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Environmental Impact Assessment

QSL International Itée

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Nouveau terminal portuaire de Sorel-Tracy – Secteur Saint- Laurent

Assessment Summary

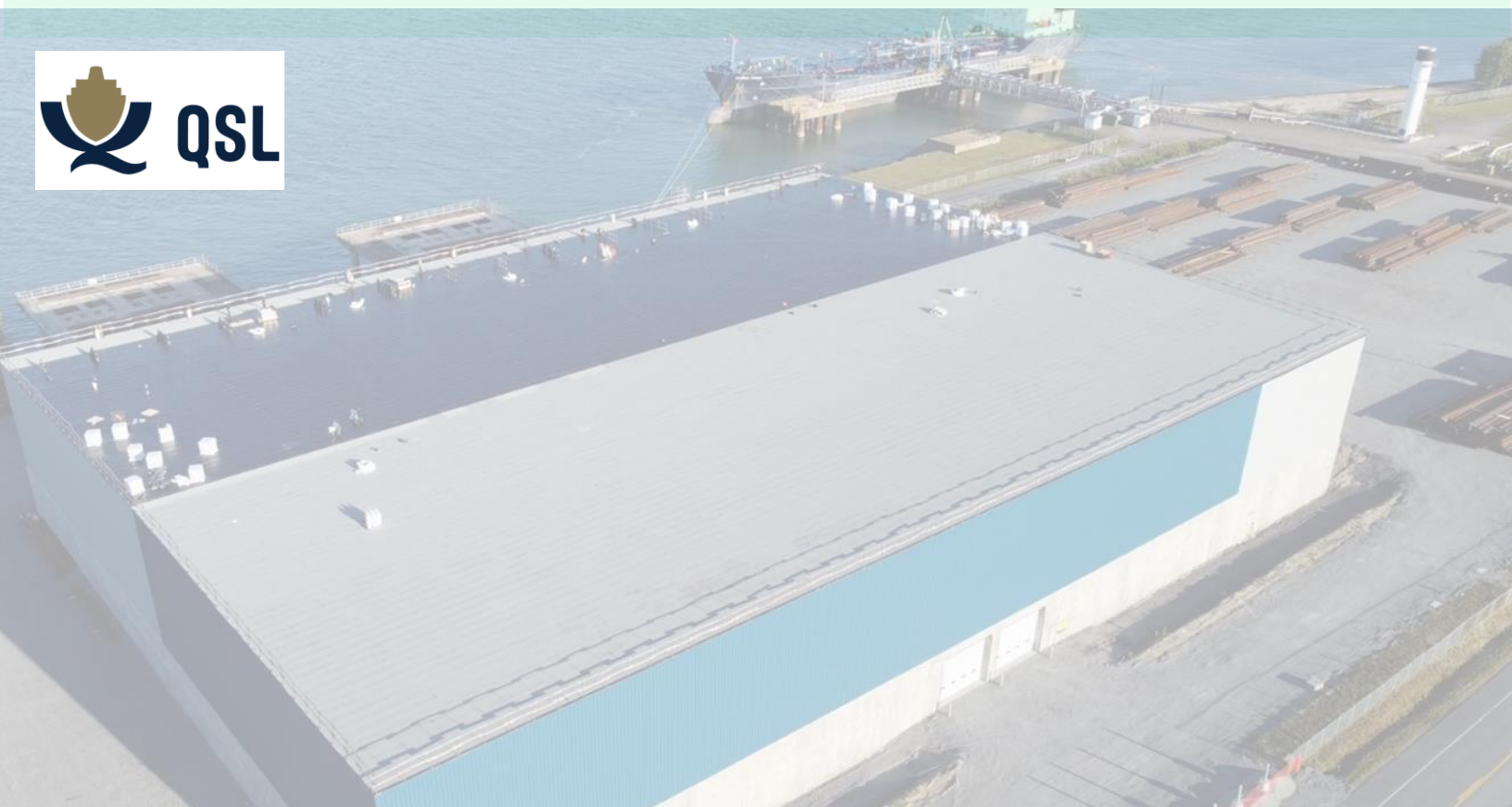


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Preface

This summary presents the main elements of the environmental impact assessment (EIA) for the construction of a new port terminal in the Saint-Laurent sector of the industrial port zone (IP Zone) of Sorel-Tracy by QSL International Ltd. (QSL). This summary has been prepared in full compliance with the *Directive pour la réalisation d'une étude d'impact sur l'environnement* emitted in June 2022 (DGÉES 2022) of the Quebec Ministry of the Environment, Climate Change, Wildlife and Parks (MELCCFP) and the *Individualized Guidelines for the Impact Assessment of the Sorel-Tracy Port Terminal Project* of the Impact Assessment Agency of Canada (IAAC 2023).

This summary presents the regulatory context in Chapter 1 and the project purpose and need for the project in Chapter 2. Chapter 3 presents the project as considered for the purposes of the environmental impact assessment. Chapter 4 presents alternative means of carrying out the project and alternatives to the project.

Chapters 5 and 6 summarize community involvement and concerns following consultations with the public and Indigenous people, respectively.

Chapter 6 summarizes the valued components of the biological, physical and human environments. Chapter 7 provides a description of the components valued by Indigenous peoples and an assessment of the cumulative effects on the St. Lawrence River specific to the interests and concerns raised by Indigenous peoples.

The environmental assessment methodology and the temporal and spatial boundaries of the assessment are summarized in Chapter 9, which also presents a summary of the assessment of impacts on valued components, mitigation measures, design elements, enhancements, and monitoring, follow-up, and offsetting plans and programs. The cumulative effects on the valued components selected for such an assessment are addressed in Chapter 10.

Chapter 11 summarizes the effects of possible accidents or failures and the analysis of risks during operation and construction. Chapter 12 outlines the monitoring, follow-up, and offsetting programs and plans that will be implemented. Finally, Chapter 13 presents adaptations to climate change, and Chapter 14 presents the integration of sustainable development principles into project development.

Readers are invited to refer to the EIA for detailed information, as well as to the appendices and sectoral studies accompanying the study in volumes 2 and 3 of the EIA.

The French version of this summary and the environmental impact study report is the official version. In the event of any conflict between the English and French versions, the French version shall prevail.



1. Introduction

QSL International Ltd. (QSL) is proposing to develop a new port terminal in the industrial port zone (IP Zone) of Sorel-Tracy, in the Saint-Laurent sector. QSL will be responsible for developing, managing, and operating the future port terminal.

The first phase of work, consisting of the development of a storage area and a warehouse, began in 2020 and is nearing completion with the development of an outdoor storage and handling area for road salt. These activities are not part of the project definition covered by the impact study. To date, these storage facilities serve the Saint-Joseph-de-Sorel wharf facilities, also operated by QSL.

Phase 2 of the project, currently in the pre-engineering stage, consists of installing a wharf structure designed to accommodate solid bulk and cargo ships with a capacity of more than 25,000 DWT, from which:

- solid bulk cargo will be handled from or to ships and transported via an assembly of electric conveyors;
- general cargo will be unloaded and trucking for storage on site or off-site, depending on the cargo handled.

QSL International Ltd. (QSL) is a Quebec-based company that has played a key role in North American maritime logistics since 1978. The company offers expertise in port terminal operations, stevedoring, marine services, logistics, and transportation.

The project is located in the Saint-Laurent sector of the industrial port zone (Zone IP) of Sorel-Tracy, in the Pierre-De Saurel Regional County Municipality (RCM), in Montérégie.

1.1 Regulatory Context

1.1.1 Triggers for the Impact Study

The environmental impact study was prepared in accordance with the *Directive pour la réalisation d'une étude d'impact sur l'environnement* (DGÉES 2022) issued by the Quebec Ministry of the Environment, Climate Change, Wildlife and Parks (MELCCFP) issued in June 2022 and the *Individualized Guidelines for the Environmental Impact Assessment of the Sorel-Tracy Port Terminal Project* issued in April 2023 by the Impact Assessment Agency of Canada (IAAC 2023).

The construction of a new port terminal is subject to the *Southern Quebec Environmental Impact Assessment and Review Procedure* since it is one of the 38 project categories listed in Schedule 1 of the *Regulation respecting the environmental impact assessment and review of certain projects* (RLRQ c Q-2, r. 23.1) under the *Environment Quality Act* (RLRQ, c. Q -2):

- The construction or expansion of a port or port terminal (section 4, paragraph 1)

The *Specific Activities Regulations* (SOR/2019-285) under the *Impact Assessment Act* (IAA) (S.C. 2019, c. 28, s. 1) also identified the project as a designated project requiring a federal environmental assessment under the following provisions:

- The construction, operation, decommissioning, and closure of a new marine terminal designed to accommodate vessels of more than 25,000 DWT (s. 52)



QSL submitted a project notice to the Environmental Assessment Branch of the MELCCFP in June 2022 and a Detailed Project Description to the Impact Assessment Agency of Canada (IAAC) in December 2022. Based on the project description, the IAAC determined that a federal environmental assessment was required.

This environmental impact assessment (EIA) is intended to meet the requirements of the provincial and federal environmental assessment processes and to provide the most comprehensive information possible on the potential environmental effects and impacts of the proposed new port terminal in Sorel-Tracy, in the St. Lawrence sector. This impact assessment was submitted to the Quebec Ministry of the Environment, Climate Change, Wildlife and Parks in February 2025, and this version is being submitted to the Impact Assessment Agency of Canada.

Although this impact study was prepared for joint submission to the two entities responsible for the environmental assessment, the processes for integrating comments from provincial and federal ministries proved too different to allow for joint submission. This version therefore incorporates clarifications made in light of comments received from federal authorities on the scope of the description and assessment provided by QSL International Ltée.

1.1.2 Laws, Regulations, Standards, Policies, and Guidelines

Upon completion of the environmental assessment process and after obtaining the Quebec government's decree and the AÉIC's decision statement, QSL will be required to obtain permits and authorizations for the construction and operation of the new port terminal. Among the authorizations that may be required are (non-exhaustive list):

Quebec:

- Authorization under the *Environment Quality Act* (RLRQ, chapter Q-2) (MELCCFP);
- Authorization under the *Endangered and Vulnerable Species Act* (E-12.01) (MELCCFP);
- Authorization under the *Act respecting the conservation and development of wildlife* (ch. C-61.1) (MELCCFP).

Canada:

- Authorization issued under paragraph (b) of section 35(2) of the *Fisheries Act* (RLC, 1985, c. F-14) of the DFO;
- Authorization under the *Species at Risk Act* (S.C. 2002, c. 29);
- Authorization under the *Canadian Navigable Waters Act* (CNWA; RSC 1985, c. N-22) of TC.

In addition to the required authorizations, the project will be subject to several federal and provincial laws and regulations for the construction and operation of the port terminal, including

Quebec:

- Environment Quality Act (LC 2002, c 29);
 - Hazardous Materials Regulation (RLRQ, c. Q -2, r. 32);
 - Air Quality Regulation (RRQ, c. Q -2, r. 4.1)
 - Regulation respecting compensation for damage to wetlands and water environments (RRQ, c. Q 2, r. 9.1)
 - Regulation respecting activities in wetlands, water environments and sensitive environments (RLRQ c Q-2, r 0.1)
 - Regulation respecting the regulation of activities according to their impact on the environment (RLRQ c Q-2, r 17.1)
 - Regulation respecting wastewater disposal and treatment in isolated dwellings (RLRQ c Q-2, r 22)



- Water Act (RLRQ, c. R-13);
 - Regulation respecting the State's water domain (RLRQ c R-13, r 1)
- Sustainable Development Act (RLRQ c D-8.1.1)
- Endangered or Vulnerable Species Act (RLRQ, c. E-12.01)
 - Regulation respecting threatened or vulnerable plant species and their habitats (RLRQ c E-12.01, r 3);
 - Regulation amending the Regulation respecting endangered or vulnerable wildlife species and their habitats (RLRQ c E-12.01, s. 10).
- Act respecting the conservation and development of wildlife (RLRQ, c. C-61.1);
 - Regulation respecting wildlife habitats (RLRQ, c. C-61.1, r. 18)
- Cultural Heritage Act (RLRQ, c. P-9.002);
- Land Use Planning and Development Act (RLRQ, c. A-19.1);
- Occupational Health and Safety Act (RLRQ, c. S-2.1)
- Civil Security Act (RRQ, c. S-2.3);
- Building Act (RLRQ, c. B -1.1)
- Act respecting the conservation of wetlands and water environments (LQ 2017, c 14).

Canada:

- Canadian Environmental Protection Act (C.E.A., 1999, c. 33):
 - Environmental Emergency Regulations (2019) (SOR/2019-51);
 - Ozone-depleting Substances and Halocarbon Replacements Regulations (SOR/2016-137);
- Migratory Birds Convention Act, 1994 (S.C., 1994, c. 22):
 - Migratory Birds Regulations (2022) (SOR/2022-105);
- Canadian Waterways Act (RLC 1985, c N-22):
 - Structures in Navigable Waters Regulations (CRC, c. 1232);
- Species at Risk Act (S.C. 2002, c. 29)
- Fisheries Act (RLC 1985, c F-14):
 - Authorizations for the Protection of Fish and Fish Habitat Regulations (SOR/2019-286);
- Transportation of Dangerous Goods Act (LC 1992, c 34);
 - Transportation of Dangerous Goods Regulations (SOR/2001-286);
- Hazardous Products Act (L.R.C., 1985, c. H-3).



2. Project Purpose and Need for the project

2.1 Project Purpose

2.1.1 Quebec's Maritime vision

In 2015, the Quebec government presented its Maritime Strategy, a plan to stimulate sustainable growth in Quebec's maritime economy. The strategy aims to develop an approach where industrial port areas offer advantages to businesses, which will be located close to production sites, related industries, and transportation infrastructure (maritime, rail, road) for fast and efficient delivery of goods and receipt of raw materials. By bringing production sites closer to raw material reception sites, the Quebec government also aims to reduce nuisances and maintenance costs related to the use of road infrastructure.

In this context, the city of Sorel-Tracy has expressed its interest to Hydro-Québec in acquiring the land of the former Tracy thermal power plant in order to develop an industrial-port complex within one of the seventeen (17) IP Zones recognized by the Quebec government, namely the Saint-Laurent sector of the Sorel-Tracy IP Zone. The city wanted to convert some of the former thermal power plant's infrastructure into a marine terminal, thereby equipping itself with a tool for development and attracting investment that would create wealth throughout its territory.

The City of Sorel-Tracy has identified several available sites near the port terminal totalling 6 million square feet that it wishes to promote to attract various industries. The City of Sorel-Tracy and QSL have committed to working together to develop these sites in order to maximize local and regional economic benefits.

2.1.2 Economic Context

Since 2017, the Montreal Metropolitan Community (CMM) has experienced significant economic growth, driven in large part by import-export activities. This economic momentum in import-export activities has stimulated the growth of QSL's operations, which have continued to expand at the Saint-Joseph-de-Sorel wharf. QSL has been operating a multi-user private wharf in Saint-Joseph-de-Sorel for over 30 years. Between 2017 and 2021, the company's economic contribution to the region amounted to \$87.5 million (in GDP), generating an average of 192 jobs per year.

2.1.3 Operational Needs

Over time, business has continued to grow and the site has become a major hub for steel and fertilizer shipments. Located in the heart of Quebec's breadbasket, interest in maritime delivery close to end users (farmers) has grown steadily in recent years. As a result, the Saint-Joseph-de-Sorel port terminal is now at full capacity, and significant waiting times for ships are caused by this congestion. Despite improved service levels, the only wharf currently in operation represents an operational bottleneck that does not allow for the trade flow necessary to meet market conditions and expectations. Currently, the existing wharf, located at 59 Étienne Street in Saint-Joseph-de-Sorel, is operating at maximum capacity, with peak periods sometimes requiring up to 30 days of waiting time before



unloading during the high season. In 2021, at least one ship was waiting in an anchorage area for 289 days (79% of the year). This demonstrates the lack of fluidity in the network.

2.1.4 Strategic Development Plan for the Industrial Port Zone

When the Quebec government announced the development of the Sorel-Tracy IP Zone in 2015 (MEIE, n.d.), the city of Sorel-Tracy identified an opportunity to develop the Saint-Laurent sector by building a multimodal port terminal that could meet the needs of industries that could potentially locate within the boundaries of the Joseph-Simard industrial park.

The City has identified several available sites near the port terminal totalling 6 million square feet that it wishes to promote to attract various industries (Figure 2-1). The City of Sorel-Tracy and QSL have committed to working together to develop these sites in order to maximize local and regional economic benefits.



Figure 2-1 Available land (in green) in the industrial-port area of Sorel-Tracy, Saint-Laurent sector. Land leased by QSL is shown in blue.¹

¹ <https://www.ville.sorel-tracy.qc.ca/ville/decouvrir-la-ville/complexe-industriolo-portuaire>

2.2 Need for the Project

2.2.1 Increased Port Capacity

Since the Saint-Joseph-de-Sorel wharf is operating at full capacity, this second berth operated by QSL in Sorel-Tracy would help significantly reduce waiting times for ships waiting offshore due to a lack of berths. The goal is to reduce ship waiting times by 200 days, bringing waiting times down to below 90 days. The new wharf, which could operate nine months a year (April-December), would accommodate up to 35 ships, allowing for the transshipment of 440,000 mt/year of bulk and general cargo.

The expansion projects for the Port of Trois-Rivières (Terminal No. 21) and the possible expansion of the Port of Bécancour cannot be used as solutions to reduce ship waiting times in Saint-Joseph-de-Sorel. Despite attempts by QSL to divert ships from Saint-Joseph-de-Sorel to Bécancour in 2021, only two (2) ships were able to proceed to avoid waiting. Similarly, the port of Trois-Rivières experienced a 39% increase in volume handled between 2016 and 2021, and as in Bécancour, the expansion of Terminal No. 21 is targeting markets other than those announced in Sorel-Tracy.

The addition of a new wharf, combined with related storage facilities, would represent a new offering to the market that would reduce ship transshipment times and improve the flow of the supply chain. The location of this new terminal would provide access to both the river and Highway 30.

More regionally, the nearby ports of Sorel-Tracy and Contrecoeur are the last ports downstream from the St. Lawrence Seaway. Due to restrictions on maximum dimensions and tonnage for using the Seaway, the two (2) ports represent the entrance to a funnel for maritime traffic. This geographical position facilitates ship lightening operations before entering the Seaway and is therefore strategic in the supply chain. The proposed terminal would therefore provide additional unloading capacity and, as a result, greater fluidity in the St. Lawrence River and Great Lakes transportation route. Delivery times would be shorter, leading to lower costs and having a direct impact on Canada's international economic competitiveness.

2.2.2 Local Supply

The project is located in a region dominated by the agri-food industry, which accounts for more than 80% of the MRC's land use. The establishment of a new port terminal would make it possible to supply agricultural producers with fertilizers and seeds.

Steel supplies for construction needs in the Greater Montreal area are also anticipated. Finally, with a strong history of shipbuilding and oversized parts manufacturing, the Sorel region is highly motivated to participate in Davie's shipbuilding projects and to promote short-distance marine transportation between Sorel and Lévis, which could be facilitated by the new wharf project.

2.2.3 Economic Benefits

The analysis of the economic benefits of the new port terminal in the Sorel-Tracy IP Zone—Saint-Laurent sector has been entrusted to Deloitte (2024). The study evaluates several economic impact indicators related to the construction and operation phases of the terminal. It is based on the Quebec Institute of Statistics (ISQ) intersectoral model for assessing the impact of the construction and operation of a new terminal with a capacity of 440,000 mt/year, and on Deloitte's model, which uses Statistics Canada's input-output tables to estimate the induced impact of spending. This study includes direct, indirect, and induced effects.



According to the study conducted by Deloitte (2022) to quantify and formalize the socio-economic contribution of QSL's activities in the Sorel-Tracy region between 2017 and 2021, QSL is:

- 26 million tons of goods handled annually through its 64 marine terminals;
- 2,000 jobs across its 64 marine terminals;
- One hundred and one (101) direct jobs and 192 jobs in total in Sorel-Tracy between 2017 and 2021, including 227 jobs in 2021 alone;
- A contribution of \$87.5 million to the regional gross domestic product (GDP)
- Approximately \$75.1 million in annual expenditures for ongoing activities (investment and operations)

The benefits of the proposed port terminal project are summarized as follows (Deloitte 2024):

- Construction phase (terminal only, based on a total investment of \$36.3 million, excluding investments already made in the warehouse and site development:
 - Number of jobs created: 268 in total, including 222 in Quebec;
 - Average gross compensation per job (in Quebec): \$78,477
 - Tax revenues generated (Quebec): \$2.1 million
 - Tax revenues generated (Canada): \$1.4 million
 - Impact on GDP: \$33.3 million, including \$27.6 million in Quebec.
- Operational phase (terminal only):
 - Number of jobs created: 60 in total, including 53 FTE in Quebec.
 - Average gross compensation per job: \$91,479;
 - Tax revenue generated (Quebec): \$0.9 million;
 - Tax revenue generated (Canada): \$0.6 million;
 - Contribution of \$5.8 million to Quebec's GDP;
 - Contribution of \$6.5 million to Canada's GDP.

In addition to serving the dominant economic activity, the creation of this project will diversify the services offered in the region, which will promote its economic growth. A new wharf in the Sorel-Tracy region, with its enviable maritime history, will be attractive to investors and future industrial occupants, in addition to supporting the region's ability to attract and sustain investment in the maritime sector. Significant additional economic spinoffs are therefore expected for the region.

2.2.4 Project Benefits

First, the addition of a wharf in the Sorel-Tracy region would significantly reduce GHG emissions associated with the operation of auxiliary engines on ships waiting at port terminals in this sector. The transfer of goods from the road network to the port network would also contribute to GHG reduction by significantly reducing the number of goods transported from the Saint-Joseph-de-Sorel wharf to the warehouse located in the IP Zone, Saint-Laurent sector, which represented 48,000 km of trucking for the year 2021.

The planned terminal would therefore reduce truck traffic within the community of Saint-Joseph-de-Sorel, redirecting it to the IP Zone in the Saint-Laurent sector, which is further away from residential neighbourhoods. The significant reduction in freight transport between the existing wharf in Saint-Joseph-de-Sorel and the IP Zone, Saint-Laurent sector, would therefore result in environmental and social benefits.



In short, the addition of a wharf in the Sorel-Tracy IP Zone would

- Offer an alternative to cargo delivery at the Saint-Joseph-de-Sorel wharf, which is located at the end of Étienne Street, thereby eliminating a bottleneck in the supply chain;
- Adapt to the maritime supply market and allow for an increase in the volume of goods traded;
- Diversify imports and exports in the Greater Montreal area and its free zone;
- Increase intermodal transportation opportunities while reducing trucking activities and conflicts between industrial traffic and residential areas within the urban perimeter of Sorel-Tracy;
- Invest in the construction of infrastructure that, in addition to having a low ecological footprint and reducing GHG emissions, is highly resilient to climate change by adapting to water level variations;
- To create economic leverage for a high-potential strategic development zone targeted by the Quebec government and the city of Sorel-Tracy, which falls within the parameters of sustainable development allowing for GHG reductions;



3. Project Overview

The project is located in the Saint-Laurent sector of the industrial port zone (Zone IP) of Sorel-Tracy, in the Pierre-De Saurel RCM, in Montérégie, at the following address:

12125, route Marie-Victorin
Sorel-Tracy, Quebec J3P 7A3

The project area (PA), which includes the planned infrastructure and related infrastructure, is located on lots 3,585,417 and 4,784,170 and a portion of lot 5,405,221 of the renovated Quebec cadastre, which correspond to the former site of the Sorel-Tracy thermal power plant operated by Hydro-Québec. This plant was dismantled between 2013 and 2015 and the site was rehabilitated (map 3-1).

The City of Sorel-Tracy owns the lots on which the infrastructure is planned. A long-term lease with a minimum term of 30 years and a maximum term of 60 years has been signed between the City and QSL. The project area is located on both sides of lot 3,585,556 (Marie-Victorin Road) of the renovated Quebec cadastre, which is also owned by the City of Sorel-Tracy.

