Cliffs.

Gosse, J. W., R. Cox, and S. W. Avery. 2005. Home-range characteristics and habitat use by American martens in eastern Newfoundland. Journal of Mammalogy 86:1156–1163.

Government of Newfoundland and Labrador, 1992. Water Resources Atlas of Newfoundland, Water Resource Division, Department of Environment and Lands, NL

Government of Newfoundland & Labrador (2023). Outfitters. Newfoundland and Labrador, Canada – Official Hunting Website. https://www.huntingnewfoundlandlabrador.com/plan-and-book/outfitters

Government of Canada. 2023. Canada Marine Planning Atlas. Online Resource. Available at: https://www.dfo-mpo.gc.ca/oceans/planning-planification/atlas/index-eng.html (last accessed March 2023)

Hatch Consulting Engineering and project Implementation, 2008. Environment Canadea, Mining and Processing Division, Canadian Potash Mining Sector, Foundation Report – Final Report. Health Canada

Hearn, B.J. 2007. Factors affecting habitat selection and population characteristics of American marten (Martes americana atrata) in Newfoundland. Ph.D. dissertation, University of Maine, Orono, Maine, USA. xxvi + 226 pp.

Hearn, B. J., D. J. Harrison, A. K. Fuller, C. G. Lundrigan, and W. J. Curran. 2010. Paradigm shifts in habitat ecology of threatened Newfoundland martens. Journal of Wildlife Management 74:719–728.

Hearn Consulting Inc. 2021. Habitat availability and population size for American marten (Martes americana atrata) on the island of Newfoundland. 68 pp.

Hoyt, J. R., Kilpatrick, A. M., & Langwig, K. E. 2021. Ecology and impacts of white-nose syndrome on bats. Nature Reviews Microbiology, 19 (3), 196-210.

Huang**,** R. K., Q. M. Webber, M. P. Laforge, A. L. Robitaille, M. Bonar, J. Balluffi-Fry, S. Zabihi-Seissan, and E. Vander Wal. 2021. Coyote (Canis latrans) diet and spatial co-occurrence with woodland caribou (Rangifer tarandus caribou). Canadian Journal of Zoology, 99: 391-399.

Hull, S. H. 2023. Provincial Archaeology Office, Government of Newfoundland and Labrador. Personal communication (email correspondence), November 2, 2023.

LGL. 2007. LGL Limited. Port au Port Bay Exploration Drilling Program Environmental Assessment. https://www.cnlopb.ca/wp-content/uploads/pdidrill/pdieart.pdf

Mahoney**,** S. P. 2000. A synthesis and interpretation of the biology of woodland caribou on the island of Newfoundland. Sustainable Development and Strategic Science Division, St. John's, Newfoundland, 205 pp.

McBurney and Segers. 2021. Jordi Segers, Scott McBurney, Megan Jones, and Patrick Zimmer. The Canadian Wildlife Health Cooperative National Bat Health Report – 2021. https://www.cwhc-rcsf.ca/docs/technical_reports/CWHC%20National%20bat%20health%20report%202021.pdf

Millais, J.G. 1907. Newfoundland and its Untrodden Ways. Longmans, Green and Co., London, England. 340 pp.

Montaron, B., & Tapponnier, P. (n.d.). *Quantitative model for salt deposition in actively spreading basins**. Search and Discovery. https://www.searchanddiscovery.com/documents/2010/30117montaron/ndx_montaron.pdf

Natural Resources Canada. 2022. Topographic Data of Canada – CanVec Series. Retrieved under Open Government License – Canada. https://open.canada.ca/data/en/dataset/8ba2aa2a-7bb9-4448-b4d7-f164409fe056

NBBA. Square 21TUP86. https://nf.birdatlas.ca/data/

NewGold. 2015. https://projects.eao.gov.bc.ca/api/document/58868f9de036fb0105768505/fetch

NL Community Accounts 2023. https://nl.communityaccounts.ca/default.asp

NLDECC. 2022. Newfoundland and Labrador Department of Environment and Climate. https://www.gov.nl.ca/ecc/files/2022-Air-Quality-Annual-Report.pdf

NLDFA (Department of Fisheries and Aquaculture, Government of NL). 2021. Aquaculture Sites. Database accessed through https://nloffshorestudy.iciinnovations.com/mapviewer/ReportViz/Index

NLDMAE. 1992. Water Resources Atlas of Newfoundland. https://www.gov.nl.ca/ecc/files/waterres-cycle-hydrologic-water-resources-atlas-of-newfoundland-1992.pdf

NLECC-Well Water Database. Newfoundland and Labrador Department of Environment and Climate Change. https://www.gov.nl.ca/ecc/waterres/cycle/groundwater/data/

NLECC-Water Resources Atlas. Water Resources Atlas, Newfoundland and Labrador Department of Environment and Climate Change. https://storymaps.arcgis.com/stories/79d69ba5d56c488e9f8daa525fe94643

NL GMD 2022. Forestry Habitat Data. https://geohub-gnl.hub.arcgis.com/search?tags=forestry

NLIET-Geoscience Atlas. Geoscience Atlas, Newfoundland and Labrador Department of Industry, Energy and Technology. https://geoatlas.gov.nl.ca.