The wharf will be built in the St. Lawrence River on lots 6,337,691 and 6,337,690 of the State's water domain, for which an agreement of at least 25 years should be concluded with the Government of Quebec. Currently, the City of Sorel-Tracy has a water lease for the development of the project currently being considered. The wharf's right-of-way is also planned outside these two (2) lots (towards the open sea), in Quebec's public territory, and the water lease will have to be revised.

The geographical coordinates of the proposed locations of the main permanent and related facilities are as follows:

- The central point of berthing for vessels (extreme coordinates of the wharf): 45°59'47.24"N, 73° 10'33.05"W;
- The point where the wharf is attached to the water intake (pumping station of the former Tracy thermal power plant): 45°59'45.87"N, 73° 10'25.72"W;
- The central point of the warehouse: 45°59'45.66"N, 73° 10'20.57"W

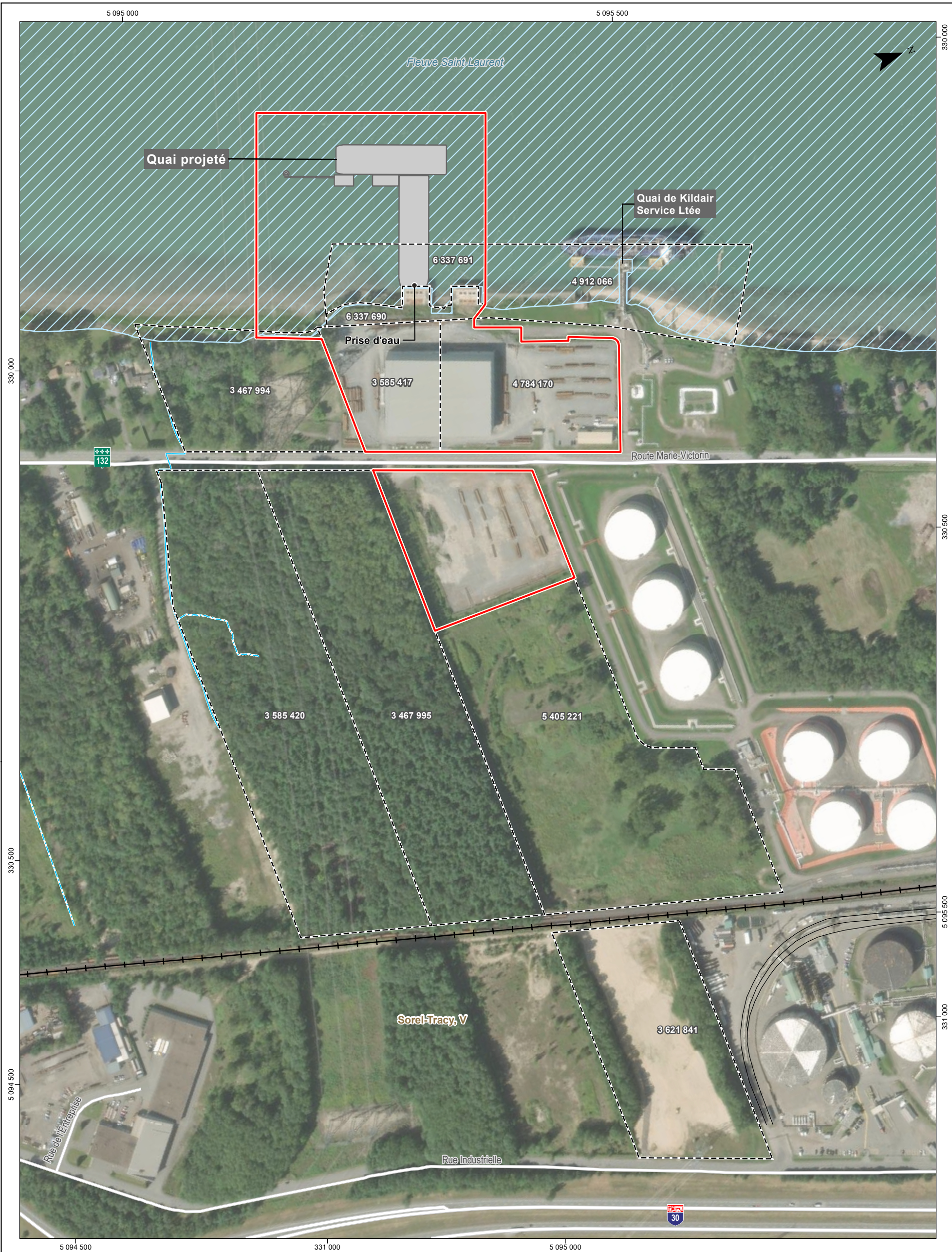
According to the Pierre-De Saurel RCM's land use plan (1988), "industrial" use is planned east of Route 132 and "urban" use is planned west of Route 132, on the site of the former Tracy thermal power plant.

The urban plan defines seven (7) major land uses for the city of Sorel. The PA is designated as "industrial" for the land portion and "public and institutional" for the water portion. To the north and south, at 460 m and 375 m respectively, the designation is "Residential," as are all lots along the St. Lawrence River, with the exception of the industrial enclave consisting of the lots covered by the project and the Kildair Services lot to the north. Among the visions presented in the Sorel-Tracy urban plan, the QSL project can be directly linked to the desire to:

- Consolidate existing industrial activities;
- Identify potential for the establishment of new industries.



The PA for the port terminal project in the Sorel-Tracy IP Zone, Saint-Laurent sector, is located in the zone I-01-13, designated for industrial use, and P-01-123, designated for public and institutional use. According to the *zoning regulations* for these zones, permitted uses are predominantly industrial with heavy commercial, wholesale trade, and para-industrial services, as well as services related to maritime transport.





- PROJET**
- Empreinte du quai flottant projeté
 - Zone du projet
 - Limite de lot
- HYDROGRAPHIE**
- Cours d'eau permanent
 - Cours d'eau intermittent
- INFRASTRUCTURES**
- Chemin de fer principal
 - Autre chemin de fer
 - Route

- ÉLÉMENT SENSIBLE**
- Habitat essentiel du chevalier cuivré (alimentation)





ÉTUDE D'IMPACT
 Nouveau terminal portuaire de Sorel-Tracy -
 secteur Saint-Laurent

Zone d'étude restreinte

Sources :
 Adresses Québec, MERN Québec, mai 2024
 Cadastre rénové, MERN Québec, mai 2022
 Habitats essentiels, MPO Canada, février 2024
 Maxar image (WorldView-03), résolution 31 cm, 7 septembre 2022

Projet : 695075
 Fichier : 695075-4E-EI-C7-1-ZERestreinte-250119-00.mxd



1/4 000
 MTM, fuseau 8, NAD83 (SCRS)

Janvier 2025

Carte 3-1

The new port terminal in the Saint-Laurent sector of the Sorel-Tracy IP Zone will cover an area of 12.3 ha and will include the main elements presented in Table 3-1. Some of these components have already been built, and some have already been approved by the Quebec government (MELCCFP) for development in 2023, as they are not exclusively related to the operation of the new port terminal, but also to the activities of the wharf currently operated by QSL in Saint-Joseph-de-Sorel. These components are considered ancillary to the project and their construction are not included in the project definition for impact assessment purposes.

The project will be divided into two phases:

- **Construction phase (16 to 17 months)** [section 3.2]: Construction work will take approximately 16 to 17 months from the start of the contractor’s mobilization, depending on the option selected.
- **Operational phase (50 years)** [section 3.3]: All concrete used for construction will be delivered by concrete mixers and no concrete manufacturing plant will be built. Concrete mixers will be washed outside the site at the concrete plant. Therefore, no concrete mixer washing area is planned.

No deadline has been set for site operations and no activities related to the closure or decommissioning of the site are therefore planned, as maintenance of the facilities will extend its service life.

Two options are being considered for the type of wharf to be installed (section 3.1.2). The impacts of each option will be assessed in order to obtain authorization to proceed with one or the other. Thus, should detailed engineering or economic considerations lead QSL to favour one option over the other, the Quebec Government Decree and the Government of Canada Decision Statement will allow for this possibility.

Table 3-1 Project components and their surface area

| Project component | Status | Area (m ²) | |
|---|---|------------------------|-----------|
| | | Option 1 | Variant 2 |
| Multimodal handling terminal (warehouse) | Already developed | 9,600 | |
| Bulk storage areas (outdoor) and site drainage system west of Route 132 | Authorized for construction by the MELCCFP (2023) | 7,200 | |
| East section storage areas (Cargo) | No development required | 2 | |
| Occasional storage area | To be developed | 3,900 | |
| Ancillary buildings (office, garage, gatehouse) | | 5 | |
| Parking | | 5 | |
| Weighing | | 12 | |
| Conveyors (off the wharf) | | 80 | |
| TOTAL LAND PORTION | | 47 | |
| Quay (section perpendicular to the shore; approach barge) * | To be developed | 3 | 1 |
| Mooring dolphins | | 60 | |



| Project component | Status | Area (m ²) | |
|---------------------|--------|------------------------|-----------|
| | | Option 1 | Variant 2 |
| Reception barge* | | 3,850 | |
| TOTAL RIVER PORTION | | 8,300 | 6,400 |

*Represents the floating or above-water area and does not represent encroachment on the shoreline.

The general plan of the various components of the project is shown in maps 3-2 and 3-3.



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5 095 500



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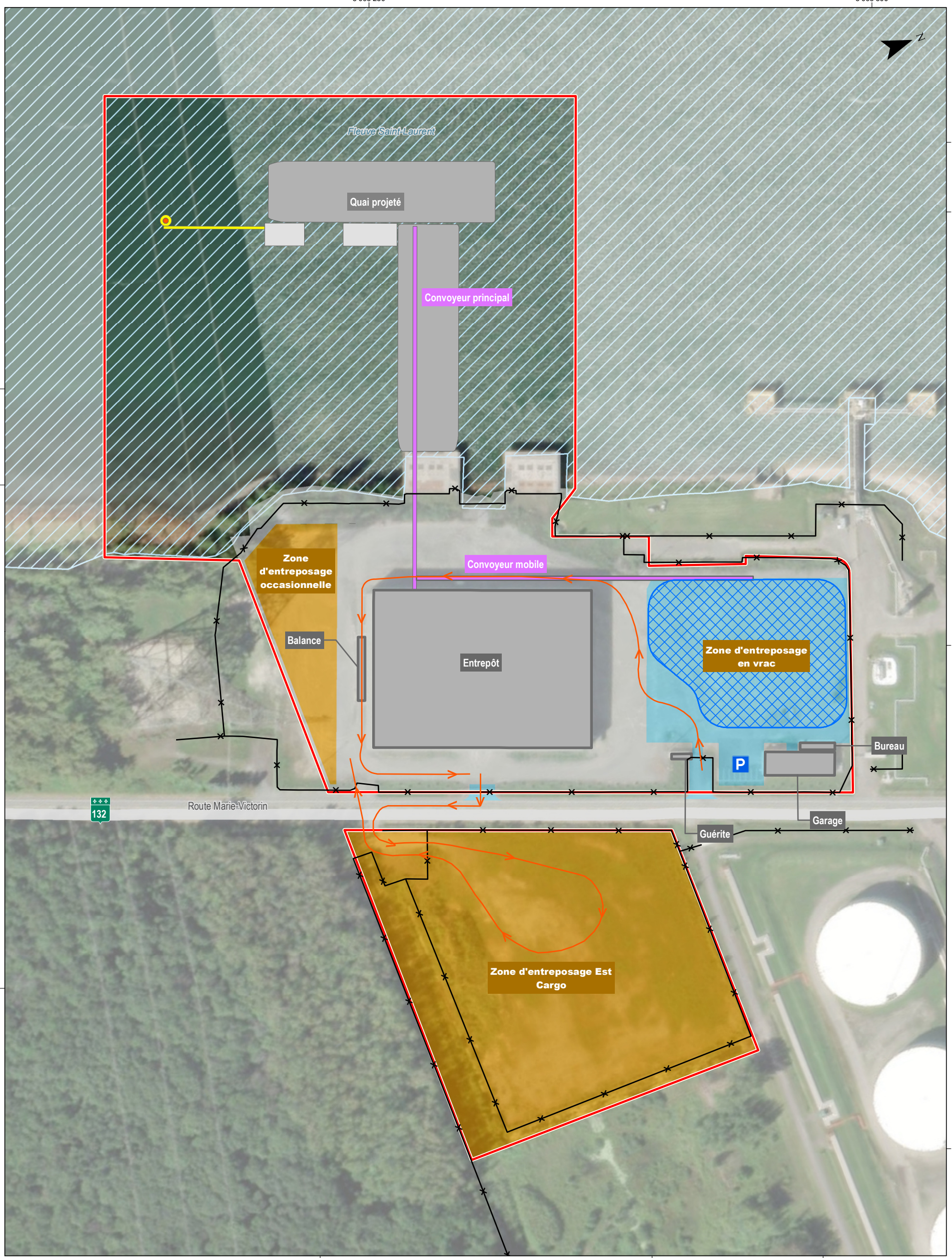
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| | |
|---------------------------------|--|
| PROJET | Passerelle |
| Zone du projet | ÉLÉMENT SENSIBLE |
| Bâtiment | Habitat essentiel du chevalier cuivré (alimentation) |
| Clôture | |
| Pile de sel | |
| Zone d'entreposage | |
| Zone à paver | |
| Convoyeur | |
| Voie de cheminement des camions | |
| Stationnement des employés | |
| Quai projeté | |
| Barge | |
| Duc d'Albe | |
| Pieu-caisson | |

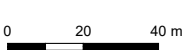



ÉTUDE D'IMPACT
Nouveau terminal portuaire de Sorel-Tracy -
secteur Saint-Laurent

Installations projetées - Aménagement du site (variante 1)

Sources :
Adresses Québec, MERN Québec, mai 2024
Habitats essentiels, MPO Canada, février 2024
MAXAR image, résolution 31 cm, ESRI, 7 septembre 2022

Projet : 695075
Fichier : 695075-4E-EI-C7-2-instalV1-250723-01.mxd


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MTM, fuseau 8, NAD83 (SCRS)

Juillet 2025
Carte 3-2

5 095 250

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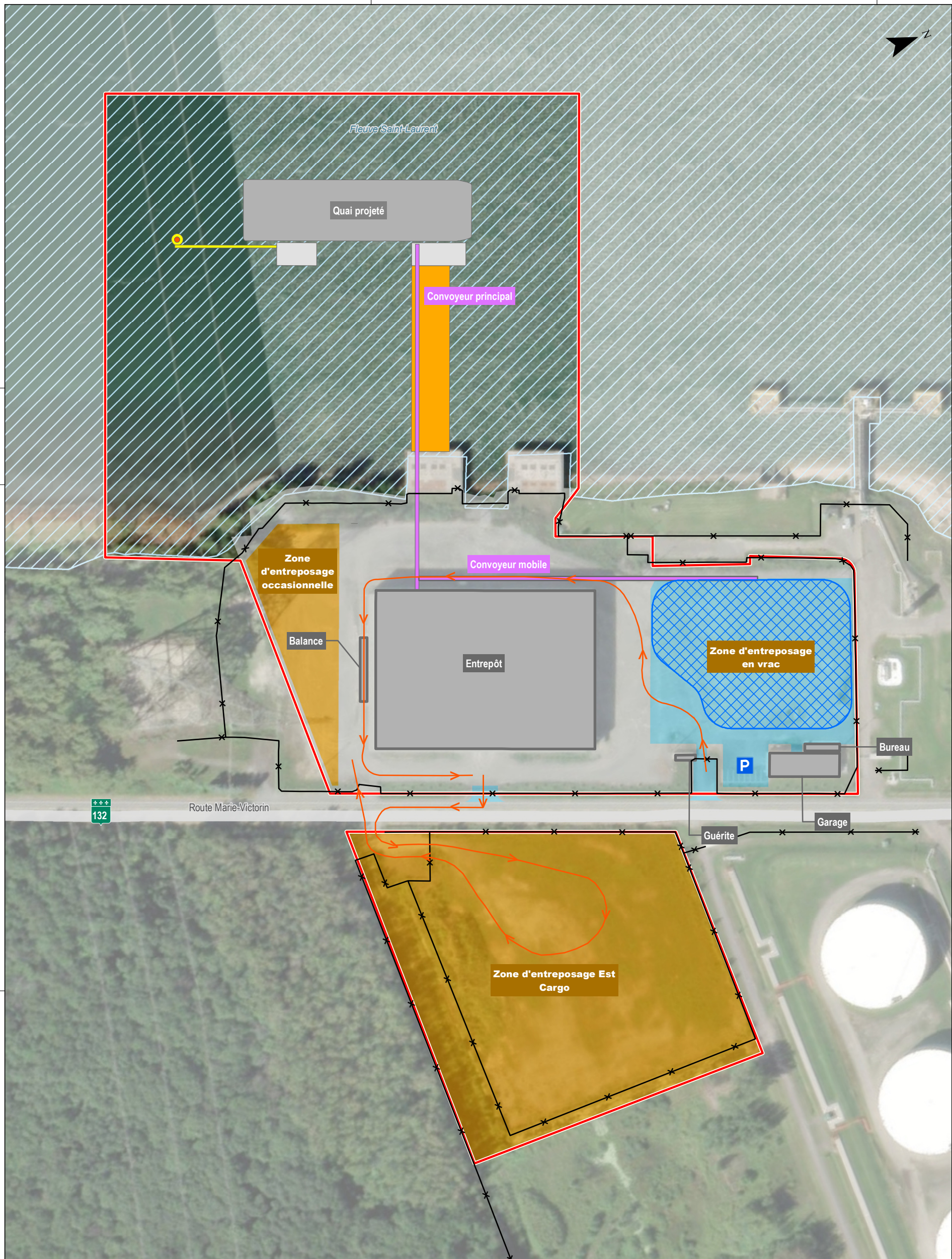
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| | | |
|---------------------------------|----------------------------|--|
| PROJET | Zone du projet | Duc d'Albe |
| Bâtiment | Pieu-caisson | Passerelle |
| Clôture | ÉLÉMENT SENSIBLE | Habitat essentiel du chevalier cuivré (alimentation) |
| Pile de sel | Zone d'entreposage | |
| Zone à paver | Convoyeur | |
| Voie de cheminement des camions | Stationnement des employés | |
| Quai projeté | | |
| Pont | | |
| Barge | | |

ÉTUDE D'IMPACT
Nouveau terminal portuaire de Sorel-Tracy -
secteur Saint-Laurent

Installations projetées - Aménagement du site (variante 2)

Sources :
Adresses Québec, MERN Québec, mai 2024
Habitats essentiels, MPO Canada, février 2024
MAXAR image, résolution 31 cm, ESRI, 7 septembre 2022

Projet : 695075
Fichier : 695075-4E-EI-C7-3-instalV2-250723-01.mxd

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 MTM, fuseau 8, NAD83 (SCRS)

Juillet 2025
Carte 3-3

3.1.1 Existing Facilities and Infrastructure or Those whose construction is not covered by the impact assessment

3.1.1.1 Multimodal Handling Terminal (Warehouse)

The warehouse, which was completed in September 2021, is currently used to store materials from the QSL wharf located in Saint-Joseph-de-Sorel at the mouth of the Richelieu River and could exist without the proposed wharf. Ultimately, depending on the use of the wharf, the warehouse could serve both port terminals, but it is expected that the warehouse will only serve the wharf in the Saint-Laurent sector of the Sorel-Tracy IP Zone and that the Saint-Joseph-de-Sorel wharf will manage its cargo independently. This warehouse, divided into cells, is designed to receive all weather-sensitive bulk materials.

3.1.1.2 Bulk Storage Area

A ministerial authorization was issued in December 2023 by the MELCCFP for the development of a storage site for de-icing salts with a capacity of 92,847 metric tons, as well as for the development of a stormwater management system around the warehouse and storage area and for the paving of the deicing salt storage area. Construction of this storage area has not yet taken place and will be carried out at a later date, along with the coastal facilities. This storage area was intended to add new storage space for QSL's port activities in the Sorel-Tracy region, as the storage capacity available at other sites operated by QSL was no longer sufficient or adequate for its deicing salt handling needs. This bulk storage area could therefore exist without the planned wharf. Construction of this storage area will be deferred along with the coastal facilities.

3.1.2 Quay

Two wharf options were studied to accommodate up to 35 bulk carriers with an average tonnage of 12,575 tons per year, for a total unloaded tonnage of approximately 440,000 mt/year. Depending on the layout of the approach section and the reception barge (options 1 and 2), the quay could have a total length of between 140.6 m and 152 m.

To operate the quay, two dolphin breakwaters will be built near the unloading areas and one dolphin breakwater offshore for mooring vessels (maps 3-2 and 3-3). The latter dolphin breakwater will be connected to the other dolphin breakwaters by a self-supporting pedestrian bridge. The first two mooring dolphins will consist of 12 steel caisson piles filled with concrete, with the pile heads integrated into a single monolithic reinforced concrete block. The third mooring dolphin will also consist of a steel caisson pile filled with concrete.

The pumping station of the former Tracy thermal power plant will be repaired and modified on the surface and will serve as a support point for the planned quay. The second water intake block will serve as a mooring point for ships at the quay.

The reception barge will be equipped with an appropriate defence system. The ability to withstand docking impacts will also be ensured by piles that will allow the barges to be anchored to the coast at a depth calculated by the engineers who carried out the geotechnical survey of the existing soil. QSL plans to remove the barge offshore each winter and tow it to the port of Saint-Joseph-de-Sorel, located approximately seven kilometres from the site, where it will be temporarily moored in the Richelieu River at wharves 10 and/or 19 for the winter period.



3.1.2.1 Option 1

For option 1, the floating wharf will consist of two (2) self-elevating barges, one receiving barge and one approach barge.

The approach barge (cross-section) will be 110 to 120 m long, depending on the type of model available at the time of purchase. It will be supported on the shore by steel anchor piles and will be secured to one of the dolphins at one end and to one of the existing structures of the water intake blocks of the former thermal power plant at the other end. Protection against scouring (100-300 mm stone coating) must be provided around the water intake block. The reception barge will be secured to the mooring dolphins and will serve as an unloading wharf for ships.

Access to the approach barge will be from the former water intake of the thermal power plant via a metal or steel loading ramp, which will adjust to the water levels, similar to a ferry boarding/disembarking ramp. The approach barge includes a corridor with an electric conveyor for loading and unloading ships, as well as a rolling surface for machinery.

In this variant, only the fixed concrete structures (mooring dolphins) would remain in place during the winter and would be designed to withstand ice pressure.

The approach barge could remain in place in the ice pack. The presence of this barge during the winter would promote ice formation along the shore, which would occur more quickly and over a larger area seaward and upstream. The barge would promote the stability of this ice pack attached to the shore, which would remain in place longer. A cost-benefit analysis will be carried out at a later stage during the preparation of the project plans and specifications to confirm whether one or two barges will be removed during the winter period.

3.1.2.2 Option 2

Option 2 consists of a reception barge fixed to the structures of the mooring dolphins and an approach section of the “bridge with deck and piles” type. The reception barge, which is a self-elevating barge, is stabilized by six steel anchor piles.

The approach section, approximately 108.6 m long and 20 m wide, comprises a concrete deck supported by piles (caisson piles) in a configuration with three 32-meter-long spans. A total of 30 caisson piles (24 for the mooring dolphins and 6 for the bridge) are to be constructed. Protection against scouring, in the form of a 100-300 mm stone revetment, will be provided around the water intake block and the two piles closest to the shore.

Access between the reception barge and the approach section will be via a metal or steel loading ramp, which will adjust to water levels, similar to a ferry boarding/disembarking ramp.

3.1.3 Cargo Storage Areas

Two outdoor storage areas will be dedicated to cargo storage, the first east of Marie-Victorin Road (Route 132) and the second south of the warehouse. These storage areas are intended for solid materials and goods, such as steel beams, delivered to the site by sea or land transport. QSL will be the sole user of these spaces for the handling and storage of bulk goods and other general merchandise for its customers.



3.1.4 Equipment and Infrastructure

The site where the port terminal will be operated is fully fenced. An access gate controlled by an access card will be built for truck and employee access.

Near the storage area west of Route 132 are a garage and a parking lot with a few spaces for employees.

3.1.4.1 Transfer Conveyors

To handle the bulk cargo, a first fixed electric conveyor will connect the receiving barge to the warehouse. This conveyor will be slightly raised above ground level. The conveyor will be equipped with a hopper and a spring-loaded deflector to adjust to wave and tide levels and reduce accidental spillage of bulk material into the water when transferring material from the ship's hold to the conveyor.

A secondary line of three mobile conveyors in series will connect the main conveyor to the outdoor storage area. A dust collector will be installed at the end of each conveyor, at the transfer point between conveyors. A telescopic conveyor will allow bulk materials to be stored in piles up to 13.71 m (45 feet) high in the outdoor bulk storage area.

3.1.4.2 Lighting

The site is currently lit by two types of lighting configurations: a warehouse lighting system consisting of 22 fixtures located around the building and 17 floodlights elsewhere on the site.

To ensure safe ship unloading operations, a lighting system consisting of fixtures located on the water intake block and on the barge will be added. The lighting will be directed to illuminate only the work areas. Light-emitting diode (LED) lights will be used to limit light pollution. The lighting is designed in accordance with the minimum safe lighting levels recommended by the *Canadian Occupational Health and Safety Regulations* (September 2016). In addition, for industrial areas with employees at work, lighting will comply with the requirements of the Bureau de normalization du Québec (BNQ) standard 4930-100/2016—Outdoor lighting—Control of light pollution.

3.1.5 Access and Traffic Routes

Trucking companies will access the port terminal facilities from Highway 30 (Exit 135). Transit between Highway 30 and Route 132 will be via the road network authorized for heavy vehicle traffic, as regulated by municipal by-laws. From Highway 30, trucks will follow the route t Chemin du Golf, between the Highway 30 entrance and exit ramps, Rue Industrielle, Rue Joseph-Simard, and Route Marie-Victorin.

QSL has put up a sign at the exit of its warehouse to inform truck drivers of the route to take to follow the authorized truck route.

3.1.6 Utilities

The site is already served by public utilities (electricity and water) from the city of Sorel-Tracy. Greywater and sanitary wastewater will be managed through a domestic sewer line connected to an on-site wastewater treatment system that complies with provincial regulations *under the Regulation respecting wastewater disposal systems for isolated dwellings* (RLRQ c Q-2, r 22).



3.2 Construction Activities

Construction activities will be carried out during the day, between 7:00 a.m. and 7:00 p.m., five days a week, with light work possible at night or on weekends when necessary. Construction work could begin in the summer of 2026 and continue until 2027. The wharf could therefore be operational at the start of the 2028 boating season.

Construction phase activities include the following:

- Site mobilization and preparation:
 - Temporary buildings (construction trailers)
 - Temporary material storage areas;
 - Parking and refuelling areas for machinery;
 - Machinery washing areas;
 - Water supply;
 - Temporary sanitary facilities;
 - Temporary connections to the electrical distribution network;
 - Barge handling
- Work in water (construction of the quay):
 - Modification of the water intake;
 - Vibratory driving of caisson piles, including removal of sediment from inside the piles;
 - Reinforcement and concreting of caisson piles (prefabricated reinforcement cages off-site);
 - Construction (formwork and concreting) of foundation units (variant 2) and mooring dolphins;
 - Construction of the concrete deck;
 - Asphalt paving.
- Waste management:
 - The main waste materials are used oil, construction debris, and household waste;
 - Management procedures will be established to regulate sorting, storage, and disposal;
 - The 3RVE hierarchy approach will be applied to the management of these waste materials during construction.
- Used snow management:
 - Little or no construction activity is planned during the winter, so snow removal from access roads and the construction site in general will be kept to a minimum.
 - Snow may preferably be pushed back to designated accumulation areas;
 - Used snow may also be accumulated pending loading for disposal at an authorized disposal site.

3.2.1 Site Mobilization and Preparation

Given the location of the proposed wharf, no access roads, clearing, excavation, grading, or dredging is necessary for site preparation, temporary facilities (construction trailers, material storage area, machinery refuelling area, temporary sanitary facilities, etc.) or wharf construction. Removal of vegetation to access the upstream water intake may be necessary. As for the vegetation at the eastern storage site, removal of grassy vegetation to access the water intake may be necessary. etc.) or the wharf. Removal of herbaceous vegetation to access the upstream



water intake may be necessary. As for the vegetation at the east storage site, it will not be removed but will be disturbed by storage (crushing).

The planned goods reception and material storage areas will be located in the existing storage areas, and construction materials will not be stored in the warehouse. The materials that will be temporarily stored on site are

- caisson pile tubes;
- prefabricated reinforcement cages;
- formwork panels;
- guardrails (if applicable);
- and steel beams (if applicable).

These items are not likely to emit contaminants. They will be stored at a certain distance from the shore, which is itself located 15 metres from the coastline, as there will be machinery traffic for work near the shore. Demolition waste could be temporarily stored on site in watertight containers, and the same issue of machinery traffic will ensure that the waste is located at a safe distance from the shoreline. Runoff will be managed by the site's drainage system.

To date, the estimated number of truck trips for land transport of materials is just over 400 round trips to disposal and supply sites over the total construction period of 16 to 17 months.

A dedicated area for refuelling machinery by tanker trucks will be set up near the site entrance to minimize tanker truck traffic on the site and maintain the greatest possible distance between the site and the St. Lawrence River. The distance between the site entrance and the shoreline is 150 m.

All concrete used for construction will be delivered by concrete mixers, and no concrete manufacturing plant will be built. Concrete mixers will be washed outside the site, at the concrete plant. Therefore, no concrete mixer washing area is planned.

Drinking water for human consumption will come from the city water supply system. Contractors on site will provide their employees with adequately equipped dining rooms (refrigerators, cutlery, etc.).

The electrical power required during construction work on the site will be provided by the existing power supply system or one or more connections to the Hydro-Québec power grid. The connection point and power line are the responsibility of Hydro-Québec.

Work barges will be loaded with equipment and machinery from dock no. ° 10 in Ludger-Simard Park, located approximately seven kilometres from the site. The work barge used for construction purposes will be temporarily anchored in the river in the work zone or moved to dock no. 10 in the event of extreme weather conditions.

3.2.2 Land Facilities

In general, the site will include:

- Three paved vehicle entrances to allow vehicles to access Route 132;
- A gatehouse and automatic barriers with access cards to control access;
- A green screen along the property, bordering Route 132;
- Seven paved parking spaces;



- An administrative office and maintenance garage;
- A Bionest or equivalent off-grid wastewater treatment system;
- A vehicle access road and related signage;
- A vehicle weighing station;
- Foundation bases for the end of the fixed conveyor, as well as a section of conveyors.

Some facilities have already been installed:

- A warehouse;

Some facilities have already been authorized for construction by the MELCCFP in 2023 and are considered a related project excluded from the definition of the project covered by the impact study:

- A paved storage apron for which surface water outside the apron is segregated/redirected;
- Perimeter drainage ditches;
- A retention ditch and a hydrodynamic separator, both located upstream of the main outfall;
- An underground storm sewer system in the section west of Route 132 of the terminal.

3.2.3 Construction of the Wharf

Work will need to be done on the old water intake to seal the holes in the existing intake and build a concrete slab including wheel chocks and guardrails to allow vehicles to drive on the infrastructure. For option 2, a support will also have to be built for the deck beams. This will require demolishing part of the front of the water intake to build this support.

All caisson piles to be constructed on the coastline will be vibratory driven. Driving will be carried out in the water using a vibratory driver mounted on a work barge. Containment enclosures, such as air bubble curtains, may also be erected around the work areas to limit the dispersion of suspended solids, particularly towards sensitive environments. The first caisson piles will be constructed offshore and construction will move closer to the shore as work progresses.

Sediment will be removed from the caisson piles using a hopper, then transferred to either side of the existing water intake using an excavator or crane from the shore to deposit or collect the material on the moored barge.

The sequence of work on the caisson piles is as follows:

- A first section of caisson pile will be driven using a vibratory hammer and the sediments will be removed.
- A second section of pile will be welded to the first, then driven and emptied, and the same operation will be carried out a third time for a third section to reach the final depth of the caisson piles.
- The reinforcement cage can then be installed in the caisson pile, which will be concreted. During concreting, reinforcement bars will protrude from the top of the caisson pile.
- Next, another section of steel with a smaller diameter will be placed on top of the hardened concrete of the caisson pile. This section will serve as protection against ice and as formwork for the pile columns.
- The columns will then be reinforced with steel and concrete. The piles columns will be erected from the work barges.
- For option 2, the bridge girders will also be erected from the work barges.



Extensions will be installed on a concrete pump to deliver concrete to the foundation units furthest from the shore. For all underwater work, pH-neutral, anti-washout concrete will be used.

Construction of the deck will begin at the shore and continue away from the shore as the concrete sections of the deck take shape.

Approximately 3,000 m³ of sediment excavated from the caisson piles will need to be disposed of off-site. Since the material excavated from the caisson piles will be wet, it will be deposited in a settling device that will allow the water not loaded with sediment to be discharged into the river. When the material is sufficiently dry, it can be easily transferred to trucks and transported off-site.

3.3 Operational Activities

Operations at the proposed wharf will mainly involve the transshipment of bulk or cargo between ships and the handling terminal and storage areas.

During bulk and fertilizer transshipment operations, the terminal will operate 24 hours a day. Bulk cargo accounts for more than 50% of expected vessels. For other cargo, the terminal will operate only during the day, although in a few cases (less than 10%) certain activities may continue until 1:00 a.m.

The average duration of operations at berth, from docking to departure, is four (4) to five (5) days. The expected occupancy rate of the berth is approximately 55% during the 9- to 10-month operating period each year.

The activities planned during the operating phase are

- Ship navigation and maneuvers:
 - A total of 35 vessels/year over a 9-month period are expected at the terminal, or 1 to 4 vessels per month, with 4 being the maximum when the terminal is operating at full capacity, for a total discharged tonnage of approximately 440,000 MT/year.
 - It is estimated that approximately eight (8) additional vessels will be added to the existing maritime traffic in the shipping channel, representing less than a 1% increase on the traffic of 4,000 merchant vessel passages annually;
 - Ships will have a capacity of up to 25,000 DWT;
 - Ships will berth using two tugs;
 - Docking and departure maneuvers at the new terminal have been established based on maneuver simulations;
 - The majority of the anticipated ships would be dedicated to regional needs and would be unloaded at the terminal; a smaller proportion could proceed with lightening and continue further upstream in the seaway to join the Great Lakes network.
- Quay operations:
 - Unloading of bulk carriers using ship cranes onto conveyors;
 - Unloading cargo and freight ships with a wheel loader;
 - Products that could be handled include deicing salts, fertilizers, steel products, or any other product that could be covered by a contractual agreement based on market needs;
 - The facilities are not designed to handle liquid bulk cargo;



- There will be no land-based bunkering infrastructure (fuel supply). If necessary, refuelling will be carried out by tanker trucks;
- Ship wastewater management;
- The design of the future wharf does not currently include any electrical connection facilities for ships, as there are currently no standards or norms in this regard for the type of ships expected.
- As the Saint-Laurent terminal is an unloading port, ballasting operations should only involve the addition of ballast water.
- Storage operations:
 - Storage of weather-sensitive bulk cargo inside the warehouse;
 - Storage of bulk cargo not susceptible to deterioration due to weather conditions and general cargo outside in designated areas (occasional storage area and east storage area).
- Truck loading and road traffic activities:
 - Activities at the new terminal could generate an off-site trucking of approximately 6,000 vehicles/year when operations begin. Ultimately, a maximum of 14,600 truck trips/year is anticipated with the dock operating at full capacity.
 - Approximately 40 trucks/day (terminal operating at full capacity) will enter and exit the terminal.
 - Trucking will take place year-round, as materials will be stored year-round in the warehouse and bulk storage area.
 - Trucking activities will take place from 7 a.m. to 7 p.m., weekdays only (Monday to Friday).
 - Trucks transiting the new terminal will access it via Highway 30. The route taken by truck will follow Chemin du Golf, between the Highway 30 entrance and exit ramps, Industrielle Street, Joseph-Simard Street, and Marie-Victorin Road.
- Water management (map 3-4):
 - Sanitary wastewater will be managed through a domestic sewer line connected to an on-site wastewater treatment system.
 - The stormwater management system for the area east of Route 132 will be located upstream of the main outfall and will include perimeter drainage ditches, a retention ditch, a control structure equipped with a flow regulator, a hydrodynamic separator, and an overflow sump.
 - The temporary outdoor storage area for the cargo is located in a different watershed than the bulk storage area for which the drainage system was designed.
 - The eastern outdoor cargo storage area already has a runoff collection system (ditches), which will be retained. The water currently flows to existing outfalls that discharge into the river.
- Waste management:
 - Domestic waste produced by terminal personnel will be transported off-site to facilities with the appropriate regulatory authorizations.
 - Ships may occasionally dispose of domestic waste from the crew through duly authorized companies that treat this waste in accordance with applicable regulations.
 - Mechanical maintenance activities will also generate used oil, which will be placed in leakproof containers, regularly collected, and disposed of by an accredited supplier.
- Hazardous materials management:
 - No dangerous goods likely to cause damage to persons, facilities or the environment are expected to be handled at the port terminal in the Sorel-Tracy IP Zone, Saint-Laurent sector.



- Hazardous waste used at the terminal is related to equipment maintenance activities. The main materials to be managed are hydraulic oil, transmission oil, antifreeze, windshield washer fluid, glycol (engine antifreeze), used vehicle oil tanks, oily residues from water/oil separators, paint, and solvents.
- The new terminal is not an oil terminal and is intended solely for the handling of goods (solid bulk and general cargo).
- No petroleum product tanks are planned on the site, except for a diesel tank to power an emergency generator. The fleet of vehicles and equipment requiring fuel will be refuelled by refuelling truck at designated refuelling areas.
- Snow management:
 - Since the wharf will not operate during the winter, snow removal from the wharves should not be carried out more than a few times in the fall and spring.
 - Storage areas will be completely cleared of snow throughout the winter.
 - Used snow will be stored in a portion of the storage area that does not interfere with the outdoor storage of deicing salts and trucking.
 - If the amount of snow stored interferes with operations, the snow will be loaded and transported to a used snow disposal site designed in accordance with applicable standards and regulations.

Given the location of the site, no maintenance dredging is necessary.



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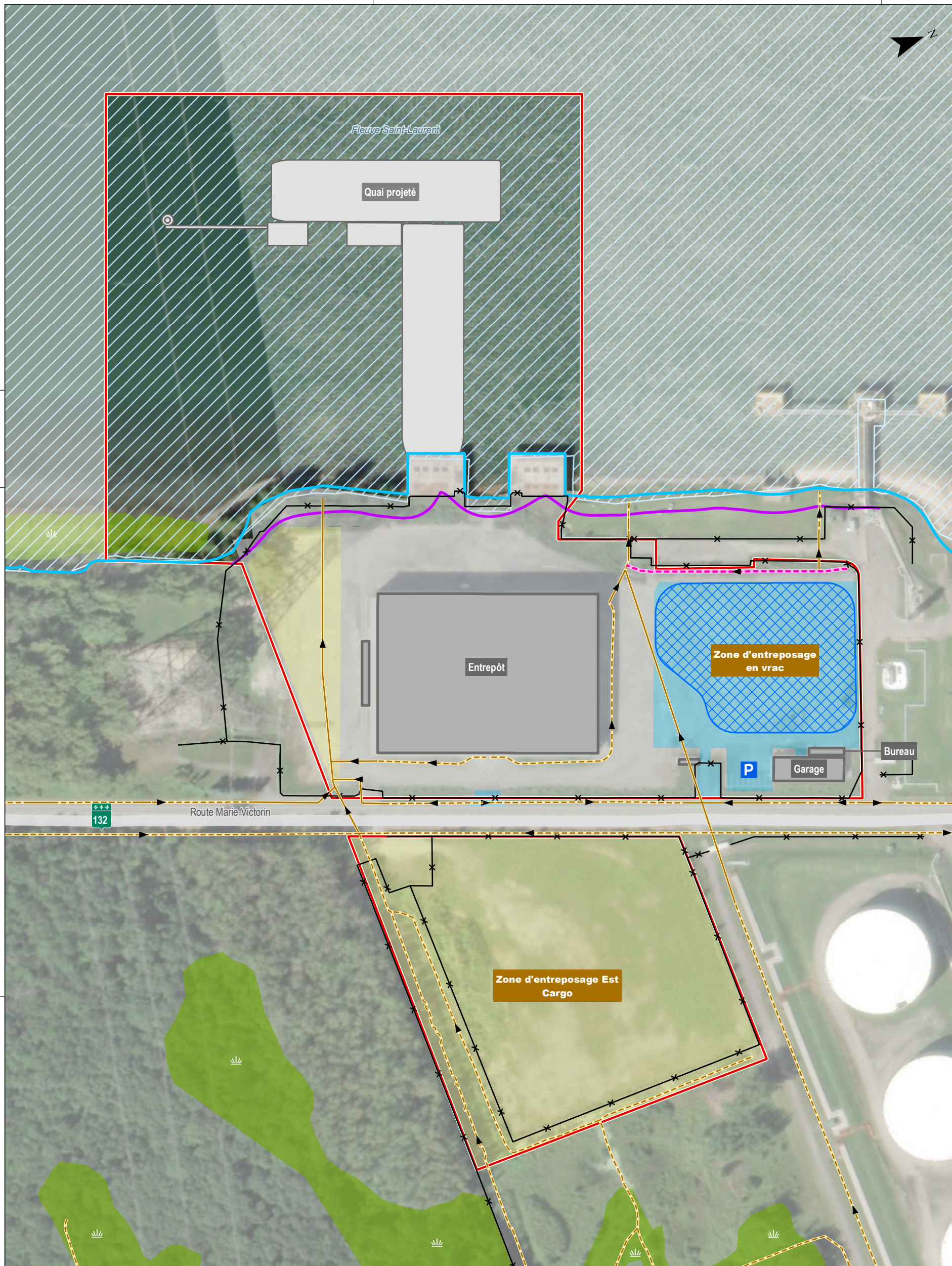
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| | | | |
|---------------------------|----------------------------|--------------------------|--|
| PROJET | | Drainage existant | |
| | Zone du projet | | Fossé |
| | Bâtiment | | Conduite souterraine |
| | Quai projeté | MILIEU NATUREL | |
| | Clôture | | Ligne des hautes eaux (2 ans) |
| | Pile de sel | | Cote de crue 100 ans |
| | Zone d'entreposage | | Milieu humide |
| | Zone à paver | ÉLÉMENT SENSIBLE | |
| | Stationnement des employés | | Habitat essentiel du chevalier cuirvé (alimentation) |
| RÉSEAU DE DRAINAGE | | | |
| | Fossé projeté | | |

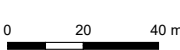



ÉTUDE D'IMPACT
Nouveau terminal portuaire de Sorel-Tracy - secteur Saint-Laurent

Réseau de drainage en exploitation

Sources :
Adresses Québec, MERN Québec, mai 2024
Habitats essentiels, MPO Canada, février 2024
MAXAR image, résolution 31 cm, ESRI, 7 septembre 2022

Projet : 695075
Fichier : 695075-4E-EI-C7-5-drainExploit-250723-00.mxd



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MTM, fuseau 8, NAD83 (SCRS)

Juillet 2025

Carte 3-4

3.3.1 Dismantling Activities

No deadline has been set for site operations. The useful life of marine structures is approximately 50 years. Depending on the maintenance program for the structure, its life may be significantly extended. In this regard, QSL anticipates carrying out marine operations at the site without a set end date for activities.

3.3.2 Facility Maintenance

QSL carries out numerous infrastructure maintenance projects each year, including those necessary for the safe and efficient operation of its existing wharf located at the mouth of the Richelieu River, seven (7) kilometres downstream from the St. Lawrence River in Saint-Joseph-de-Sorel.

Maintenance of wharves and buildings includes the following activities:

- Dismantling/installation of barges;
- Regular inspections;
- Preventive maintenance;
- Water management;
- Repair and rehabilitation;
- Environmental management.

Road maintenance includes the following activities:

- Routine maintenance (weekly to monthly);
- Preventive maintenance (quarterly to annual);
- Corrective maintenance (as needed);
- Winter maintenance;
- Major maintenance (every 8 to 15 years).

3.4 Labour Requirements

3.4.1 Job Creation

During the construction phase, approximately 50 local and regional jobs will be needed to complete the work.

During the operational phase, 22 direct local and regional jobs (FTEs; full-time equivalents) at the port terminal site and 4 indirect off-site jobs (head office) are likely to be filled. The majority of the positions to be filled at the port terminal site will require a college degree, specific job training, or an apprenticeship program of less than two years for the required function.

With this project, QSL aims to develop new expertise, particularly in the handling of oversized parts. The planned port terminal will significantly increase handling and trans capacity and greatly improve maritime transport services, in line with the maritime strategy of the federal and provincial governments.



3.4.2 Employment Policies

In the fall of 2022, QSL implemented an employment equity program that promotes, supports, and improves employment equity for four traditionally underrepresented groups: women, Indigenous peoples, persons with disabilities, and visible minorities.

In traditionally male-dominated sectors such as construction and maritime, this could help balance gender representation and improve the workplace experience for women. With regard to Indigenous peoples living near the project site, collaboration agreements have already been reached with the Mohawks of Kahnawake and W8banaki, formerly the Grand Council of the Waban-Aki Nation. QSL has contacted the Huron-Wendat, who have declined to sign a formal agreement. In the case of Kahnawake, the agreement has established a subcontracting relationship with an employment agency to provide stevedores to QSL (Kahnawake Mohawk Stevedore). This relationship could contribute to Mohawk employment once the wharf is operational. This could contribute to the economic empowerment and respect for the rights of Indigenous peoples.

The code of ethics developed by QSL defines expectations for employees, directors, officers, and managers with regard to expected behaviour. It is based on the company's values, takes into account its mission, and recognizes the need to act in accordance with the highest standards of ethics and conduct.

This code of ethics is based on the company's values:

- Health and safety;
- Respect;
- Team spirit;
- Innovation;
- Enjoyment at work;
- Loyalty;
- Good corporate citizenship.

In its workplace clause, QSL states that it offers equal employment opportunities to all without discrimination based on age, gender, sexual orientation, disability, race, religion, citizenship, marital status, family status or any other factor, in accordance with the laws and regulations in force in the countries where QSL operates.

QSL adopts recruitment and workforce management practices that enable it to be considered one of Canada's best-managed companies and to demonstrate one of Canada's most admired cultures, as evidenced by the awards it has received in this regard. To this end, QSL is an active member of the Sorel-Tracy and Region Workforce Attraction Project. The Workforce Attraction Project works in concert with employers in Sorel-Tracy and the surrounding area to address the many challenges arising from labour shortages and the difficulty of attracting and retaining talent in the region.



4. Alternatives considered

4.1 Expansion of Existing Facilities

Since QSL already operates a terminal in Saint-Joseph-de-Sorel at the mouth of the Richelieu River, the possibility of expanding the facilities was evaluated. However, property boundaries, as well as the configuration and enclave of the site, prevent expansion and increased operations at the existing wharf.

4.2 Alternative Solutions (Site Options)

In order for a site to accommodate a port terminal capable of handling bulk carriers and cargo ships and adequately meet requirements, it must have at least 180 m of frontage on the St. Lawrence River, a draft of 8.3 m to avoid dredging, requires minimal investment (soil decontamination, addition of infrastructure, etc.) and be located in an area with minimal disturbance, where trucking is permitted.

Of the seven vacant lots with a frontage on the St. Lawrence River owned by the City of Sorel-Tracy, five (5) were found to be impossible to consider because

- The lot was zoned for residential use;
- The wharf would have conflicted with an existing mooring area;
- The site was not accessible by a truck route authorized by the City of Sorel-Tracy's by-laws;
- The size of the site did not allow for the storage of goods.