NL Wildlife Division, undated. https://www.gov.nl.ca/ffa/files/wildlife-endangeredspecies-boreal-felt-lichen.pdf

Newfoundland and Labrador Endangered Species Act. 2001. cE-10.1 S1. https://www.assembly.nl.ca/legislation/sr/statutes/e10-1.htm

NMRT (Newfoundland Pine Marten Recovery Team) 2010. https://www.sararegistry.gc.ca/virtual_sara/files/plans/rs_american_marten_newfoundland_population_e_final.pdf

Ontario Ministry of Labour, Immigration, Training and Skills Development. (2021). A guide to the Noise Regulation under the Occupational Health and Safety Act. https://www.ontario.ca/document/guide-noise-regulation-under-occupational-health-and-safety-act/appendix-d-noise-construction-mining-farming-and-firefighting-operations

PAANL (Protected Areas Association of NL). 2008. Western Newfoundland Forest ecoregion – St. George's Bay Subregion. Department of Environment and Conservation. Government of Newfoundland and Labrador.

*Qalipu Development Corporation*. Qalipu. 2023. https://qalipu.ca/corporate/qalipu-development-corporation/

QFNB (Qalipu First Nation Band). 2023. https://qalipu.ca/

SLR Consulting (Canada) Ltd. 2023. Technical Report on the Great Atlantic Salt Project, Newfoundland and Labrador, Canada. Report for NI 43-101; dated October 11, 2023. Technical Report on the Great Atlantic Salt Project, Newfoundland and Labrador, Canada (atlassalt.com)

SARA (Species at Risk Act), SC. 2002, c 29, ss 5, 7-12.

Species Status Advisory Committee. 2012. https://www.gov.nl.ca/ffa/files/wildlife-endangeredspecies-ssac-pdf-ssac-ann-rpt-2012-13.pdf

Species Status Advisory Committee. 2016. Status Review for Mummichog [(Fundulus heteroclitus macrolepidotus)] in Newfoundland and Labrador. Wildlife Division, Department of Environment and Conservation, Government of Newfoundland and Labrador, Corner Brook, Newfoundland and Labrador, Canada.

Stantec 2023. https://www.gov.nl.ca/ecc/projects/2202-2/. Sections 1-3: https://www.gov.nl.ca/ecc/files/env_assessment_y2023_2202-EIS_4_Ch1-3.pdf

Thompson, I.D. 1991. Could marten become the spotted owl of eastern Canada? The Forestry Chronicle 67:136–140.

Town of St. George's. 2020. Municipal Plan and Development Regulations. 2019-2029. Approved November 2020. https://townofstgeorges.com/municipality/municipal-plan/

Town of St. George's. 2023. https://townofstgeorges.com/

USGS & Canadian Salt Industry Data, 2020. Weir, J.N., Morrison, S.F., Luther, J.G., and Mahoney, S.P. 2014. Caribou Data Synthesis – Progress Report #2. Status of the Newfoundland population of woodland caribou. Technical Bulletin No. 008, Sustainable Development and Strategic Science, Government of Newfoundland and Labrador, St. John's, NL.

Wiese et al. 2001. Wiese, F.K., Montevecchi, W.A., Davoren, G.K., Huettmann, F., Diamond, A.W., and Linke, J. (2001). Seabirds at risk around offshore oil platforms in the Northwest Atlantic.Marine Pollution Bulletin. 42(12):1285-1290.

Wilkerson M.L., M.G.E. Mitchell, D. Shanahan, K.A. Wilson, C.D. Ives, C.E. Lovelock, J.R. Rhodes. 2018. The role of socio-economic factors in planning and managing urban ecosystem services. https://www.sciencedirect.com/science/article/abs/pii/S2212041616302480

Williams, T.M., and D. C. Heard. 1986. World status of wild Rangifer tarandus populations. Rangifer, 6: 19–28.

Wright and Hopky. 1998. https://publications.gc.ca/collections/Collection/Fs97-6-2107E.pdf