Of the two remaining sites, a comparative analysis based on economic, technical, environmental, and social considerations favoured the site located in the industrial-port zone because

- Vacant land is available nearby to attract businesses and industries whose activities are compatible with the operation of a port terminal;
- The storage capacity is much greater and sufficient to operate a port terminal adequately;
- The length of the wharf required to operate without dredging is shorter;
- The area of submerged aquatic vegetation affected is smaller;
- No deforestation is required;
- No changes to the appearance of the shoreline (anthropization) are necessary;
- The distance to schools and hospitals is greater;
- The archaeological potential is likely to be nil due to the high level of anthropization of the site.

Table 4-1 presents a comparative analysis of the two sites studied that were not previously rejected.



Table 4-1 Comparative analysis of the sites studied

| Criteria | Site | |
|--|---|---|
| | 2 | 7 |
| Economic | | |
| Availability of vacant or redevelopable land nearby to attract industries compatible with port terminal operations | No (1) | Yes (2) |
| Technical | | |
| Unloading and storage capacity | ~5,000 m ² (1) | ~40,000 m ² (2) |
| Dock length required to avoid dredging ² | ~300 m (1) | ~140 m (2) |
| Environmental | | |
| Impacted grass beds ¹ | Between 100 and 200 m ² (1) | Between 30 and 120 m ² (2) |
| Deforestation required | ~3,000 m ² (1) | None (2) |
| Modification to the integrity of the shoreline | The shoreline is natural (1) | The bank has been altered by humans (2) |
| Trucking distance on the local road network from the existing wharf in Saint-Joseph-de-Sorel | 2.6 km (2) | 6.1 km (1) |
| Social | | |
| Distance to the nearest sensitive receptors | | |
| ▪ Residential | 500 m (2) | 190 m (1) |
| ▪ School | 1.48 km (1) | 2.7 km (2) |
| ▪ Hospital | 3.2 km (1) | 7.5 km (2) |
| Impact on Indigenous peoples | | |
| Archaeological potential | Existing (1) | Unlikely; site severely disturbed ³ (2) |
| Total score | 13 | 19 |

1 According to data from Ducks Unlimited Canada, Detailed Wetland Mapping (2010)

2 According to Navionics bathymetry

3 According to GCNWA (2022; Volume 3)

4.3 Design Variants

4.3.1 Construction Variants

Three construction variants with varying footprints were studied by QSL: a jetty and steel sheet pile wharf, a floating wharf on anchor piles, and a wharf on caisson piles and a concrete deck. The jetty and sheet pile option was rejected because

- The cost and construction time are significantly higher;
- This option requires coastal filling;
- The amount of fish habitat destroyed is significantly greater;
- Construction noise is greater;
- Maintenance costs are higher.

In addition, nuisances during the construction phase would be greater as there would be

- Vibratory pile driving or sheet pile driving for a longer period, which would generate more noise than options 1 and 2;
- Fewer components manufactured off-site;
- More imported granular fill;
- A longer construction period.

4.3.2 Quay Alignment Options

Two distance alternatives (close to and far from the shore; Map 4-1) and two wharves configuration alternatives (T-shaped and L-shaped; Map 4-2) were considered. The analysis considered the need for dredging during construction and operation, ship maneuvering and safety at the QSL and Kildair ULC wharves, and the interaction of the wharf with free ice flow. QSL selected a wharf option farther from the shore (distance option B) and closer to the Seaway, which does not require dredging and, due to its distance, facilitates vessel berthing and departure maneuvers, since the wharf is farther from the vessels at the Kildair wharf and in an area where little ice accumulates in winter and the tide is low. QSL also selected the L-shaped configuration alternative to address concerns raised during pilotage simulations. This option also reduces the size of the fixed structures and the construction time and costs.

4.3.3 Bulk Handling Options

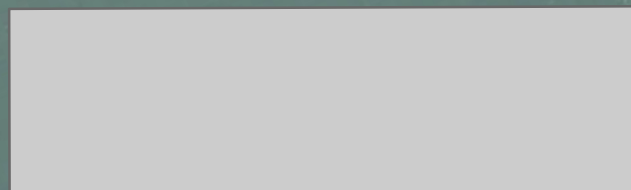
The design of the proposed wharf involves the use of an electric conveyor system for unloading bulk materials, which reduces the need for machinery compared to a solution where no conveyor system would have been considered. The use of conveyors is advantageous in several respects. First, continuous unloading of cargo results in shorter unloading times and fewer personnel (machinery and labour), which is advantageous from an economic standpoint. In addition, transshipment of bulk materials by truck increases the risk of dust generation and accidents.



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Variante A

Fleuve Saint-Laurent



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PROJET

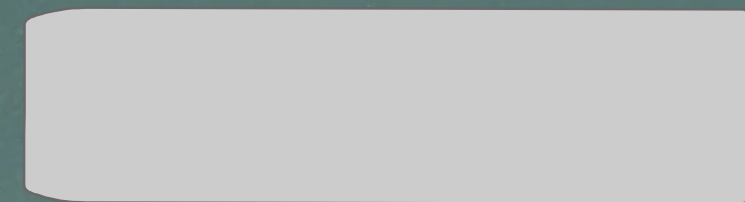


Variante projetée

5 095 250

Variante B

Fleuve Saint-Laurent



330 000

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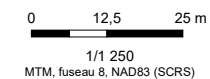
5 095 250



ÉTUDE D'IMPACT
Nouveau terminal portuaire de Sorel-Tracy -
secteur Saint-Laurent

Variantes de distance du quai

Sources :
Imagerie de l'inventaire écoforestier, résolution 20 cm, MERN Québec, 2018
Projet : 695075
Fichier : 695075-4E-EI-C6-2-varDistance-250119-00.mxd



Janvier 2025

Carte 4-1

5 095 250

Variante B1



Fleuve Saint-Laurent


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PROJET

 Variante étudiée

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Variante B2





Fleuve Saint-Laurent

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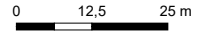



ÉTUDE D'IMPACT
Nouveau terminal portuaire de Sorel-Tracy -
secteur Saint-Laurent

Variantes de configuration du quai

Sources :
Imagerie de l'inventaire écoforestier, résolution 20 cm, MERN Québec, 2018

Projet : 695075
Fichier : 695075-4E-EI-C6-3-varConfiguration-250119-00.mxd



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MTM, fuseau 8, NAD83 (SCRS)

Janvier 2025

Carte 4-2

4.4 No-action (Null) Alternative

The expansion projects for the Port of Trois-Rivières (Terminal No. 21) and the possible expansion of the Port of Bécancour cannot be used as solutions to reduce ship waiting times in Saint-Joseph-de-Sorel. The Port of Bécancour is already very busy, even more so since the Cargo du Nord loading operations were repatriated there in 2021. The possible expansion of the Port of Bécancour is fully supported by the development of the battery industry and the import/export needs of the major industrial companies that are expected to set up operations there. Despite attempts by QSL to divert ships from Saint-Joseph-de-Sorel to Bécancour in 2021, only two (2) ships were able to proceed to avoid waiting. Similarly, the port of Trois-Rivières saw a 39% increase in volume handled between 2016 and 2021, and as in Bécancour, the expansion of Terminal No. 21 is targeting markets other than those announced in Sorel-Tracy.

The main impacts of not implementing the Project would be

- Slowing job creation and economic benefits at the local and regional levels;
- Compromising the development of the IP Zone, which is also being worked on by the City of Sorel-Tracy and the Quebec government;
- Generate more greenhouse gas emissions from the transport of goods to port facilities other than those in Sorel-Tracy;
- Generate more greenhouse gas emissions from ships waiting offshore to be unloaded;
- Impair the flow of goods and necessitate new logistics solutions for transport to the United States;
- Increase supply costs for Quebecers and Canadians, thereby reducing the economic competitiveness of the province and the country.

The high occupancy rate at the Saint-Joseph-de-Sorel wharf and the desire to satisfy customers also create stress and a sustained and accelerated work pace for QSL workers. This situation is likely to have a negative impact on worker health and safety and environmental protection by increasing the risk of incidents.



5. Public Participation

The mobilization approach adopted for the project is divided into three main phases:

- An upstream phase of the impact study, which consisted of disseminating information to the public and conducting a series of targeted consultations;
- A pre-consultation phase as part of the impact assessment to highlight the views and concerns of stakeholders interested in the project;
- A consultation phase during the preparation of the impact study.

The information gathered during these consultations is intended to report the opinions and concerns of stakeholders interested in the project, as well as factors that could promote or hinder the project's integration into its environment.

Table 5-1 summarizes the consultation and information activities carried out as part of the project, which is described in detail in the following sections.

Table 5-1 Information and consultation activities carried out as part of the project

| Activity | Responsible | Date/Period |
|--|------------------------------|---|
| Information dissemination | QSL and City of Sorel-Tracy | December 2020 to 2024 |
| Targeted consultations prior to the impact study | QSL and City of Sorel-Tracy | February 2021 to January 2022 |
| Pre-consultations as part of the impact assessment | QSL and AtkinsRéalisis | July to October 2022 |
| Public consultation on the project description | AÉIC, QSL and AtkinsRéalisis | September 26 to October 17, 2022 February 7 to March 9, 2023 |
| Consultations during the impact assessment | QSL and AtkinsRéalisis | April 2023 to July 2025 |

5.1 Information Dissemination

Information about the project began to be disseminated in December 2020 and will continue beyond the presentation of the impact assessment.

The following activities have taken place:

- Information dissemination:
 - Conference and press release in 2020;
 - A dedicated project page on the QSL website: https://qsl.com/fr/our_projects/zone-ip-sorel-tracy/;
 - Dedicated email address communautés@qsl.com accessible via the QSL website so that the community can share their concerns and suggestions;
 - One-week radio campaign;
 - Creation and distribution of an information brochure about the project to 14,750 residents;



- Media coverage of the inauguration of the first facilities of the new IP Zone terminal in the Saint-Laurent sector of Sorel-Tracy in September 2021;
- Advertisements in the newspaper Les 2 Rives in 2022;
- Participation in a special supplement on the city of Sorel-Tracy in 2022 announcing the upcoming project in the Sorel-Tracy IP Zone;
- Publication in the business section of the newspaper “La Presse” in 2022 and 2024 to present the progress of the project;
- Several posts about the project on QSL’s social media.
- Targeted consultations prior to the impact study, in the form of press conferences, online meetings, and presentations by invitation:
 - Political stakeholders (6);
 - Local and regional authorities (3);
 - Representatives from the community (7);
 - Economic partners (5);
 - Technical partners (4);
 - Government institutions (2).
- Pre-consultations as part of the impact assessment:
 - Contact with 12 environmental groups and 12 socio-economic groups;
 - Face-to-face meetings and targeted online consultation with 8 environmental or socio-economic groups.
- Public consultation on the project description;
- Information and consultation activities as part of the impact assessment:
 - Eight meetings with government authorities (provincial and federal);
 - Several exchanges with Kildair Service ULC;
 - Online meeting with stakeholders from the health and social services sector;
 - Letters sent to citizens living near the project.

Table 5-2 summarizes the main issues and concerns and observations, and Table 5-3 presents the public’s recommendations and how they were addressed in the impact study.



Table 5-2 Issues and concerns raised during consultation activities related to the preparation of the impact study

| Issue | Main concerns | Integration into the EIA |
|--|---|---|
| Environmental issues | | |
| Maintaining biodiversity | Increased coastal erosion | Potential impacts considered in the section on river geohazards (|
| | Increased underwater noise | Potential impacts considered in the section on fish habitat |
| | Spread of zebra mussels, an invasive alien species | Potential impacts presented in the section describing invasive aquatic species and cumulative effects on the St. Lawrence River and its ecosystem |
| | Disturbance of migratory and endangered birds | Potential impacts considered in the section on birds of special concern and endangered birds |
| | Impacts on species at risk that may frequent the study area | Potential impacts considered in the sections on the Copper Redhorse and its habitat, birds of special concern and endangered species, and other species of special concern or endangered species, and planned mitigation measures |
| | Contribution of the project to cumulative impacts on the environment, the St. Lawrence River, and vulnerable species. | Cumulative impacts assessed |
| Maintenance of the quantity and quality of plant and animal habitats | Loss and fragmentation of fish habitat | Potential impacts considered in the sections on fish and fish habitat and on the Copper Redhorse and its habitat, and planned compensation for losses incurred |
| | Risks of release of handled products into river water during ship unloading | Potential impacts considered in the sections on sediment quality, air quality, and surface water quality, design elements considered, and mitigation measures planned |
| | Risks of release of handled products (spillage, leaching or erosion) from stored products | Potential impacts considered in the sections on groundwater quality, surface water quality, and accidents and failures |
| | Impacts on the aquatic environment, fish habitat, and the seabed during the various phases of the project. | Potential impacts considered in the sections on river geohazards, surface water quality, fish and fish habitat, and Copper Redhorse and their habitat, mitigation measures and compensation plans for losses incurred |
| | Protection of wetlands | Potential impacts considered in the section on fish habitat for submerged vegetation. No other impacts on wetlands are anticipated |



| Issue | Main concerns | Integration into the EIA |
|---|---|---|
| | Cumulative impact of fish habitat loss and fragmentation | Cumulative impacts assessed |
| Conservation of the Copper Redhorse | Impacts on shallow-water grass bed that serve as food sources for adults | Potential impacts considered in the section on Copper Redhorse and its habitat, mitigation measures and compensation project planned for losses incurred |
| | Artificialization of riverbanks | The project does not cause additional artificialization of the riverbanks |
| | Disturbance from navigation (avoidance behaviour) | Potential impacts considered in the section on the Copper Redhorse, its habitat, and planned mitigation measures |
| | Competition between invasive molluscs and native molluscs that serve as food for the Copper Redhorse | Potential impacts presented in the section describing invasive aquatic species and in the cumulative effects on the St. Lawrence River and its ecosystem |
| | Monitor fish fauna, particularly the Copper Redhorse and the potential loss of ecological function of the herbaceous vegetation present on the site | Potential impacts considered in the section on the Copper Redhorse and its habitat and in the cumulative effects on the St. Lawrence River and its ecosystem, and monitoring program determined |
| | Contribution of the project to cumulative impacts on the environment, the St. Lawrence River, and vulnerable species. | Cumulative impacts assessed |
| Climate change mitigation | Project impacts on sustainability and GHG emissions | Potential impacts considered in the section on climate change |
| | Project justification in the context of climate change mitigation | Presented in the section on alternatives to the project |
| Protection of wetlands and water bodies | Possibility that the final design of the wharf and its operation will require maintenance dredging | The alternative selection and design choices were made to prevent the need for maintenance dredging |
| | Risks of discharge of handled products into river water during unloading of vessels | Potential impacts considered in the section on surface water quality and planned mitigation measures |
| | Wetland protection | Potential impacts considered in the section on fish habitat for submerged vegetation. No other impacts on wetlands are anticipated. |
| Socio-economic issues | | |
| Maintenance of quality of life | Project impacts on air quality (dust/particles) for sensitive receptors located nearby (senior residences, homes, etc.) | Analysis conducted as part of a specific sectoral study and potential impacts considered in the sections on air quality and quality of life for the population |



| Issue | Main concerns | Integration into the EIA |
|-------|--|--|
| | Noise impacts of the project (construction and operation) on human health | Analysis carried out as part of a specific sectoral study and potential impacts considered in the sections on the acoustic environment and quality of life of the population |
| | Potential nuisance for residents in terms of light impact on the mental and physical health of local residents, particularly in the case of nighttime activities and possible sleep disturbance. | Analysis carried out as part of a specific sectoral study and potential impacts considered in the sections on lighting conditions and quality of life of the population |
| | Risk that transshipped materials may be a source of odours | Analysis carried out as part of the specific sectoral study. The results show that the impact of activities associated with the new terminal would not typically be felt in terms of odours. |
| | Types of goods that would be transshipped at the planned terminal (solid bulk, liquid bulk, hydrocarbons, etc.) | Potential impacts considered in the section on accidents and failures. Liquid bulk and hydrocarbons are not handled at the proposed terminal. |
| | Increased road traffic in residential and recreational areas located near the project and its impacts on human health (noise, contaminant emissions) | Potential impacts considered in the section on infrastructure and public services and planned mitigation measures |
| | Increase in ships waiting in anchorage areas located near residential areas and possible impacts on noise, air quality, and light | Not addressed in the EIA. Mooring areas are managed by the Montreal Port Authority, which also handles communications with ships in the event of complaints. |
| | Risk of accidents, deterioration of road conditions, conflicts between road users on the route used by trucks travelling between Highway 30, the existing port terminal in Saint-Joseph-de-Sorel, and the port terminal site | A traffic study was conducted as part of a sectoral study, and the potential impacts of increased traffic were considered in the section on infrastructure and public services. |
| | Nuisance caused by boats moored near the wharf (noise, emission of contaminants, light) | Not addressed in the EIA. Mooring areas are managed by the Montreal Port Authority, which also handles communications with ships in the event of complaints. |
| | Increase in respiratory problems among the population of Sorel-Tracy, which already has a higher than average rate, especially among young people. | Potential impacts considered in the sections on air quality, quality of life of the population, and cumulative effects on air quality, and planned mitigation measures |



| Issue | Main concerns | Integration into the EIA |
|---|---|---|
| Maintaining economic vitality | Implementation of initiatives to hire and recruit a diverse and regional workforce | Potential impacts considered in the section on economic benefits and employment and improvement measures considered |
| | Number of jobs created | Presented in the section on economic benefits and employment |
| | Impacts on the market value of their property from increased project-related road traffic | QSL assessed the project's impacts on factors that could indirectly reduce the market value of a property, such as traffic problems, significant noise or light disturbance, or changes in the view of the landscape. None of these impacts are anticipated, as presented in the sections on acoustic environment, landscape, lighting, and infrastructure and public services. Properties in the vicinity of the project already coexist with the industrial fabric. |
| | Impacts of the project on marine traffic (number of additional ship passages) between the proposed terminal and Montreal, as well as upstream of Montreal and along the St. Lawrence Seaway | Presented in the section on ship navigation and maneuvering and cumulative effects on the St. Lawrence River and its ecosystem |
| Maintaining the safety of residents and users | Risk of collision with a ship causing an oil spill | Analysis conducted as part of a specific sectoral study and potential impacts considered in the section on accidents and failures |
| | Storage of materials that may pose a safety risk | Potential impacts considered in the section on accidents and failures |
| | Increased trucking outside the route prescribed by the trucking regulations | QSL has installed a sign at the exit of its warehouse to inform truck drivers of the route to take to follow the authorized truck route |
| | Deterioration of road conditions, conflicts between road users on the route used by trucks travelling between Highway 30, the existing port terminal in Saint-Joseph-de-Sorel, and the port terminal site | A traffic study was conducted as part of a sectoral study, and the potential impacts of increased traffic were considered in the section on infrastructure and public services. |
| | Road safety in the project area and potential accidents between users (pedestrians/cyclists) and trucks | A traffic study was conducted as part of a sectoral study, and the potential impacts of increased traffic were considered in the section on infrastructure and public services. |
| | Increased road transport in residential and recreational areas located near the project and its impacts on road safety | A traffic study was conducted as part of a sectoral study, and the potential impacts of increased traffic were considered in the section on infrastructure and public services |



| Issue | Main concerns | Integration into the EIA |
|-----------------------------|--|---|
| | Accident risk management related to Kildair Service ULC activities | Analysis conducted as part of specific sectoral studies and potential impacts considered in the section on accidents and failures |
| Reconciliation of land uses | Integration of the project into regional development (harmonization of industrial, residential, agricultural, and recreational uses) | Potential impacts considered in the section on land and resource allocation and use |
| | Capacity of streets that will be used by trucks to accommodate increased traffic | A traffic study was conducted as part of a sectoral study, and the potential impacts of increased traffic were considered in the section on infrastructure and public services. |
| | Impact of vessel mooring and safety at the proposed wharf and their cabling on the ability of vessels to maneuver when berthing at or departing from the Kildair Service ULC wharf | Analysis conducted as part of a specific sectoral study and results presented in the section on berthing and departure maneuvers. |
| | Impact of the new wharf on tug requirements for Kildair Service ULC wharf operations | Analysis conducted as part of a specific sectoral study and results presented in the section on berthing and departure maneuvers |
| | Impacts of the project on recreational and tourism activities (e.g., pleasure boating) | Potential impacts considered in the section on commercial, recreational and water-recreational activities |
| | Influence of the new wharf on ice accumulation around the structure | Potential impacts considered in the section on river geohazards |
| | Impact of the project on vessel traffic and the project's contribution to the growth of maritime activities at other terminals in the area | Presented in the section on vessel navigation and maneuvering and in the section on cumulative effects on the St. Lawrence River and its ecosystem |

Table 5-3 Stakeholder recommendations in preparation for the impact assessment

| Theme | Recommendation | Inclusion in the EIA |
|------------------|---|--|
| Greenhouse gases | Install infrastructure to supply electricity to ships at berth in order to reduce their greenhouse gas (GHG) emissions when Hydro-Québec's grid capacity allows and when the design of electrical connections for cargo ships is more standardized/regulated/uniform. Buildings are equipped with appropriate structures. | Addressed in the section on power supply |
| Road safety | Add safety infrastructure and amenities to ensure road safety and reduce the risk of accidents between soft mobility users (pedestrians/cyclists) and trucks | Add to the section on infrastructure and public services |



| Theme | Recommendation | Inclusion in the EIA |
|-----------------|---|---|
| | Build a waiting area for trucks wanting to access the project site to prevent them from parking on the shoulder of Route 132 | At the start of daily operations, waiting trucks. The bulk storage area to the east could be used as a waiting area for trucks rather than building dedicated infrastructure on a provincial road. |
| | Improve road signage to minimize the impacts of project-related road transportation and ensure the safety of pedestrians, cyclists, and other road users. | QSL has posted signage at the exit of its warehouse to inform truck drivers of the route to take to follow the authorized truck route. |
| Port operations | Improve planning related to ship unloading to reduce ship waiting times on the river in the Sorel-Tracy area | Ship unloading planning is linked to market demand and is not controlled by any stakeholder or authority. Several external factors (weather, tides, pilotage, etc.) influence transit times and, incidentally, unloading schedules, and are beyond QSL's control. Transoceanic conditions are not predictable enough to accurately forecast vessel arrival dates and times. |
| | Ensure better coordination between the Port of Montreal and the various private terminal operators in the Sorel-Tracy area to enforce regulations and nuisance restrictions when ships are moored or waiting. | Not addressed in the EIS. The Montreal Port Authority is responsible for communications, also manages communications with ships in the event of complaints, and is responsible for assigning mooring areas. |
| | Move ship mooring areas to a sector where the river is wider | Not addressed in the EIA. The location of anchorage areas is governed by the <i>Canada Shipping Act, 2001</i> , administered by Transport Canada. |
| | Identify a central point of contact with which citizens can communicate for the processing of their complaints | Addressed in the section on quality of life for the population |



6. Indigenous Peoples' Participation

Consultation processes were established by QSL in the spring of 2022 with Indigenous communities affected by the project, in cases where the project is located on their ancestral territories.

These communities are

- W8banaki (formerly the Grand Council of the Waban-Aki Nation), representing and speaking on behalf of the Abenaki communities (W8banakiak):
 - Odanak;
 - Wôlinak (W8linak);
- The Mohawks (Kanien:keha'ka):
 - from Kahnawake (Kahnawà:ke);
 - from Kanesatake (Kanehsatà:ke);
 - Akwesasne (Akwesáhsne);
- The Huron-Wendat of Wendake.

The consultation that was carried out as part of the impact study complies with the directive issued for the preparation of the federal impact assessment. As such, its scope is broader than that of the directive issued as part of Quebec's impact assessment and review process. In addition to covering all the elements required in the directive for conducting an environmental impact assessment, it includes consultations with the Huron-Wendat Nation, as requested by the federal government as part of its analysis.

The objective of the information and consultation process was to ensure the full participation of Indigenous peoples in the environmental assessment process and, more specifically, to:

- Present the project and explain the main issues and anticipated mitigation measures;
- Ensure that Indigenous peoples have access to all information related to the project so that they can assess its impacts;
- Gather the perspectives, concerns, and recommendations of Indigenous peoples on the project and associated compensation or accommodation measures, where applicable.

QSL exchanged information with Indigenous communities throughout the preparation of the impact study. The consultation timeline, which spanned several months, allowed Indigenous peoples time to review the project and obtain more detailed information about it, as needed.

The consultation process with Indigenous communities was organized in two stages:

- Consultations prior to the project notice and detailed project description, during which comments were made on the project;
- Consultations conducted as part of the impact study initiated by QSL, which allowed for open discussions on project issues and the signing of collaboration agreements with the communities.

Initial contact was made with representatives of the identified communities in June 2022 by sending them letters by email with the aim of initiating conversation, presenting QSL and the project, and proposing meeting for their potential contribution to the environmental assessment process. Each community that expressed interest and a desire to be involved was met with.



In April 2023, QSL sent a letter to all affected Indigenous communities confirming that a federal environmental impact assessment would be conducted and requesting a meeting with each group to establish a process for updating the project presentation and discussing their concerns. Following this mailing, QSL met with each of the communities that had expressed an interest in being contacted to provide them with an update on the project's progress. After online consultations and email exchanges, QSL met with:

- Twice with the Mohawk community of Kahnawake, represented by the Mohawk Council of Kahnawake (MCK);
- Twice with the Huron-Wendat community of Wendake represented by the Bureau du Nionwentsio;
- And four times with the W8banaki Nation represented by W8banaki (formerly the Grand Council of the Waban-Aki Nation [GNCWA]).

QSL has implemented a range of engagement activities that vary from one nation to another, depending on each nation's interests, expectations, and capacity for participation. Here are a few examples of these activities:

- Collaboration agreements, signed or pending, as appropriate;
- Provision of funding and opportunities for participation related to the impact study;
- Participation in and conduct of baseline studies, including land use and occupation studies and archaeological potential studies, to promote capacity building, information exchange, and meaningful collaboration;
- Sharing of preliminary documents produced for the impact assessment for review;
- Validation of the interpretation and use of indigenous knowledge in assessment documents;
- Multiple exchanges of information by email, letter, and virtually regarding proposed activities, meetings, and project updates.

Collaboration agreements have been signed with the Mohawk community of Kahnawake and W8banaki with the following objectives:

- Promote collaboration between the parties;
- Encourage the effective and timely participation of interested communities;
- Promote predictability in the process and enable the efficient use of each party's resources
- Provide funding for their participation/review of the impact study
- Provide for dialogue between the parties on the sequence for resolving the negative impacts and effects of the project on the rights of the Nations that will be identified in the impact assessment
- Describe the roles and responsibilities of the parties to enable timely and informed decision-making and establish an administrative framework that will facilitate the effective and efficient review of the project impact assessment.

The collaboration agreements also include a commitment to provide for the participation of Indigenous peoples in additional inventories, if required, in the event that the project is authorized, as well as participation in environmental monitoring and the development of compensation projects.

The Huron-Wendat did not wish to enter into a formal agreement, but still wish to be kept informed of the project's progress and consulted at key stages of the process. However, they did participate in a workshop on the identification of valued components (VCs) in order to share the elements that are most important to the community.

Finally, the comments received from Indigenous groups focused on seven main themes:

- Increased marine traffic;
- Cumulative effects of port developments;
- Impacts on the Copper Redhorse and its habitat;



- Adequate assessment of impacts on ancestral rights;
- The time lag between compensation for habitat loss and project completion
- Impacts on areas of importance to each community;
- Impacts on the value and natural character of the territory.

Given these concerns, the potential impacts of the project were analyzed in relation to the following environmental components:

- Visual environment (visual experience of the St. Lawrence River and its banks)
- Land use and culturally valued species;
- Indigenous fisheries;
- Health and quality of life
- Economic benefits and Aboriginal employment
- Exercise of ancestral and treaty-based Indigenous rights
- St. Lawrence River and its ecosystem (cumulative effects)

Table 6-1 provides a summary of the main concerns, observations and recommendations made by potentially affected Indigenous peoples and how they were addressed in the impact assessment.

W8banaki submitted an initial set of comments, which have been incorporated into this document. As of the date of submission of this impact statement, no comments had been received from the MCK or the Nionwentsio office. However, the MCK indicated that it intended to provide QSL with additional information and amendments regarding the significance of archaeology and cultural heritage, wetlands, fishing rights, fish and fish habitat, and species at risk. Their comments will therefore be incorporated at a later stage. The recommendations that have been made or will be made will be considered in the design, mitigation, and compensation.



Table 6-1 Issues and concerns raised during consultation activities related to the preparation of the impact assessment

| Issue or valued component | Main concerns | Integration into the EIA |
|-----------------------------|---|---|
| Environmental | | |
| Maintenance of biodiversity | Species of fishing interest | Study on land use by members of the W8banaki Nation (confidential report), knowledge included in sections on fish and habitat description, potential impacts considered in sections on fish and habitat, on current use of land and resources for traditional purposes, and in the assessment of cumulative effects on the St. Lawrence River and its ecosystem |
| | Species of interest for hunting (waterfowl) | Study on land use by members of the W8banaki Nation (confidential report), knowledge included and potential impacts considered in the section on current use of land and resources for traditional purposes |
| | Impacts of the project on species that are culturally important and sensitive to Indigenous peoples (e.g., lake and paddlefish sturgeon, yellow perch, and migratory birds) | <p>Study on land use by members of the W8banaki Nation (confidential report), knowledge included in the sections on</p> <ul style="list-style-type: none"> ▪ the description of fish and fish habitat; ▪ the description of birds, migratory birds, and their habitats; ▪ description of other species at risk and species with precarious status. <p>Potential impacts considered in sections on</p> <ul style="list-style-type: none"> ▪ fish and fish habitat; ▪ migratory birds and their habitat; ▪ birds with special status or at risk; ▪ other special status or endangered species; ▪ current use of land and resources for traditional purposes; ▪ cumulative effects on fish and fish habitat; ▪ cumulative effects on the St. Lawrence River and its ecosystem. |
| | Impacts of the project on the Copper Redhorse and its critical habitat | The footprint of the work on the shoreline is between 434 and 624 m ² , and critical grass beds are minimally impacted (63 to 200 m ²). |
| | Increase in maritime traffic with the arrival of new facilities | The increase in marine traffic on the St. Lawrence River will be very low, approximately five (5) per year. This represents less than a 1% increase in traffic of several thousand vessels annually. |
| | Protection of the St. Lawrence River and its ecosystem | Cumulative effects assessed |



| Issue or valued component | Main concerns | Integration into the EIA |
|--|---|---|
| Social | | |
| Archaeological and historical heritage | Potential impacts on natural and cultural elements (historical, archaeological, paleontological, architectural) | The archaeological potential study did not reveal any archaeological remains within the study area and determined its archaeological potential to be low. However, if work were to be carried out outside the project footprint during the operational phase, QSL will respect the areas of potential identified by the Ndakina Office. QSL will follow all measures in place for the construction period to ensure that appropriate prospecting methods are used and will also inform the Nation. The impacts are assessed in the section on natural and cultural heritage and in the section on cumulative effects on the St. Lawrence River and its ecosystem. |
| Current use of land and resources for traditional purposes | Impacts of the project on traditional land use (fishing, hunting, gathering) | Impacts assessed in the section on current use of land and resources for traditional purposes and in the section on cumulative effects on the St. Lawrence River and its ecosystem |
| | Impacts of the project on resources available for non-food purposes | Potential impacts considered and in the section on cumulative effects on the St. Lawrence River and its ecosystem |
| | Access to the territory | Knowledge included and impacts assessed in the section on current use of land and resources for traditional purposes and in the section on cumulative effects on the St. Lawrence River and its ecosystem. QSL will evaluate the possibility of participating with the W8banaki Nation in certain initiatives to mitigate impacts on certain traditional activities specific to the Nation, as proposed in the land use and occupation study produced by W8banaki (2024). |
| | Changes in the traditional use of cultural landscapes | Knowledge included and impacts assessed in the section on natural and cultural heritage and in the section on cumulative effects on the St. Lawrence River and its ecosystem |
| Health and quality of life | Impacts of the project on the accumulation of contaminants in traditional foods consumed by Indigenous peoples, as well as their potential health effects | Information presented in the section on fish and fish habitat and in the section on cumulative effects on the St. Lawrence River and its ecosystem |
| Ancestral rights and land claims | Impacts of the project on access to areas important for the exercise of rights, and assessment of the | Impacts assessed in the section on rights, territories, and land claims and in the section on cumulative effects on the St. Lawrence River and its ecosystem. Given that the project's impact on this component is low, QSL did not |



| Issue or valued component | Main concerns | Integration into the EIA |
|---------------------------|---|---|
| | impacts of the options considered on Aboriginal rights | conduct a separate assessment for each option considered. |
| | Community involvement beyond the environmental assessment process | Addressed in section 4.2.3.2 of the impact study |

6.1 Mohawk Community

The MCK noted that Quebec’s maritime strategy does not take into account cumulative environmental impacts and that there are numerous port projects on the St. Lawrence River, including five port projects on which the MCK was consulted in two years.

In 2020, the MCK also requested a regional assessment to understand the current state of the river and take into account the cumulative effects of past, present, and future projects in a regional context. It proposed that the regional assessment focus on the yellow sturgeon as a key species, with the goal of establishing thresholds and standard mitigation measures for future projects.

Several concerns were raised by the MCK, for example

- Concern that the project will increase marine traffic on the St. Lawrence River and towards the Seaway;
- Impacts on the critical habitat of the Copper Redhorse;
- The inclusion of Aboriginal rights in the assessment of alternatives;
- Payment of a financial contribution in lieu of compensation for potential wetland loss;
- Consideration of environmental thresholds in the assessment of cumulative effects.

For the MCK, the lack of recent and multi-year data on wildlife was a concern with regard to the likelihood of vulnerable species occurring at the site.

6.2 W8banaki Nation

Like the Mohawk Nation, the W8banaki Nation supports a regional assessment of the St. Lawrence River region.

The report produced by W8banaki focuses on the contemporary land use and occupation (LOU) of the W8banakiak in the study area, but also takes a temporal perspective that highlights the continuity of this LOU in the project area by members. In fact, these three complementary perspectives—archaeological, historical, and ethnographic—illustrate the continuity of land use and occupation over time and space (W8abanaki 2024), presenting an analysis focused on the rights of the W8banaki Nation, which has implications for the nation’s main concerns:

- Potential cumulative effects caused by the presence of numerous vessels planned for the river, which suggests an increase in navigation and the presence of increasingly large vessels;
- Changes to the river ecosystem and human interventions that alter the environment essential for the exercise of rights;



- Ecosystem changes affecting plant species of interest to the community, such as those in decline, such as ash and sweetgrass;
- Impacts on species and environments of importance to the W8banakiak on a larger scale (e.g., effects of the project on fish and fish habitat outside the study area).
- Loss of access to traditional activities caused by the cumulative impacts of the project (e.g., changes in fish resources, bank erosion, etc.).
- Impacts on the value and natural character of the territory that affect a value of the Nation related to heritage and cultural transmission, which affects the exercise of their rights.
- Fear that the proliferation of port and maritime projects on the river will require the re-excavation of the shipping channel and impacts on the banks, which are already extensively eroded.

6.3 Huron-Wendat Community

Like the Mohawk Nation and the W8banaki Nation, the Huron-Wendat Nation (NHW) supports conducting a regional assessment of the St. Lawrence River region, given the cumulative effects of several port and maritime development projects on the St. Lawrence River in recent years. It has proposed that the regional assessment include fish species quality criteria that are of interest to the Huron-Wendat, including lake sturgeon, black sturgeon, and American eel. It also proposed that the assessment take into account the integrity of archaeological sites on the riverbanks, access to the river and the practice of customary activities, the overall quality of the habitat, and the impact of increased marine traffic.

The NHW's main concerns regarding the project are

- The land claims of the Huron-Wendat;
- Traditional land and resource uses (including hunting and fishing of species of interest);
- Cumulative impacts related to various port projects.



7. Description of the biophysical and human environment

7.1 Physical Environment

7.1.1 Meteorological Environment

The Sorel region is characterized by a moderate subhumid climate with a long growing season. The local climate is largely influenced by the St. Lawrence River, which acts as a thermal buffer and source of humidity. The St. Lawrence Valley gives the prevailing winds a northeast/southwest orientation. Precipitation is mainly in the form of rain and averages almost one metre per year. Visibility is good most of the year, with 7,500 hours above nine kilometres, but visibility can be reduced to less than one kilometre for a total of 82 hours per year, half of which occur between December and March.

7.1.2 Geology and Geomorphology

The site is part of the St. Lawrence Lowlands geological province, which forms a large, generally homogeneous platform composed of sedimentary rocks. Based on available and identified technical and historical information, no significant geological hazards are expected in the context of the project. The project is not located in an area known for landslides.

The region is dominated by sandy marine deposits, but mainly clayey, frequently covered by littoral, fluvial or eolian sands. Numerous morainic islands and ridges appear here and there, left behind by retreating glaciers. In the land portion of the site, three main stratigraphic units were encountered: a surface unit (crushed stone, organic soils, and fill), a generally fine alluvial deposit composed of sandy silt, and a clay and silt deposit.

At the study site, the south bank of the St. Lawrence River is composed of alluvium and an underlying layer of the river terrace alluvium. On the littoral shelf, the first layer encountered is sandy silt with a variable clay fraction to a depth of more than 25 m. It rests on a thick deposit of stiff to very stiff clay, in which the boreholes were terminated. No bedrock was encountered (at a depth of 70 m), which is representative of the bedrock level in the Sorel region, where it is generally encountered at depths of more than 60 m. According to tests, the clay soils at the project site are generally susceptible to reworking.

7.1.3 Geological Risks

Eastern Canada (Ontario, Quebec, and the Maritime Provinces) is located in a stable continental region of the North American tectonic plate where seismic activity is moderate. Most earthquakes worldwide occur near tectonic plate boundaries. Eastern Canada has no such boundaries, and earthquakes there are more likely to be related to regional stress fields, as seismic activity is concentrated in areas of weakness in the Earth's crust.

According to statistics from Natural Resources Canada, there are an average of four earthquakes exceeding magnitude 4, thirty exceeding magnitude 3, and twenty-five others that are felt in southeastern Quebec each year. Over a 10-year cycle, an average of three earthquakes exceeds magnitude 5. An earthquake of magnitude 3 is



sufficient to be felt in the surrounding area, and an earthquake of magnitude 5 generally marks the threshold for an event to cause damage.

Within a radius of 100 km of Sorel-Tracy, 5 earthquakes with a magnitude greater than 4, 29 earthquakes with a magnitude greater than 3, and 239 earthquakes with a magnitude greater than 2 were recorded between 1985 and 2024. The most recent earthquake, with a magnitude of 3.9 and located at a depth of 7.2 km, was recorded 8 km southeast of Saint-François-du-Lac.

7.1.4 Topography

The site under study has a relatively flat topography in its land portion, with a slight slope towards the St. Lawrence River. Its elevation and that of the immediate surroundings are approximately 10 m above sea level.

The bathymetry of the river at the site is marked by a fairly steep slope from the bank to a depth of about 10 m, followed by a ledge about 50 m wide and then a gentler slope to a depth of about 15 m further offshore. The bank at the site of the former power plant has been filled in, resulting in an abrupt transition to the terrestrial environment, while the banks upstream and downstream of the site have a gentler transition that is favourable to aquatic vegetation and marshes.

7.1.5 Environmental Quality of Soils

The project site was occupied by a thermal power plant in the portion between the river and Marie-Victorin Boulevard and by Hydro-Québec's Tracy substation east of Marie-Victorin Boulevard (Route 132). Activities related to the former thermal power plant have affected the environmental quality of the site's soil in the past.

Demolition of the above-ground portion of the plant was carried out from 2013 to October 2015. The environmental remediation plan to remove non-compliant soil (exceeding criteria C) was then approved by the MELCCFP in December 2015.

According to the environmental due diligence conducted in 2018, a review of the monitoring reports confirms that, following the remediation work carried out in 2016 and 2017, the soil in the areas of the former Sorel-Tracy thermal power plant site complies with the regulatory values set out in Appendix II of the RPRT corresponding to the remediation objective. These values are compatible with the City of Sorel-Tracy's proposed use for the former thermal power plant site (industrial-port zone).

In July 2023, CIMA+ conducted an additional environmental characterization of the soil. The purpose was to verify whether the activities of the neighbouring site (handling and storage of petroleum products on land owned by Kildair Service Ltée) could have contaminated the soil on the site. This issue had been raised by the Phase I environmental site characterization (SNC-Lavalin 2023). Two boreholes were therefore drilled at the property boundary. Three samples, including one duplicate, were submitted for chemical analysis. A concentration of styrene was measured in the A-B range in the backfill at a depth of between 4.26 m and 4.88 m in one of the two boreholes. All other parameters analyzed (PAHs, MAH, PH C₁₀-C₅₀ and metals) were below criteria A. The CIMA+ report therefore concluded that there was no soil contamination associated with industrial activities on the neighbouring property.

Following the dismantling of the infrastructure and equipment at the Tracy site (east of Route 132), environmental remediation work was undertaken in the summer of 2015 in areas where soil was contaminated with zinc above criterion C. All soil contaminated above criterion C was excavated and disposed of off-site.



7.1.6 Environmental Quality of Sediments

The results of the 2012 environmental characterization showed that no petroleum hydrocarbon concentrations were detectable and that no metal contaminants exceeded the rare effect concentration (REC), the lowest of the criteria. However, PAH concentrations were measured in six of the eight samples above the REC and, in three of them, above the threshold effect concentration (TEC). However, these concentrations are comparable to values identified as natural levels in pre-industrial sediments in the St. Lawrence River section and could therefore be of natural origin.

The results of the 2012 environmental characterization showed that no petroleum hydrocarbon concentrations were detectable and that no metal contaminants exceeded the CRE, the lowest of the criteria. However, PAH concentrations were measured in six of the eight samples above the CRE and in three of them above the CSE. However, these concentrations are comparable to the values identified as natural levels in pre-industrial sediments in the St. Lawrence River and may therefore be of natural origin. The values measured in duplicate on one of the samples (SM-103) show concentrations above the COE but below the CPE for certain PAHs. The difference from the values measured in the parent sample and the isolated nature of these higher concentrations (> COE) are more indicative of a “nugget” effect and therefore less representative of sediment contamination at this location.

7.1.7 Groundwater

At the project site, the piezometric level is estimated to be between 1.2 and 5.7 m deep. The variation in the piezometric level at the same well varied by around 1 to 2 m during 2018, clearly demonstrating the influence of seasonality on piezometric levels. However, despite variations in the oxidation-reduction potential, hydraulic conductivity, and sodium concentration in some wells, no direct influence or trend of seasonality can be established for the site as a whole.

Groundwater flows towards the St. Lawrence River (groundwater resurgence) and mainly into alluvial deposits. The slope profile indicates that, from Highway 30, the flow direction is towards the St. Lawrence River. Thus, the storage area east of Route 132 also flows in this direction. According to tests, the groundwater flow velocity within the hydrostratigraphic unit of the alluvial deposits at the site could vary from 2 to 34 m per year. Considering that the site runs along the St. Lawrence River for a conservative length of 400 m (from the southernmost point to the northernmost point), that the saturated thickness of the alluvial deposits is 14.4 metres, that the effective porosity is 0.3 and that the flow is linear, the volume of resurgent water discharging into the St. Lawrence River at the site would vary from 3,272 to 58,167 cubic metres per year.

None of the hydrostratigraphic units encountered in the first 70 metres from the surface of the study site exhibit textures and hydraulic parameters favourable to commercial or municipal exploitation of groundwater. Furthermore, based on the results of the physical and chemical parameters measured, the groundwater at the site is slightly saline and is unlikely to be used in future developments.

In terms of groundwater quality, the results of chemical analyses of groundwater were compared with the groundwater criteria for a resurgence, in surface water (RES, formerly RESIE) or drinking water (EC), presented in the Intervention Guide — *Soil Protection and Contaminated Site Remediation* of the Ministry of the Environment, Climate Change, Wildlife and Parks (MELCCFP).

In the four sampling campaigns carried out, the vast majority of samples analyzed for polychlorinated biphenyls (PCBs), petroleum hydrocarbons (HC C₁₀ -C₅₀), polycyclic aromatic hydrocarbons (PAHs), monocyclic aromatic hydrocarbons (MAHs), chlorinated aliphatic hydrocarbons (CAH) or dissolved metals were below the RES criteria,



its alert threshold (50%), or the EC criterion for all parameters analyzed, with the exception of a few samples in 2011 and 2018 or a few concentrations of PCBs, copper, and aluminum that exceeded the RES criterion.

7.1.8 Surface Water

For the period 2020 to 2022, the bacteriological and physico-chemical quality index (IQBP) for river water indicates satisfactory to very poor water quality at the sampling stations in the project area. Water quality is good near the south bank, questionable near the north bank, and very poor at the station in the central channel of the river. High concentrations of fecal coliforms are mainly responsible for the deterioration in water quality.

In addition, water quality is considered “polluted” for fecal coliforms according to bathing water quality criteria downstream of the project area on the north bank at Lanoraie, but is considered “good” just downstream of the project area on the south bank at Tracy. In general, bacteriological contamination in the area downstream of Montreal comes from the wastewater treatment plants in the cities of Montreal, Longueuil, and Repentigny, which do not ensure complete disinfection of treated wastewater, as well as from overflows from combined sewer systems during heavy rainfall in the Montreal area.

A possible but unlikely exceedance of nitrite levels has been observed. Since there are no specific measurements available for nitrites alone and nitrate is the most stable form of nitrogen, but can be reduced to nitrite, which is moderately reactive, by microbial action under anaerobic conditions, it is more likely that total nitrate and nitrite concentrations contain mainly nitrates, given the good oxygen saturation recorded at all stations.

With regard to metals, the CCME aquatic life protection criterion (long-term) and the MELCCFP aquatic life protection criterion (chronic effect) were exceeded for total extractable iron at the station #88 (north bank of the river).

For the other parameters usually measured, most stations showed average concentrations below or equal to Quebec’s surface water quality criteria from 2020 to 2022. With regard to metal concentrations in river water, apart from the exceedances mentioned above, concentrations were generally well below the aquatic life protection criteria during the period from 2009 to 2013, with no data available for subsequent years.

The water management plan for the Richelieu River watershed and the St. Lawrence area notes that phosphorus and nitrogen are of little concern in the river, but that turbidity is on the rise at all sampling stations on the river, which is a concern, as are chlorophyll a concentration, which is also on the rise.

7.1.9 River Environment

7.1.9.1 Hydrodynamic regime

The St. Lawrence River is fed by the Great Lakes Basin and the Ottawa River Basin. The highest levels are observed during the spring flood (March and April) and, to a lesser extent, during the fall flood (November and December). The lowest levels are observed during the summer low water period, which peaks in September. From Montreal to Sorel, the tidal effect is barely noticeable and manifests itself in very slight oscillations (mm), and the area is not influenced by semidiurnal tides. The presence of the Seaway concentrates nearly 70% of the current in the navigation channel.



Since no dredging of the channel is necessary to allow navigation in the river section where the project is located, the navigation channel is not straight. The depth varies in the undredged portion, ranging from more than 11.3 m (ZC) to approximately 18.5 m (ZC) in the deepest part.

Analysis of ice conditions at the site of the new wharf in the Saint-Laurent sector of the Sorel-Tracy IP Zone shows that the duration of ice cover varies between 85 and 115 days, concentrated in the period between late December and late March. The ice thickness recorded on ice charts during January never exceeds 30 cm. Ice is predominant during February and March. From the beginning of freezing to the end of January, ice conditions at the site generally consist of alternating thin (less than 30 cm) ice floes (floating ice fragments two metres or less in size) and open water. Then, from late January to early March on average, a fixed ice pack covers the study area. Analyses have shown that no significant difference in wave height is observed if the ice conditions at the site are modified by climate change.

At the future terminal, the flows calculated in June 2022 (end of the spring period) are 13,875 m³/s and the shore current speeds vary between 0.3 m/s and 0.85 m/s, mainly due to the depth of the riverbed. The shallow areas (0 to 4 m) have velocities of less than 0.3 m/s, and 0.3 to 0.5 m/s in depths between 4 and 10 m. Finally, areas deeper than 10 m generally have velocities greater than 1.0 m/s and can reach 1.2 to 1.6 m/s in areas further offshore from the study area, in the centre of the channel.

7.1.9.2 Sediment Dynamics

Sediments on the shore consist mainly of fine sand, with the largest proportion of sand on the downstream side of the future wharf. Silt is present in greater proportions in the sediments of the upstream area and in front of the wharf, decreasing towards the east (downstream area of the wharf). This distribution suggests local hydrodynamic conditions favouring sand accumulation on the downstream side of the future wharf.

The main source of suspended sediments in the river section appears to be erosion of the banks and riverbed. However, the waters of the Saint Lawrence River at the future terminal site are relatively clear. Analysis of the coastline evolution between 164 and 2018 at the site reveals that the shore is stable throughout the study area, with no significant regression or accumulation.

7.1.10 Air Quality

The results of air quality modelling carried out using stations representative of each parameter were compared with the ambient air quality standards specified in Quebec's *Regulation respecting air quality management (l'assainissement de l'atmosphère, RAQA)* and the Canadian ambient air quality standards (CAAQS) applicable as of 2025 for the main air contaminants (MACs). For PM₁₀, the air quality level recommended in the World Health Organization guidelines is used, as there are no Quebec or Canadian standards for this parameter.

Certain additional contaminants have been added in order to examine the carcinogenic risk associated with the activities of the new terminal in relation to these contaminants, including diesel particulate matter (DPM; PM_{2.5} from diesel engines), black carbon (CN; elemental carbon particles), nitrated PAHs (NPAHs), oxygenated PAHs (OPAHs), alkylated PAHs (APAHs), and dibenzothiophene (DBT). No air quality standards or criteria exist for these contaminants.

7.1.10.1 Air Quality Management System

The Canadian Council of Ministers of the Environment (CCME) Air Quality Management System (AQMS) divides Canada's air basins into defined air management zones to provide a localized picture and establish required



management levels and a zone-specific management plan. The air quality picture is established by comparing the results of measurements of SO₂, NO₂, PM_{2.5} and O₃ concentrations in the air with the applicable CWAQs.

According to data for 2020, the Quebec South air zone where the new terminal will be located showed non-compliance for PM_{2.5} and SO₂, while NO₂ and O₃ concentrations were found to be in compliance with the CAAQS according to the analysis conducted by the CCME.

Air quality in this atmospheric zone is affected by a multitude of sources of contamination, including industry (cement plants, pulp and paper mills, aluminum smelters, refineries, foundries, etc.), manufacturing, particularly between Montreal and Quebec City, road transportation, forest fires, and wood heating.

Analysis of trends in concentrations of the main air contaminants shows mostly stable or declining conditions for all contaminants evaluated, with the exception of O₃ in urban areas and PM_{2.5} concentrations at a few rural or forest stations. That said, the decline in concentrations observed over the past decade is generally less significant than that observed in previous decades.

Taking into account the various regulations and the gradual electrification of transportation, which will limit emissions of contaminants such as PM_{2.5}, it is projected that, all other things being equal, air quality in the Québec-South atmospheric zone will improve in the short and medium term.

7.1.10.2 Main Surrounding Emitters

Located in an industrial port area, the area surrounding the new terminal already includes a petroleum product tank farm to the east of the future port terminal connected to a wharf for the transshipment of petroleum products to and from ships, and a number of smaller specialized businesses of various kinds. The sources of contaminant emissions in the study area can be summarized as follows:

- Ships passing through the shipping lane in front of the terminal;
- Vehicle traffic in the area including Highway 30;
- Locomotives passing on the railway line crossing the industrial complex;
- Industrial and manufacturing activities, including a group of facilities in Sorel-Tracy and a second group in Contrecoeur.

Analysis of contaminant emissions reported to the National Pollutant Release Inventory (NPRI) for 2022 shows that no facilities reported emissions exceeding at least one of the NPRI reporting thresholds within 5 km of the new terminal, which is not necessarily indicative of the absence of air emissions in the area.

However, emissions deemed significant could occur for facilities that are not required to report to the NPRI.

Industries that reported emissions to the INRP and mobile emission sources (locomotives, ships, and vehicles) have an impact on sensitive receptors in the Sorel-Tracy region (schools, CÉGEPs, daycare centres and seniors' residences), depending on the level of emissions from the source relative to other sources, the distance from the emission source to the sensitive receptor, and the frequency of winds from the emission source to the sensitive receptor.

Overall, Rio Tinto Fer et Titane (RTFT) remains the facility with the greatest potential impact on sensitive receptors, followed by Highway 30 due to its proximity and the Seaway. The impact of other sources is considered to be negligible to marginal due to the small quantities involved and/or their distance from the sensitive receptors considered in this study.



7.1.10.3 Ambient Concentrations

7.1.10.3.1 Gaseous contaminants (NO₂, SO₂, CO)

The initial concentration at the station closest to the new terminal (Saint-Joseph-de-Sorel) already exceeds the hourly CAAQS by 58% for SO₂ due to the presence of the RTFT plant less than 500 m from the measuring station for the 2021-2023 reference period. Since the new terminal is located approximately 5 km from the plant and the Saint-Joseph-de-Sorel station, the data from this station are unlikely to be representative of the study area. SO₂ concentrations are below the standards at the Trois-Rivières—Cap-de-la-Madelaine station, also located in an urban and industrial area.

No exceedances were observed for NO₂ between 2021 and 2023 at the Drummondville—Stade Jacques-Desautels station, located in an area surrounded by residential areas but with a large industrial area to the northwest. The same conclusions apply to CO measurements taken at the Saint-Anicet station, located outside a heavily urbanized area, between 2021 and 2023.

7.1.10.3.2 Particulate matter (PM_T, PM₁₀ and PM_{2.5})

For PM_T, measurements for three recent consecutive years are available at four (4) stations within 60 km of the new terminal. The two stations that exceed the standard are Joliette-Graymont and Trois-Rivières — Louis-Denoncourt. The Joliette-Graymont station is the closest station, but it is located just over 200 m from the Graymont lime production plant. Although the plant is currently shut down, there are areas (piles) in the vicinity with bulk materials susceptible to wind erosion. The Trois-Rivières station, although located near the river, is also susceptible to wind erosion of bulk materials from the Kruger paper mill and the Port of Trois-Rivières, a little over 1 km away. These industrial sources are likely responsible for the relatively high concentrations of PM_T obtained (75 to 115 mg/m³ depending on the year). There are no such sources near the new terminal. The RTFT plant is located just over 5 km from the new terminal, which is a sufficient distance to allow, among other things, the dust plume to be depleted by dry and wet deposition towards the terminal. In this context, the results from the Drummondville-Stade Jacques-Desautels station are considered for the initial concentration calculation, as it is located in an area surrounded by residential areas but with a large industrial area to the northwest, which is similar to the conditions found around the new terminal. An exceedance of the standard was observed in 2023, but the standard was met on average over the three years.

PM₁₀ concentrations measured over three consecutive years with a sequential analyzer in southern Quebec (excluding Montreal) are only available from the Bécancour station. As with PM_T, an exceedance of the standard was observed in 2023, but the standard was met on average over the three years.

PM_{2.5} concentrations are measured at several locations in southern Quebec and in various environments. Over three consecutive years, the resulting average concentrations did not vary greatly from one station to another, ranging from 19 to 25 mg/m³. The Trois-Rivières-Cap-de-la-Madeleine station, whose results are slightly higher than the others, was therefore selected for the calculation of the initial concentration, as it is also located near the Seaway. As with PM_T, the presence of another paper mill nearby could likely increase PM_{2.5} concentrations in this area, slightly overestimating the initial concentration. An exceedance of the standard was observed in 2021, but the standard was met on average over the three years.

7.1.10.3.3 Diesel Particulate Matter (DPM) and Black Carbon

DPM mainly comes from the combustion of diesel in internal combustion engines, generating fine particulate matter (PM_{2.5}) with a high level of toxicity. DPM is composed of carbon particles (or black carbon) and a range of high molecular weight organic compounds, including PAHs. Given the multitude of molecules associated with DPM, it cannot be measured directly by air quality monitoring stations. However, the RSQAQ has been monitoring



black carbon (BC) for some time at certain stations in its network. There is little difference on average between the two sites, remaining at an average of 0.35 mg/m³, representing around 4 to 5% of the PM_{2.5} concentrations measured simultaneously.

7.1.10.3.4 Greenhouse gases (GHG)

No GHG emissions resulting from accidents or failures are expected, and the project will not involve any land use changes and will therefore have no direct impact on surrounding carbon sinks.

The impact of GHG emissions related to climate change must be considered a global issue (at the state level) rather than a localized issue in the broader project area. At the Canadian level, GHGs can come from a variety of sources, including transportation (air, road, marine, rail), and fuel combustion in homes, businesses, and industrial, construction, electricity and energy production activities, among others.

Canada's total emissions are estimated to represent 1.5% of global emissions, amounting to 708 Mt CO₂e in 2022. The energy sector accounts for 82% of these emissions, mainly associated with fixed fuel combustion, followed by the transportation sector. At the provincial level, total annual emissions are estimated to be close to 78 Mt CO₂e.

7.1.11 Acoustic Environment

According to continuous noise measurements taken from July 19 to 21, 2023, at the four residences closest to the project area and closest to the truck route, the main sources of noise constituting the initial sound climate are road traffic, natural sounds (rustling leaves, bird song), the presence of ships at the Kildair Services wharf, noise from nearby industries (reversing alarms, impact noise) and helicopter overflights.

The readings indicate a sound environment governed mainly by road infrastructure, which is acceptable at points 1 to 3 and slightly disturbed at point 4, located on the north shore of the St. Lawrence River in Lanoraie.

The noise limits that will be used for the project during the construction phase are those set out in the MELCCFP's Guidelines for Noise Levels from Industrial Construction Sites, as they include quantitative limits that can be used to compare the anticipated noise levels of the project. The noise limits that will be used during the operational phase are those set out in MELCCFP Instruction Note 98-01, which determines the maximum noise level limits applicable to fixed sources, as they are more restrictive than those in municipal regulations and are compatible with those of the WHO.

7.2 Biological Environment

7.2.1 Vegetation and Riparian Environments

The study area is located in the St. Lawrence River lowland ecoregion, in the bioclimatic zone of the heart-leaved maple forest, which enjoys the mildest climate in Quebec. It therefore contains the southernmost and most diverse flora in Quebec. All of Quebec's native tree species are found here.

7.2.1.1 Wetlands and Submerged Aquatic Vegetation

There are no wetlands in the project area. In the terrestrial LSA, five wetlands of three types (marshes, shrub swamps, and swamp forests) have been identified. There are red ash swamp forests, red maple swamp forests, a Bebb willow swamp forest, and a cattail marsh. In total, 5.2% of the terrestrial LSA consists of wetlands. The main ecological functions of the wetlands in the terrestrial portion of the LSA are to conserve biological diversity, in



particular by providing habitats for species to feed, shelter, and reproduce, and to filter pollution from surface water and groundwater. They can also contribute to the quality of the landscape since they are located in a highly urbanized area.

A coastal wetland has been identified upstream in the study area. It is an emergent herbaceous vegetation dominated by common three-square bulrushes. The restricted river LSA, which corresponds to the coastal portion of the LSA, consists of 20.8% aquatic herbaceous vegetation and coastal marshes. The dominant species in most of the submerged aquatic herbaceous vegetation is American waterweed. Most of the herbaceous vegetation consists of plant associations of American waterweed, pondweed, and Canadian waterweed. Aquatic herb beds are dominated by density classes ranging from “medium” to “high,” while the “sparse” class is poorly represented. Medium- and high-density beds are mainly located in the upstream and downstream study areas of the restricted river LSA, while the central area is dominated by sparse-density beds.

7.2.1.2 Terrestrial Environments

In the PA, there is no vegetation in the terrestrial portion, except for a strip of herbaceous wasteland between the current storage site and the water intake block where the future wharf will be built, and pioneer vegetation that has been establishing itself since 2019 in the storage area east of Route 132. The vegetation in the terrestrial LSA is dominated by woodlands and herbaceous stands. In general, the wooded areas are young or mature and dominated by light-demanding or shade-tolerant species, depending on their stage of succession. The terrestrial LSA is composed of 42.5% anthropized environments and anthropized environments with sparse vegetation.

7.2.1.3 Water Environments

Riverbank

The width of the St. Lawrence River shoreline is 10 m along most of its length and 15 m in the central portion, near the water intakes. In the upstream and downstream portions, the shoreline is an “ecotone” type ecosystem.

The banks in the project area are entirely artificial and consist of a sheet pile wall surrounding the two water intakes and a sheet pile wall protected by riprap for the portion south of the water intake. North of the project area, the bank is stabilised up to the Kildair Services property, where a section of approximately 90 linear meters is unprotected and sediment accumulation has occurred. North of this property, the bank is again stabilized by a stabilization wall, followed by riprap.

Flood Zone

The boundary of the high-flow (0-20 years) and low-flow (0-100 years) flood zones is restricted to a strip varying between 3 and 15 metres from the shoreline and does not reach land-based infrastructure (warehouse, storage areas). The high-current zone encompasses most of the water intake blocks. However, even during the floods of 2017 and 2019, when water levels exceeded the 100-year flood level, the water did not reach the level of the land-based facilities.

Watercourses

Watercourses are described in the section describing Fish habitat in the terrestrial LSA.

7.2.1.4 Protected Areas

Several protected areas are located along the river section between Montreal and Sorel, but very few protected areas are located near the LSA. The protected areas closest to the project are the waterfowl concentration area



(St. Lawrence River, Lanoraie, Île aux Foins), the Contrecoeur National Wildlife Area, and the Île du Milieu voluntary conservation area.

7.2.1.5 Flora Species With Special Status

According to data provided by the CDPNQ, 43 occurrences of 26 plant species are located within a 10 km radius of the study area. The closest occurrences are located 1.5 km from the study area. Based on available habitats, only one species is considered to have a moderate likelihood of occurring in the study area. This is Houghton's flatsedge, which could be found in the emergent vegetation in the upstream area of the restricted river LSA. No plant species with a precarious status were observed in the LSA, except for ostrich fern, a species vulnerable to harvesting in Quebec.

7.2.1.6 Invasive Alien Plant Species

Four invasive alien plant species (IAPS) were identified: common reed, flowering-rush, reed canarygrass, and purple loosestrife. The only invasive alien plant species considered a priority by the MELCCFP and requiring specific mitigation measures is common reed. No IAPS were observed in aquatic vegetation surveys.

7.2.1.7 Connectivity

According to the model developed by the Quebec Biodiversity Center (CSBQ), in partnership with the MELCC, to determine conservation priorities among the remaining natural areas in the St. Lawrence Lowlands, the woodlands south of the port terminal in the Saint-Laurent sector of the Sorel-Tracy IP Zone, which are part of the LSA, are part of a medium-importance connectivity corridor, but the project area is part of a low-importance corridor.

7.2.1.8 Species of Cultural Importance to Indigenous Communities

Four species of cultural and spiritual importance are important to the W8banaki Nation: black ash, vanilla sweetgrass, ostrich fern, and cattail. Although the first two species were not identified during the inventories, the Nation's oral history confirms that the regional study area contains important traditional and ancestral gathering and harvesting areas for these two species. A major concern has been raised that vanilla sweetgrass, which is very sensitive to changes in water levels and quality, is becoming increasingly scarce in the area. Black ash, which is central to W8banaki identity and culture, is threatened by the Emerald Ash Borer, an exotic invasive insect. Ostrich fern is a species harvested mainly for food (fiddleheads).

7.2.2 Fish and Fish habitat

7.2.2.1 Fish Habitat in the River LSA

Characterization was carried out to analyze fish habitat using the Ministry of Fisheries and Oceans' river habitat classification system, which classifies fish habitats into 33 categories based on four parameters observed in the field: flow type (hydrology), water column depth (bathymetry), substrate type (grain size), and presence of aquatic vegetation.

A total of fourteen different types of river habitats were mapped, including nine sensitive habitats (1, 2, 3, 4, 6, 8, 19a, and 20a) and two moderately sensitive habitats (7 and 10). Ten types of river habitats were identified in the vicinity of the coastal infrastructure to be built, including sensitive habitats 1, 3, 4, 6, 8 and 20a.



The entire study area is a feeding ground and migration corridor for the various fish species present in the river, and no anthropogenic structures currently impede fish movement in the LSA. The characterization revealed that the immediate area around the water intakes provides good shelter for juvenile and small fish.

Since the LSA is located in the essential feeding habitat of adult Copper Redhorse, the four factors determining the selection of summer habitats in the St. Lawrence River developed by logistic regression modelling were analyzed: the presence of gastropods, grain size (silt and sand), the presence of dreissenids, and low current velocity (<0.5 m/s). According to the results of the characterization, the grass beds in the LSA have all the characteristics corresponding to the habitat criteria for adult Copper Redhorse feeding grounds.

The large grass bed complex upstream of the proposed wharf and the one downstream of the Kildair Service ULC wharf were identified as cyprinid nursery and rearing areas. Juvenile yellow perch and northern pike have also been caught in these beds, suggesting that these species also use the habitat as a growth area.

7.2.2.2 Fish Habitat in the Terrestrial LSA

Two watercourses have been characterized in the terrestrial LSA. Watercourse CE01 is a permanent watercourse that has been straightened along part of its course and channelled to the St. Lawrence River, and watercourse CE02 is an intermittent watercourse that flows into CE01 and originates in wetland MH02. Although watercourse CE01 is considered a fish habitat, the potential for spawning grounds, feeding sites, and nursery areas are considered low.

7.2.2.3 Fish Communities and Benthic Fauna

Between 2001 and 2015, 66 fish species were recorded in the Montreal-Sorel section, and fishing conducted between 2008 and 2016 in Contrecoeur and in 2015 in the project's LSA identified 45 and 26 fish species, respectively. One invasive alien species, the Round Goby, was caught. The appearance of new exotic and invasive fish species is detrimental to fishing and is a major risk factor for the sustainability of traditional fishing, particularly for the W8banaki Nation. Among the species widespread in the St. Lawrence River are Zebra and Quagga mussels, the Round Goby, and Asian carps.

The results of the fish monitoring network indicate that the percentage of external abnormalities (deformities, erosion, lesions, tumours) in the Montreal-Sorel sector is among the highest of the 10 sections sampled in the St. Lawrence River. However, the trend in fish flesh contamination is relatively stable or slightly declining.

Five live bivalves were collected during inventories. These were individuals of Eastern Elliptio, Eastern Lampmussel, Zebra mussels, and Elliptio sp. No individuals of Hickorynut, a species listed as "endangered" under the SARA, were found in the study area.

7.2.2.4 Species with Precarious Status

During fishing in 2015, five fish species with precarious status were caught, namely the American Shad, Striped Bass, Yellow Sturgeon, Black Sturgeon, and Channel Darter.

Several other fish species with precarious status whose range overlaps the section of the river where the Project is located may frequent the infrastructure area, including the Eastern Sand Dart, River Redhorse, Rainbow Smelt, Cutlip Minnow, Rosyface Shiner, Silver Lamprey, Northern Brook Lamprey, Bridled Shiner, Copper Redhorse, Brassy Minnow, and American Eel. The Elephant-Ear, Spike and Hickorynut may also be present.



With regard to the Copper Redhorse, it has already been established that the grass beds in the project's river LSA possesses the characteristics of the feeding habitat of adult Copper Redhorse. According to telemetric monitoring of adult Copper Redhorse in the St. Lawrence River, no individuals were detected by telemetry more than 12 km from the project site, and no Copper Redhorse was caught within 4 km of the project site. The last observations of Copper Redhorse in their feeding habitat between Montreal and Sorel-Tracy were in 2015 in the Sorel Islands, in 2008 by telemetry tracking between Montreal and Lake Saint-Pierre, and in 1999, 2000, and 2001 in the Contrecoeur-Lavaltrie sector.

7.2.2.5 Fish Species of Interest

In addition to species with special status, certain species are of particular interest for recreational fishing or are species of interest to Indigenous fishing.

The W8banakiak have emphasized the symbolic importance of Kchitegw (the St. Lawrence River), Nebesek (Lake Saint-Pierre), the Sorel Islands, its channels and banks for fishing, and have identified Yellow Perch, Sturgeon (Yellow and Black), Smallmouth and Largemouth Bass, Northern Pike, Walleye, Sauger, Channel Catfish, Brown Bullhead, Striped Bass, American Eel, and Copper Redhorse as aquatic species of significant cultural value. Several W8banakiak have noticed a decline in both the quantity and quality of fish in the river, including catfish, pike, walleye, muskellunge, sturgeon, striped bass, and perch.

The W8banakiak also pointed out that a walleye fishing site used by the community was located in the project area. Muskellunge was added to this list as a species of particular interest for recreational fishing.

7.2.2.6 Invasive Alien Aquatic Species

Zebra mussels and Quagga mussels are two species of freshwater mussels that are present in the region and therefore favourable habitat characteristics may be present in the study area. In terms of fish species, the Round Goby, which was found during fishing, and the Grass Carp, whose presence has been confirmed in the St. Lawrence River since the capture of an individual in May 2016 by a commercial fisherman in Contrecoeur, are found or may be found in the local study area. Environmental DNA surveys conducted between 2015 and 2017 did not detect traces of Silver Carp or Bighead Carp DNA.

7.2.2.7 Sensitive Habitats

There are no protected areas within the river LSA, but the LSA overlaps the critical feeding habitat of adult Copper Redhorse. In the regional study area, there are a large number of protected areas and spawning grounds, especially around the island chains (Boucherville Islands, Bouchard Island, Contrecoeur Islands, and Saint-Ours Island upstream of the proposed wharf, Île aux Foins, and the Sorel Islands downstream of the proposed wharf). In the downstream portion of the proposed wharf, several spawning grounds have been identified in the Sorel Islands, and 70 protected areas (exceptional forest ecosystem, habitat of threatened or vulnerable plant species, wildlife habitat, voluntary conservation area, wildlife refuge, and recognized nature reserve) have been identified.

7.2.3 Birds, Migratory birds, and their habitat

7.2.3.1 Waterfowl and other water birds

The LSA is located more than 500 m from the waterfowl concentration area of the St. Lawrence River—Lanoraie—Île aux Foins. The vast majority of waterfowl and water birds observed are directly on the river, but several species fly over the site without stopping.



Waterfowl and other waterbird species are not very abundant in the LSA in winter, and ice cover significantly limits the presence of ducks throughout the winter. Anatidae diversity was found to be greater in the fall than in the spring in the LSA.

The Canada Goose was by far the most abundant species, followed by the Mallard. However, waterfowl abundance in the project area remains low compared to the floodplain of Lavallière Bay in Sainte-Anne-de-Sorel, 18 km northeast of the PA as the crow flies.

The number of Anatidae feeding directly in the PA and the feeding potential appear to be limited, particularly for diving ducks. Locally, the Sorel Islands are a much more important fall waterfowl habitat than the LSA. Members of the W8banaki Nation reported hunting Canada Geese, ducks (waterfowl), and Snow Geese in the regional study area, but not within the LSA.

Although several thousand gulls frequent certain areas further east on the river, the section located within the LSA is not popular with this group, with relatively low daily maximums.

The only confirmed waterfowl or aquatic bird species nesting in the LSA in 2023 was the Mallard. It is also likely that Canada Goose and Wood Ducks occasionally breed there. There are no specific habitats that favour waterfowl nesting, which can nest in vegetated islands, marshes, and meadows. However, Mallards and Canada Geese are known to be opportunistic and sometimes nest on anthropogenic structures without necessarily depending on them.

7.2.3.2 Shorebirds

The potential for shorebirds in the LSA is very limited. Most of the banks are heavily artificialized by riprap or vegetated by a strip of mature trees. There are no floodplains in the spring, and low water levels in the fall expose only a few mudflats. During bird surveys conducted in 2023, only the Killdeer, the Spotted Sandpiper, and the American Woodcock were recorded as potential or confirmed nesters. Among migratory birds, only two sanderlings, one Greater Yellowlegs, and one Willet were observed in the fall.

7.2.3.3 Raptors

The Bald Eagle and Cooper's Hawk are the only two species of raptors observed during the winter 2023 surveys. During migration, the Turkey Vulture was the most abundant species observed, and the majority of raptors were observed in flight. Although no birds of prey were observed during nesting, Cooper's Hawk and Red-Shouldered Hawk are possible or probable nesters in the PA.

7.2.3.4 Land Birds including Songbirds

In winter 2023, 73 land bird observations were made, with the most abundant migratory birds being the American Tree Sparrow and the Black-capped Chickadee.

During spring migration, the most abundant species were the Tree Swallow, the Song Sparrow, the Dark-eyed Junco, and the Black-capped Chickadee. This is the best season for swallows and the only one in which the Northern Rough-winged Swallow have been observed. Fourteen species of warblers were counted during this season, the most common being the Yellow Warbler.

In the fall, the most abundant migratory bird species are the Black-capped Chickadee, the American Goldfinch, the Song Sparrow, the White-throated Sparrow, and the Pine Siskin. There are also 15 species of warblers and nine



species of sparrows. Fifty-six species of land birds have the potential to nest in the LSA, 12 of which have been confirmed as nesting species.

When comparing inventory data and data from eBird (2024) for the Pierre-De Saurel RCM, we note that a significant proportion of the land birds present in the MRC are also found in the LSA, but we should note the absence of grassland birds in the latter (notably the Horned Lark and the Vesper Sparrow) as well as the absence of certain land birds associated with marshes (Marsh Wren). However, terrestrial birds present directly in the PA remain more limited due to the heavily anthropized areas around existing port facilities.

7.2.3.5 Bird Species With Precarious Status

Twenty-two species with precarious status have a range that overlaps the LSA. However, for fourteen of these species, their preferred habitat is absent. These are Nelson’s Sparrow, the Eastern Whip-poor-will, Common Nighthawk, the Bobolink, the Short-eared Owl, the Chimney Swift, the Golden-winged Warbler, the Canada Warbler, the Least Bittern, the Red-headed Woodpecker, the Rusty Blackbird, the Caspian Tern, the Eastern Meadowlark, and the Sedge Wren (Table 7-1). Their potential presence in the LSA ranges from low to none, with limited potential for migration or feeding for some of these species.

Table 7-1 Bird species in a precarious situation whose range overlaps the project area (the Pierre-de Saurel RCM)

| Species ^(a) | Provincial | Federal | Potential presence in the PA |
|--|---------------------|------------|---|
| Golden Eagle (<i>Aquila chysateos</i>) | Vulnerable | | None for nesting, low during migration |
| Nelson’s Sparrow (<i>Ammodramus nelsoni</i>) | LDTV ^(c) | | Poor |
| Eastern Whip-poor-will (<i>Antrostomus vociferus</i>) | Vulnerable | Endangered | Very low |
| Common Nighthawk (<i>Chordeiles minor</i>) | LDTV | Vulnerable | Very low |
| Peregrine Falcon (<i>Falco peregrinus</i>) | Vulnerable | | High |
| Bobolink (<i>Dolichonyx oryzivorus</i>) | Vulnerable | Endangered | None |
| Wood Thrush (<i>Hylocichla mustelina</i>) | | Endangered | Low |
| Evening Grosbeak (<i>Coccothraustes vespertinus</i>) | | Concern | Moderate for migration/winter Poor for nesting |
| Short-eared Owl (<i>Asio flammeus</i>) | LDTV | Concern | Not suitable |
| Bank Swallow (<i>Riparia riparia</i>) | | Threatened | None for nesting on riverbanks, but high on unconsolidated earth mounds and for feeding |



| Species ^(a) | Provincial | Federal | Potential presence in the PA |
|--|------------|------------|---|
| Barn Swallow (<i>Hirundo rustica</i>) | | Endangered | High |
| Chimney Swift (<i>Chaetura pelagica</i>) | Threatened | Threatened | Poor nesting, poor feeding |
| Golden-winged Warbler (<i>Vermivora chrysoptera</i>) | Threatened | Endangered | Poor |
| Canada Warbler (<i>Cardellina canadensis</i>) | LDTV | Threatened | Low |
| Least Bittern (<i>Ixobrychus exilis</i>) | Vulnerable | Threatened | None |
| Red-headed Woodpecker (<i>Melanerpes erythrocephalus</i>) | Endangered | Endangered | None |
| Eastern Wood-Pee wee (<i>Contopus virens</i>) | | Concerning | Moderate |
| Bald Eagle (<i>Haliaeetus leucocephalus</i>) | Vulnerable | | Low for nesting; high for feeding |
| Rusty Blackbird (<i>Euphagus carolinus</i>) | LDTV | Concern | Not important for nesting, low importance for migration |
| Caspian Tern (<i>Hydroprogne caspia</i>) | Threatened | | Poor for nesting; vulnerable for feeding |
| Eastern Meadowlark (<i>Sturnella magna</i>) | | Endangered | None |
| Sedge Wren (<i>Cistothorus stellaris</i>) | LDTV | | None |

¹ The range of endangered wildlife species described in federal documentation (e.g., COSEWIC report, recovery plan, management plan) is used if it differs from the range delineated in Quebec government documentation.

⁽ Includes species designated as threatened or vulnerable or likely to be designated as such in Quebec, species at risk in Canada listed in Schedule 1 of the SARA, and species at risk in Canada.

³ Likely to be designated as threatened or vulnerable according to the MELCCFP.

Eight bird species in a precarious situation have a range that overlaps the LSA and whose preferred habitat is present or whose presence has been confirmed. These are

- the Golden Eagle;
- the Peregrine Falcon;
- the Wood Thrush;
- the Evening Grosbeak;
- the Bank Swallow;
- the Barn Swallow;
- the Eastern Wood-Pee wee;



- and the Bald Eagle.

Of these species, the Golden Eagle does not nest in the St. Lawrence lowlands, but is present during migration, and the nesting potential for the wandering grosbeak has been deemed nil.

For the Barn Swallow, given the highly anthropized nature of the LSA, there are numerous potential nesting sites for the species, particularly around the current water intake. The absence of this easily identifiable species in several inventories at appropriate times seems to indicate that the species does not nest in the LSA.

A pair of Peregrine Falcons has already nested in an electricity pylon located near the former thermal power plant less than 100 m from the project area boundaries. Although the species did not nest again in this tower in 2021 or 2023, two Peregrine Falcons used the site as a perch in October 2023, and a pair of Peregrine Falcons also nested in the next tower on the north shore in Lanoraie.

For the Bank Swallow, nesting was confirmed in a pile of unconsolidated soil in one of the storage areas, but no burrows were observed in the natural bank of the St. Lawrence River.

7.2.4 Other Endangered Species and Species with Precarious Status

Seventeen species of terrestrial vertebrate fauna (amphibians, reptiles, small mammals, and bats) in precarious situations have a range that overlaps the LSA, including one species of small mammal (Cooper's lemming), six species of reptiles, three species of amphibians, and seven species of bats. Of these species, four reptile species and six bat species have the potential to be present in the LSA, namely the Green Snake, the Painted Turtle, the Map Turtle, the Snapping Turtle, the Silver-haired Bat, the Hoary bat, the Eastern red bat, the Big Brown bat, the Little Brown bat, and the Eastern pipistrelle.

Acoustic surveys conducted in 2023 confirmed the presence of six bat species in the LSA, with the Silver-haired Bat and the Great Brown bat being the most active. Of the six bats surveyed, five species, with the exception of the Great Brown bat, have provincial and/or federal conservation status.

No essential or residential habitats for bats have been identified in the LSA, but summer resting and feeding habitats are present, including shrublands, hardwood woodlands, tree swamps, and shrub swamps, to which a buffer strip has been added.

7.2.5 Visual Environment

At the landscape level, the project is located across from the shore of the municipality of Lanoraie, with Grèves National Park to the southwest. The surrounding landscape includes residential, industrial, and vegetated areas, providing visual separation. Visual landmarks include a Hydro-Québec transmission tower and the industrial facilities of Kildair Services ULC. Winter and summer views are similar, except for the density of vegetation. The river corridor and its marine life are the visual landscape of interest to observers along the river.

Observers are located on the North Shore (Route 138) and the south shore (Route 132). From the north shore, the view of the project is partially obstructed by natural vegetation, but the wharf and boats will be visible through the vegetation. From the south shore, visibility of the wharf and boats is partial, especially in winter when vegetation is less dense. Existing wooded areas reduce the view of the project, but residences close to the river have an immediate view of port activities.



In terms of nighttime ambiance (lighting), the study of current lighting and photometry determined that the port terminal lighting is designed to minimize light pollution while ensuring adequate visibility without excessively disturbing the surrounding residential areas and woodlands.

7.3 Human Environment

7.3.1 Historical Context

The QSL project is located on the site of the former Hydro-Québec thermal power plant in Tracy, built between 1964 and 1968 and dismantled in 2015. Hydro-Québec sold the heavy fuel oil storage tanks to Kildair in 2011, which still operates them today.

Historically, the region has been inhabited by the W8banakiak for approximately 8,000 years, who engaged in hunting, fishing, and gathering. European settlers began to settle in the area as early as 1642 with the construction of Fort Richelieu. The city of Sorel-Tracy has been an important industrial and port centre, with a history marked by the lumber industry, shipbuilding, and the war industry during World War II.

7.3.2 Land Use and Development

7.3.2.1 Administrative Context

The project is located within the municipality of Sorel-Tracy, approximately 2.3 km south of the urban core of the city and approximately 1.8 km from the city limits of Contrecoeur. The project is in the Pierre-de-Saurel RCM, located in the Montérégie administrative region.

According to the Pierre-de-Saurel RCM's land use plan, industrial uses are planned east of Route 132 and urban uses west of the route. According to the urban plan, the project area is zoned for industrial use for the land portion and public and institutional use for the water portion. The zoning allows for predominantly industrial activities, including research and development, industrial manufacturing, and certain community and recreational services.

7.3.2.2 Archaeological, Cultural, and Natural Heritage

The project area has been assessed for archaeological potential by the Ndakina Office. No archaeological remains are expected in the project area as the soils have been heavily disturbed by the construction and dismantling of the Tracy thermal power plant. However, the archaeological potential assessment mentions that the region would have been conducive to ancient Indigenous occupation, given its fertile land suitable for Indigenous cultivation and numerous wetlands and forests containing a variety of plant and animal resources.

The Sorel-Tracy region has a rich historical and industrial heritage, with exceptional sites such as the Canal-de-Saint-Ours National Historic Site and the Sorel Courthouse. The region is distinguished by its rich natural heritage and ecological diversity. It is home to the largest archipelago in the St. Lawrence River, with 103 islands, and has one of the largest heron colonies in North America. L'Île-de-Grâce, in Sainte-Anne-de-Sorel, provides essential habitat for many species, particularly waterfowl. The MRC de Pierre-de-Saurel has identified areas of special interest, including islands, streams, bays, locks, woodlands, and commons, with specific ecological, recreational, and historical uses.



7.3.2.3 Recreational and Tourism Activities

The St. Lawrence River is a popular spot for recreational boating in the summer, with intense activity from May to August for pleasure boaters and in September and October for cruise ship passengers. Boaters use various boat launches located upstream and downstream of the project to launch their boats. According to a watercraft census conducted in 2015, 81 pleasure craft were observed near the project area, mainly located in the navigation channel.

The project area is located in hunting zone 8 (north), and the majority of the game hunted in 2023 is white-tailed deer and wild turkey. Hunting does not take place at the project site. The project is located in fishing zone 8, and this activity is practised in Sorel-Tracy, particularly on the beach and shores near the project area. The W8banakiak also pointed out that a walleye fishing site used by the community is located in the project area.'

Three recreational tourism sites are located near the project area: Maisouna Park, 680 m to the north; the Grèves Regional Park, Sorel-Tracy and Contrecœur, with its entrance on Chemin du Golf, 1 km to the southeast; and the Colonie des Grèves located 1.5 km to the south.

7.3.3 Infrastructure and Public Services

7.3.3.1 Drinking Water, and Wastewater

The site is served by the Sorel-Tracy water supply system, which draws water from the Richelieu River. The industrial sector is not served by the municipal sewer system. Sorel-Tracy's drinking water supply and wastewater treatment infrastructure are located outside the local study area.

Two industrial effluent discharge process waters into the river. Both effluents are located in the Rio Tinto sector in Saint-Joseph-de-Sorel, downstream from the QSL project.

7.3.3.2 Electricity and Gas Network

Two major electrical power transmission corridors supply all of the towns/municipalities in the Pierre-de-Saurel RCM: the first runs along Highway 30 from north to south, and the second crosses the territory from west to east. A Hydro-Québec high-voltage line (735 kV) runs along the southern boundary of the project area. At this point, the line crosses the St. Lawrence River from east to west between the municipalities of Sorel-Tracy and Lanoraie. Low-voltage lines are present in the local study area and generally follow the north-south axis of the R-132 to supply the various industries and residences in the residential neighbourhoods.

The natural gas distribution network serves the Sorel-Tracy agglomeration, including the Sorel-Tracy industrial port area, where the Project is located. The main pipeline is a high-pressure pipeline (2,400 kPa) that runs along the railway network located 400 m east of the project area.

7.3.3.3 Road and Rail Networks

In the local study area, Route 132 (Boulevard Marie-Victorin) is a regional road and a bicycle route defined in the Sorel-Tracy bicycle network maps. Part of the truck route, which will run along Chemin du Golf between the Highway 30 entrance and exit ramps, Rue Industrielle, Rue Joseph-Simard, and Route 132, will be shared with cyclists on the section of Chemin du Golf and Route 132.



Traffic counts conducted in 2024 indicate that between 234 and 327 vehicles used the Highway 30 ramps at the intersection of Chemin du Golf and Chemin du Golf at the intersection of Rue Industrielle, and between 154 and 253 vehicles used Route 132 between Rue Joseph-Simard and the project area. Of these vehicles, a percentage of heavy vehicles ranging from 8% to 20% on Chemin du Golf and between 7% and 10% on Route 132 was observed. The results of the study show that there are no major problems on the entire network studied during rush hour, with no significant delays or queues.

The Pierre-De Saurel RCM has been responsible for public transportation since 2021. The project site is served by Exo bus line 700. The “Marie-Victorin/face à Hydro-Québec” stop is located directly in front of the project. The line connects Sorel-Tracy to Longueuil and serves all cities along the river (including Contrecoeur, Verchères, Varennes, and Boucherville).

In terms of rail service, the study area includes a Canadian National (CN) railway line that runs 340 m east of the QSL project storage site, on the lot east of Route 132, and connects to the industrial zone of Sorel-Tracy and Saint-Joseph-de-Sorel, crossing several industrial zones in several municipalities, including Longueuil, Boucherville, Varennes, Verchères, Contrecoeur, and Sorel-Tracy. CN has spur tracks serving Kildair and industry on neighbouring lots north of the QSL lots.

7.3.3.4 Waste

Residual materials management in the study area is handled by the Pierre-De Saurel RCM. In Sorel-Tracy and the Pierre-De Saurel RCM, non-recyclable waste is mainly sent to the region’s engineered landfill site in Saint-Roch-de-Richelieu. Recyclable materials are sent to the ecocentre, located 1.4 km north of the QSL site, for recycling and recovery. The Recyclo-Centre, located in Sorel-Tracy, specializes in sorting and recycling residual materials, including plastics, paper, cardboard, and glass.

With regard to waste disposal related to the Port of Sorel-Tracy, the MRC’s development plan states that the recovery, recycling, neutralization, and recovery of hazardous waste, with the exception of radioactive, explosive, and PCB materials, are carried out only at the Ludger-Simard industrial park (former Alstom or MIL site) and at the industrial site located at 1690 Marie-Victorin Road (former Tioxide site), both located within the city of Sorel-Tracy.

7.3.3.5 Education

The Sorel-Tracy School Service Center (CSS-ST) serves all municipalities in the Pierre-De Saurel RCM. Its French-language network includes elementary and secondary schools, two vocational training centres, and an adult education centre, which has a branch in the Sorel-Tracy detention centre. Sorel-Tracy has a CÉGEP that welcomes nearly 1,000 students each year. Several educational facilities are located near the project and constitute a pool of children and young people. The closest are the La Marelle daycare centre (2.2 km to the northeast), the Enfant-Jésus school (2.4 km to the northeast), and the Sorel-Tracy CÉGEP (2.7 km to the northeast).

7.3.3.6 Health

The Montérégie-Est Integrated Health and Social Services Centre (CISSS) includes various health facilities serving the Sorel-Tracy area, namely the Hôtel-Dieu de Sorel, the CLSC Gaston-Bélanger, and the Clinique Médicale des Professionnels de la Santé de Sorel-Tracy, all three located 9 km northeast of the project area, two family medicine groups (GMF), located 5 and 7 km from the project area, and four long-term care facilities (CHSLD): located between 4 and 6 km northeast of the project area. Among them, one facility is private and unsubsidized, and three facilities are public. The city also has residences for seniors. In total, 54 health-related resources are listed as available throughout the municipality of Sorel-Tracy (pharmacies, general and specialized medicine,



rehabilitation, physical and mental health NPOs, support NPOs for youth and seniors, etc.). None of these services are located in the local study area. In the Marguerite-D'Youville RCM, more specifically in Contrecoeur, there is a CLSC near the Contrecoeur port project facilities (6 km), a private medical clinic, a health cooperative bringing together doctors and complementary services, a long-term care hospital (CHSLD), residences for seniors, and several specialized medical practices.

7.3.3.7 Public Safety

The City of Sorel-Tracy is served by the Sûreté du Québec, Pierre-De Saurel RMC station in Sorel-Tracy.

The Direction régionale de la sécurité civile et de la sécurité incendie (DRSCSI), part of the Ministère de la Sécurité publique, is located at 165 Jacques-Cartier Street North in Saint-Jean-sur-Richelieu and provides support and coordination to municipalities in the Montérégie region, including Sorel-Tracy, in the areas of risk management, civil security, and fire safety.

The Emergency Protection and Intervention Service (SPIU), managed by the City of Sorel-Tracy, handles emergency situations, fires, public safety, and response when needed. The SPIU has equipment for responding to hazardous materials, confined space rescue, rope rescue at height, and water rescue, and has three fire stations, the closest of which is located 3 km north of the QSL project site.

Two ambulance services located in Sorel-Tracy provide pre-hospital services in the region. The city of Sorel-Tracy also has a courthouse and a detention facility.

7.3.4 Commercial Shipping

The St. Lawrence Seaway navigation channel is used by approximately 4,000 vessels annually, travelling to and from the major marine terminals on the St. Lawrence River. Near the project area, the Kildair wharf specializes in fuel transportation, including heavy fuel oil, marine diesel, and bitumen. Upstream from the project area, the Port of Contrecoeur is located about 20 kilometres away, and an expansion project is underway to meet growing demand for marine transportation and relieve congestion at the existing Port of Montreal facilities. Current marine activities in Contrecoeur are related to the handling and storage of solid bulk cargo, including iron pellets, fertilizers, and stone granules, as well as transshipment activities. Other products are handled in smaller quantities (coal, ash, residues, and aluminum ore). Downstream from the future port terminal, the Rio Tinto Fer et Titane/Complexe métallurgique de RTFT – Opérations Québec terminal is located 6 km away. This terminal serves only RTFT activities. Further downstream, at the mouth of the Richelieu River, are the Saint-Joseph-de-Sorel (operated by QSL) and Richardson's terminals. Immediately downstream is the Sorel-Tracy—Saint-Ignace-de-Loyola's ferry, the only link connecting the two banks of the St. Lawrence River between the Montreal area and the Laviolette Bridge in Trois-Rivières.

7.3.5 Socio-economic Profile and Economic Development

7.3.5.1 Demographics and Employment

In 2021, Sorel-Tracy had a population of approximately 35,165 inhabitants, and the Pierre-De Saurel RCM had 51,025 inhabitants, an increase of 1.6% since 2016. The population is generally older in Sorel-Tracy than in all comparison areas, and women are generally older than men. Sorel-Tracy and the Pierre-De Saurel RCM are distinguished by their low immigrant rates, with only 3% of residents coming from outside Canada, but the Pierre-De Saurel RCM recorded a 60% increase in immigration between 2001 and 2010 and 2011-2021, and during the same period, Sorel-Tracy saw its immigrant population increase by 15%.



Approximately 54% of Sorel-Tracy's population is of working age, and of this working population, 48% are women and 52% are men. However, a growing proportion of these workers are now in the 55-64 age group, which is generally considered close to retirement age. Data indicate that the majority of the working population worked full-time, with variations across reference areas. Women are more likely to work part-time or not work all year, while men are more likely to work full-time. In Sorel-Tracy, the majority of residents commute to work in less than 15 minutes, suggesting that the workforce comes mainly from the local area.

In general, men are more numerous in trades, transportation, and machinery, as well as in sales and services. Women dominate business, finance, and administration, as well as the health sector. Sorel-Tracy has a strong male presence in trades, transportation, and machinery (37%) and a low representation in natural and applied sciences (2%).

To develop and maintain employment in its territory and facilitate the reception and social integration of newcomers, the Pierre-De Saurel RCM has developed an action plan to ensure the economic and social stability of the RCM region. However, workforce skills development remains a challenge, and as a result, several initiatives have been implemented in various regions, notably in Sorel-Tracy through the CÉGEP de Sorel-Tracy, the Centre collégial de transfert technologique en écologie industrielle (CTTEI), L'Orienthèque, the Carrefour jeunesse-emploi, and the Centres de formation professionnelle de la MRC de Pierre-de-Saurel.

7.3.5.2 Education and Field of Study

A small majority of the population of Sorel-Tracy has a post-secondary certificate, diploma, or degree, which represents a smaller share of the population than in the reference territory. Similarly, the proportion of people with a university education is lower than the proportion of Quebec as a whole. Trends indicate that the population is moving towards more technical fields and career paths. In general, women are more likely to pursue training to obtain a certificate, diploma, or degree, which is similar to the trend observed in other reference areas.

Architecture, engineering, and related trades are the most popular fields in Sorel-Tracy compared to other regions, and the proportion of men working in these fields is significantly higher than that of women. In terms of popularity, these fields are followed by business, management, and public administration, and health and related fields. The least represented field is agriculture, natural resources, and conservation.

7.3.5.3 Income

The Pierre-de-Saurel and Marguerite-d'Youville RCMs are part of the Montérégie administrative region, labelled as the province's second economic engine. In 2022, Montérégie had the highest disposable income per capita in the province for the sixth consecutive year. The median income in Sorel-Tracy is about 10% lower than the provincial median. Sorel-Tracy, although considered the economic capital of the Pierre-De Saurel RCM, also has a lower median income than the Pierre-De Saurel RCM.

The gap between women's and men's incomes varies across regions, but remains favourable to men in all reference regions. In Sorel-Tracy, women earn about 30% less than men, and among those earning less than \$10,000, women are the most represented (>60%).

7.3.5.4 Housing

The majority of Sorel-Tracy residents own their homes. At the same time, property values have increased in the Pierre-De Saurel and Marguerite D'Youville RCMs by 21.1% to 24.6%.



In Sorel-Tracy, the rental market occupancy rate is 1.3% below the national average (for centres with 10,000 inhabitants or more), and the average rent in Sorel-Tracy has increased by 7.4%, which remains below the provincial average. In Sorel-Tracy, approximately 20% of households spend 30% or more of their income on housing costs, live in housing that is too small or in need of major repairs, a rate higher than that of the MRC. To help those in need, the Office d'habitation Pierre-De-Saurel has set up a telephone hotline to assist people looking for housing, and social and affordable housing units were added in Sorel-Tracy in 2022. In the Tracy sector, new developments including detached and semi-detached single-family homes, as well as multi-family buildings with 4, 6, and 12 units are planned.

7.3.5.5 Economic Development and Regional Economy

The Montérégie region, which is the province's second-largest economic engine, recorded growth of more than 12.0% in its gross domestic product (GDP) in 2021. This growth is mainly attributable to the manufacturing, construction, and wholesale trade sectors.

The Sorel-Tracy region is home to a high concentration of metalworking companies, which are supported by small and medium-sized enterprises (SMEs), equipment manufacturers, research and training centres, making Sorel-Tracy the most densely populated region in Quebec in terms of metalworking companies and workforce. In addition to the metalworking industry, the Sorel-Tracy region is also active in health care, social assistance, construction, wholesale trade, retail trade, and education.

Sorel-Tracy has nearly 6 million square feet of industrial land available near the St. Lawrence River in two industrial parks: the Ludger-Simard Industrial Park, located about 4 km northeast of the local study area, and the Joseph-Simard Industrial Park, where the project area is located.

In addition, it is in the shipbuilding sector, an industry with a long history in Sorel-Tracy, that local stakeholders are currently making significant efforts to breathe new life into the local economy.

According to the 2020 Economic Vitality Index (EVI), the Pierre-De Saurel RCM has the lowest EVI of any RCM in the Montérégie region, while its neighbour, the Marguerite D'Youville RCM, ranks fourth in the region in terms of economic performance. The economic gap is therefore significant, even though the territories are adjacent. According to this index, Sorel-Tracy is underperforming economically, and this trend has worsened since 2008. The IVÉ remains consistently negative, indicating a certain lag behind most Quebec communities.

The MRC Pierre-De Saurel's agriculture is focused on various specialties, including cereals, dairy, beef cattle, pigs, poultry, horse breeding, forage crops, and market gardening. Food processing companies are mainly concentrated in the cheese, meat cutting, slaughterhouse, and maple products sectors.

Over the past two decades, the cities of Sorel-Tracy and Contrecoeur have focused on economic diversification, particularly through tourism. The key sectors identified in these strategies are business tourism, agritourism, cycling tourism, and boating.

7.3.6 Health conditions

7.3.6.1 Community Health Profile

Sorel-Tracy is located in the Pierre-De Saurel Local Services Network (LSN). It is managed by the CISSS de Montérégie Est (CISSS M-E), one of three entities responsible for public health management in the Montérégie region.



According to the 2024 public health profile, the Pierre-De Saurel LSN has several distinctive characteristics in terms of public health. The Pierre-De Saurel LSN has a lower population growth rate than the Montérégie and Quebec averages, and a larger proportion of the population lives in rural areas. The proportion of people aged 65 and over is well above the regional and provincial averages. Life expectancy at birth is slightly below the regional and provincial averages.

In 2021, the proportion of the population aged 75 and over living alone in private households in the Pierre-De Saurel area was slightly higher than in other areas of the Montérégie-Est region and Quebec. In terms of the proportion of the population aged 75 and over living in a health care facility, Pierre-De Saurel had a lower rate. In 2019, approximately 6% of people aged 65 and over were victims of abuse, which led to several initiatives to promote the well-being of seniors, including several projects in Sorel-Tracy.

In 2020, the proportion of the population in the Pierre-De Saurel LSN living in poverty according to the market basket measure (MBM) was slightly higher than in the Montérégie region, but lower than in Quebec as a whole. The situation is similar to the proportion of children aged 0 to 17 living in poverty, where the Pierre-De Saurel LSN had a higher rate than the Montérégie region, but lower than Quebec.

The Pierre-De Saurel LSN has a higher proportion of single-parent families than the Montérégie and Quebec. In 2021, more than a quarter of children under the age of 18 live with a single parent, a figure higher than the average for the Montérégie and Quebec. Among these single-parent families, a higher proportion of children live with a female parent.

In March 2023, the social assistance rate for people under 65 in the Pierre-De Saurel LSN was significantly higher than in the Montérégie-Est and Quebec regions.

In terms of lifestyle habits, Pierre-De Saurel stands out for its higher rates of smoking and excessive alcohol consumption, as well as insufficient physical activity, although the rate of excess weight is relatively comparable to other regions.

The Pierre-De Saurel LSN stands out for its higher vulnerability indicators among children and youth (number of live births, proportion of low birth weight newborns, premature newborns, and newborns with mothers with low levels of education, kindergarten development, youth protection services, and school dropout rates) than in other areas of the Montérégie region and Quebec.

Residents of the Pierre-De Saurel SLR face significant physical health challenges, with higher rates of chronic diseases (especially respiratory), incidence of certain cancers, and mortality compared to other areas. The mortality rate is also high.

The Pierre-De Saurel LSN presents particular challenges in terms of mental health and neurodiversity and shows a slightly higher prevalence of mental disorders, more frequent substance use disorders, attention deficit hyperactivity disorder and autism, and a higher prevalence of Alzheimer's disease than in the Montérégie region and the rest of Quebec. However, psychological distress is lower. The suicide mortality rate is higher than in the rest of the Montérégie region and the Quebec average.

7.3.6.2 Food Security

In 2017-2018, more than 75,000 Montérégie residents aged 12 and over were food insecure, and this prevalence increased during the pandemic. Insufficient income is identified as the main factor influencing this insecurity. People without a high school diploma and renters are also at greater risk. Vulnerable groups include women, youth aged 12 to 17, and single-parent families, who are more likely to experience food insecurity. Although the



document does not provide specific data for the Pierre-De Saurel or Sorel-Tracy RCM, several economic, social, and health findings presented in different sections of this impact study suggest that part of the population is at risk of food insecurity.

7.3.6.3 Summary of Health Determinants

Health determinants are factors that influence the health status of individuals or populations and are grouped into five broad categories according to the classification of the Institut national de la santé publique du Québec (INSPQ) (Table 7-2).

Considering all the information presented in the human environment section, the vulnerability of the community is presented by comparing each determinant to determine whether the community is relatively more vulnerable than other regions. A sign (++) indicates significant vulnerability, a (+) indicates a situation slightly above average, and a (=) indicates a condition equivalent to or better than that of other regions.

Table 7-2 INSPQ health determinants

| Category | Determinants | Vulnerability (++, +, =) |
|---|--|-----------------------------|
| Economic/work environment | Income | ++ |
| | Education and literacy | = |
| | Employment | = |
| | Food security | = |
| Physical environment | Air and water quality | ++ |
| | Housing | ++ |
| | Land use | = |
| Social environment | Social support network | = |
| | Stereotypes, social exclusion | = |
| Individual characteristics, experiences, and behaviours | Genetic and biological predispositions | S.O. |
| | Early childhood experiences | ++ |
| | Lifestyle | + |
| | Individual aptitudes | N/A |
| Health and social services system | Biomedical progress | N/A |
| | Accessibility, quality, and continuity of health and social services | = |
| | Continuum of action to promote, prevent, cure and support | = |



8. Description of the Indigenous Community

The Indigenous communities that are likely to be affected by the project or for whom the project area is of interest are as follows:

- W8banaki (formerly the Grand Council of the Waban-Aki Nation), representing and speaking on behalf of the Abenaki communities (W8banakiak):
 - Odanak;
 - Wôlinak (W8linak);
- The Mohawks (Kanien:keha'ka):
 - from Kahnawake (Kahnawà: ke);
 - from Kanesatake (Kanehsatà:ke);
 - Akwesasne (Akwesáhsne);
- The Huron-Wendat of Wendake.

8.1 Administrative Context, Territories, and Land claims

8.1.1 Governance Framework

In Canada, band councils are responsible for the administration and organization of reserves under the *Indian Act* (R.S.C. 1985, section I-5). Beyond the responsibilities prescribed in this Act, many First Nations have negotiated and signed agreements with governments to obtain increased powers over reserve management and services that go beyond the responsibilities prescribed by the *Indian Act*.

8.1.2 Land Claims

The objective of land claims is to redress historical wrongs committed by federal, provincial, and territorial governments against Indigenous communities and their territories. There are several types of land claims: comprehensive claims, which deal with matters not settled in Canadian treaties and generally affect areas of the country where Aboriginal land rights have not been defined by treaty or other legal means; and specific claims, which seek redress for past wrongs committed against First Nations. These claims (made by First Nations against the Government of Canada) relate to the administration of First Nations lands and other assets and to the fulfillment of historic treaties and other agreements. Since the adoption of the *United Nations Declaration on the Rights of Indigenous Peoples*, the Canadian government has been required to take steps to ensure that federal laws respect the rights of Indigenous peoples as set out in the Declaration. Table 8-1 briefly describes the administration of band councils and the land claims of each community.

Table 8-1 Indigenous communities and outstanding comprehensive and specific land claims

| Nation | Ancestral territory | Community | Band Council | Head of the band council | Area (km²) | Distance of community from project | Land claims pending |
|-----------------------------|----------------------------|---------------------------|--------------------------------|---------------------------------|------------------------------|---|---|
| Kanien:keha'ka (Mohawks) | Kanièn:ke | Kahnawà:ke | Mohawk Council of Kahnawà:ke | Kahsennenhawe Sky-Deer | 47.49 ¹ | 75 km | Sault Saint Louis CSX Transportation Line |
| | | Kanehsatà:ke ⁴ | Mohawk Council of Kanehsatà:ke | Victor Akwirente Bonspille | 11.66 ¹ | 92 | Seigneurie of the Two Mountains |
| | | Akwesasne ² | Mohawk Council of Akwesasne | Abram Benedict | 4 | 160 km | None |
| W8banaki | Ndakina | Odanak ³ | Odanak Abenaki Council | Richard O'bomsawin | 5.75 | 60 km | Transfer of 38 lots in the w8banakiak Domaine de Saint-François; Original boundaries of Odanak |
| | | Wôlinak ³ | Wôlinak Abenaki Council | Michel R. Bernard | 0.8 | 100 km | Original boundaries of Wôlinak: seigneurie of Bécancour |
| Huron-Wendat | Nionwentsïo | Wendake | Huron-Wendat Nation Council | Rémy Vincent | 2.25 | 220 km | Comprehensive land claim (Nionwentsïo), 2008; Rockmont Reserve |

Notes:

- 1 The Mohawks of Kahnawà:ke and Kanehsatà:ke share a territory called Tiowero:ton, a place of renewal for these communities where they can practise their traditional activities of hunting, fishing, trapping, and gathering. It is located near Ste-Lucie-des-Laurentides, approximately 124 km from the project, and covers an area of 74 km². This territory is jointly managed by the Mohawk Council of Kahnawà:ke and the Mohawk Council of Kanehsatà:ke.
- 2 The community of Akwesasne is crossed by provincial (Ontario, Quebec) and international (Canada and the United States in the state of New York) borders.
- 3 The communities of Odanak and Wôlinak are represented by W8banaki (formerly the Grand Council of the Waban-Aki Nation), speaking on behalf of the Abenaki communities (W8banakiak).
- 4 The community of Kanehsatà:ke does not occupy a reserve within the meaning of the *Indian Act*. It is composed of about 50 non-contiguous parcels, most of which are located within the town of Oka.

8.2 Sociodemographic Profile and Economic profile

8.2.1 Kanien:keha'ka (Mohawks)

The Mohawk Nation is the most populous of Quebec's Indigenous populations, and the community of Akwesasne is the largest, with nearly 13,425 members. The populations of Kahnawake and Kanesatake comprise approximately 11,665 and 3,045 members, respectively. The Mohawks live mainly in their communities, especially on the Akwesasne side. The Kanesatake community has the lowest proportion of members living on the reserve. All Mohawk communities have a higher number of women than men.

Little information is available on education levels among the Mohawk population, and these data are not broken down by community. Indigenous people represent 3% of all bachelor's degree graduates. Approximately half of Aboriginal women and men aged 25 to 64 have a post-secondary education. This marks an increase in post-secondary education rates since 2006.

Very little socio-economic data is available for the three Mohawk communities, whether on employment, unemployment rates, major economic sectors, or average Mohawk household incomes, for example. More than 150 businesses are listed in the Kahnawà:ke business directory, divided into four categories: retail, local services, food and beverage, and activities and recreation. The Kahnawake community has a long tradition of steelworkers, and over the years, many workers have acquired skills in various construction trades. There are believed to be around 40 businesses in Kanesatake, but no data is available on the number of jobs they generate. Akwesasne has its own chamber of commerce. The main employer on the Canadian side of the community is the Mohawk Council of Akwesasne (MCA), which has over 700 employees. The MCA brings together nearly 100 businesses in its jurisdiction, in various economic sectors including gas stations, souvenir shops, sports, professionals, restaurants, construction, banking, etc. The US side of the community is also home to just over 100 businesses, also in similar sectors.

8.2.2 W8banaki

The Odanak community is much more populous than the Wôlinak community, and a low percentage of registered members live in the Odanak and Wôlinak communities (9.5% and 18.1%, respectively). The respective populations of Odanak and Wôlinak are 285 and 126, with 3,008 and 697 registered members in 2024. The 2016-2021 population change is marked by a sharp increase, which is potentially linked in part to changes in the rules governing registration on First Nations membership lists. Both communities have more female than male members. In addition, the population of the Wôlinak community is much younger than that of Odanak and the rest of Quebec.

Little information is available on education levels among the Abenaki population. In general, Indigenous people represent 3% of all high school graduates. Approximately half of Indigenous women and men aged 25 to 64 have a post-secondary education. This marks an increase in post-secondary education rates since 2006. More specifically, the populations of Odanak and Wôlinak have a higher percentage of people without a high school diploma compared to the Quebec population in general, with an over-representation of men, and a lower proportion of the population with a university degree. However, both communities exceed the Quebec average for obtaining certificates or trades/apprenticeships. Finally, university graduation is much less common for members of the Odanak and Wôlinak communities than for the rest of Quebec, which could indicate issues with access to university education for members of the Nation (physical, financial, psychological).



The communities of Odanak and Wôlinak are located near major centres. Odanak is near Pierreville and 30 km from Sorel-Tracy, while Wôlinak is only 22 km from Trois-Rivières and a few kilometres from Bécancour. As such, the economies of these communities are integrated with those of their respective regions, although they have developed local services. The communities of Wôlinak and Odanak have nearly 30 businesses, in addition to an industrial park. The Odanak community generates economic spinoffs in tourism, art sales, forestry, clothing manufacturing, and furniture manufacturing. As for the Wôlinak community, jobs are also generated by community services, tourism, a casino, and about 15 local businesses.

In 2016, the activity and employment rates in Odanak and Wôlinak were comparable to those for Quebec as a whole. In 2021, men accounted for a larger share of the working population than women. However, the unemployment rate for men in Wôlinak was quite high compared to Odanak and the rest of Quebec. Data indicate that the majority of the working population worked full-time, with variations depending on the reference territory. In Odanak, there is gender parity in full-time employment, while elsewhere in Quebec, women are more likely to work part-time or not work all year round, while men are more likely to work full-time.

The average income in Odanak was well below the provincial average. The gap between women's and men's incomes remains in favour of men. Odanak has the lowest gap relative to the Quebec average. This exception is explained by the fact that men's wages are more similar to women's, not because women have a higher median income. In Odanak, the gap between men and women with incomes below \$10,000 is more pronounced than the Quebec average in favour of men. However, the gap narrows to near parity in incomes between \$10,000 and \$59,999. Very few Odanak residents reported incomes above \$79,999, and none of them were women.

8.2.3 Huron-Wendat

In 2023, the Huron-Wendat community had 5,036 members, of whom 3,555 members live outside Wendake. The community has more female than male members whether they live in the community or not. The age distribution of the population of Wendake is relatively similar to that of Quebec.

Little information is available on the educational attainment levels of the Abenaki population. In general, Indigenous people represent 3% of all bachelor's degree graduates. Approximately half of Aboriginal women and men aged 25 to 64 have a post-secondary education. This marks an increase in the post-secondary education rate since 2006.

More specifically, the educational attainment levels of the population of Wendake, which is located within the Quebec City agglomeration, are generally comparable to those of the Quebec population as a whole.

The community of Wendake is economically vibrant and home to the headquarters of several Indigenous organizations. There are reportedly more than 200 businesses on the reserve, offering services in a variety of sectors, in. In 2016, the activity and employment rates were comparable to those for Quebec as a whole, and the unemployment rate was lower than the provincial average.

8.3 Public Services and Infrastructure

8.3.1 Kanien:keha'ka (Mohawks)

In general, Mohawk communities are located near large urban centres and have access to the same road, rail, and airport infrastructure as non-Indigenous people.



8.3.1.1 Health

All Mohawk communities provide primary health care services to their members. Social assistance programs and housing programs (home construction and repair) are available in each community.

The Mohawk communities of Kahnawà:ke, Kanesatake, and Akwesasne have implemented programs to improve public health, including mental and physical health prevention and promotion initiatives and environmental health services, including water and air quality monitoring and food safety.

8.3.1.2 Education, Municipal Services, and Public Safety

All three communities offer primary and secondary education services that provide instruction focused on the integration of the Kanien'kehá:ka language and values.

All Mohawk communities provide essential municipal services for their members, including waste management, snow removal, road and infrastructure maintenance, and fire services. The communities of Kahnawà:ke and Akwesasne have their own police forces, but in Kanesatake, public safety is provided by the Sûreté du Québec, which responds when needed.

8.3.2 W8banaki

The communities of Odanak and Wôlinak are located near major urban centres and therefore have access to the same road, rail, and airport networks as the general population.

8.3.2.1 Health

Both communities have a health centre that provides services to ensure the well-being of residents. They implement preventive care and mental health programs, as well as health promotion initiatives. They both organize workshops and campaigns on nutrition, physical exercise, and stress management, as well as fitness classes, activity clubs, and sporting events to encourage healthy lifestyles.

Both communities work actively to preserve the Abenaki culture and language, organizing cultural and educational events to promote and maintain the nation's traditions. They also collaborate with various organizations and governments to develop training and employment programs aimed at improving economic opportunities for their members.

8.3.2.2 Education, Municipal Services, and Public Safety

The communities of Odanak and Wôlinak provide certain municipal services, including garbage collection and waste management. Since 2009, both communities have been served by the Abenaki Police Force, based in Odanak.

Educational services are administered by the Abenaki Council in each community. They offer educational programs and Abenaki language courses. The elementary and secondary schools attended by students are located outside the communities. Both communities benefit from partnerships with institutions such as the University of Sherbrooke, which provides students with access to specific resources and opportunities.



8.3.3 Huron-Wendat

Several major roads and highways allow residents to travel easily in all directions. These routes place Wendake about a 30-minute drive from many recreational, educational, and health facilities in Quebec City. Wendake is also about a 20-minute drive from Quebec City's Jean Lesage International Airport. In terms of public transportation, Wendake is served by the Réseau de transport de la Capitale (RTC) of Quebec City. For active transportation, Wendake is crossed by a multi-use trail that is part of the Route verte and the Trans Canada Trail.

8.3.3.1 Health

Wendake has a health centre that offers a range of health and social services to community members. The community also has a youth centre, a health clinic, and a residence for seniors.

In Wendake, public health is mainly managed by the Marie-Paule-Sioui-Vincent Health Center, whose mission is to promote optimal health among members of the Huron-Wendat Nation, in harmony with their culture.

8.3.3.2 Education, Municipal Services, and Public Safety

Wendake offers various services to the Huron-Wendat people. Members of the nation also have easy access to Quebec City's infrastructure, as they are surrounded by the city's territory.

In Wendake, educational services are administered by the Huron-Wendat Nation Council. There is a primary school where the Wendat language is taught. Wendake also has an adult education centre that offers recognized training programs funded by the Ministry of Education, with courses tailored to the needs of First Nations and accompanied by support services. It enables people aged 16 to 64 to obtain their high school diploma or the prerequisites required to enter vocational training or pursue college or university studies.

Given its proximity to Quebec City, several services are covered by agreements with the city, such as fire services, water and sewer systems, waste management, etc. The Wendake Police Department works closely with the Quebec City Police Department, the Sûreté du Québec, and the Royal Canadian Mounted Police to ensure effective coverage of the territory.

8.4 Land and resources use for traditional purposes

The term "territory" refers to the places where Indigenous peoples live, namely reserves and lands over which they have specific rights granted by governments in the context of land claims, and claimed territories over which they have inherent rights recognized and protected by section 35 of the Constitution Act, 1982.

Inherent rights include the right to self-government, which means that Indigenous peoples have the right to govern themselves and make decisions about their internal affairs, cultures, traditions, languages, and institutions. These rights are considered to have existed prior to colonization and are therefore recognized as ancestral rights. Ancestral rights, on the other hand, are the collective rights of specific Indigenous societies and vary from group to group, depending on the customs, practices, and traditions that have shaped their distinct cultures.

8.4.1.1 Kanien:keha'ka (Mohawks)

The traditional activities practised on the territory by the Mohawks are not just activities, but rather ancestral rights that include, among other things, fishing rights, hunting rights, harvesting rights (particularly of medicinal plants), trade rights, cultural rights (including archaeological heritage), and *environmental stewardship rights*. The Nation's



traditional use of Kaniatarowanenneh (the St. Lawrence River) is a central concern with the addition of commercial vessels that may interfere with this practice.

8.4.1.2 W8banaki

For the W8banaki Nation, Kchitegw (the St. Lawrence River) has ancestral significance as one of the main transportation routes, but also for its islands and shores for the practice of other traditional activities. During the pre-industrial period in the Sorel region, Kchitegw (St. Lawrence River) was an integral part of the W8banaki economy, particularly for the black ash basketry and sweetgrass industry.

Although the regional study area has experienced several disruptions over time, traditional activities such as fishing, navigation, hunting, trapping, gathering, knowledge transfer, renewal, and camping still play a central role. Fishing is practised throughout the year with varying intensity. The most active periods are generally spring, fall, and winter, depending on activity and available resources. A w8banakiak walleye fishing site is located near the proposed site for the future port terminal.

The current use and occupation of the study area can be explained through a more complex understanding of the concept of territoriality in the broadest sense, which includes not only food, ritual, and social activities, but also, for example, contemplative and recreational activities. These activities are practised by families and passed down from generation to generation, playing a significant role in preserving culture and strengthening ties between different generations, as well as in social and community cohesion. Privatization, erosion of the shoreline, particularly on the Sorel Islands, increased commercial boat and industrial and urban development are complicating the practice of certain traditional and family activities, such as knowledge transfer, swimming, and camping. The groups most affected by these changes are women, children, and seniors, as they play a central role in the transfer of knowledge. It is therefore generally more difficult for women to practise and pass on knowledge and culture to children in areas far from their communities.

8.4.1.3 Huron-Wendat

Even today, the Nionwentsïo territory occupies a central place in the cultural identity of the Huron-Wendat Nation. The traditional activities practised there not only perpetuate customs, but also ensure the transfer of knowledge between generations and the preservation of culture. Important activities practised on the territory include moose, big game and small game hunting, migratory bird hunting, fur trapping, fishing, and medicinal plant gathering.

Although the project is not located in Nionwentsïo, the nation's traditional use of the St. Lawrence River has been historically documented. It can therefore be assumed that the Huron-Wendat sometimes frequent the portion of the St. Lawrence River between Montreal and Quebec City, as well as its banks, to engage in traditional activities.

8.5 Archaeological Potential

Consultations with Indigenous peoples have demonstrated the importance of prehistoric and historic heritage to the peoples affected by this project. According to the archaeological potential study conducted by the W8banaki Ndakina Office, the region has certain features favourable to historical occupation of the territory by Indigenous peoples. This is supported in particular by the proximity of several major waterways—Kchitegw (St. Lawrence River), Masesoliantegw (Richelieu River), and other streams—as well as the fertility of the plains and the presence of raised terraces, making the region abundant in marine, aquatic, and terrestrial wildlife and plant resources, conducive to the establishment of settlements.



However, the study of the archaeological potential of the project area reveals too many disturbances related to industrial development in the region, and it is unlikely that undisturbed soils are still in place.

8.6 St. Lawrence River and its ecosystem

The St. Lawrence River and its ecosystem is a valued holistic component that overlaps with several other components under study (surface water quality, sediment quality, river environment and geohazards, fauna and flora, recreational boating, past use, current and future potential of land and resources for traditional purposes, etc.) and overlaps with several concepts related to:

- Natural heritage;
- The safety of members of Indigenous communities who engage in activities on or near the river;
- The visual experience of the St. Lawrence River;
- Culturally valued species;
- Indigenous fisheries;
- The exercise of ancestral and treaty rights.

The Indigenous peoples consulted for this study—the Mohawks, Abenakis, and Huron-Wendats—unanimously raised concerns about the capacity of the St. Lawrence River and its ecosystem to support future projects. They are concerned about further degradation of the river environment they value. The cumulative effects felt on the St. Lawrence River and its ecosystem are synergistic effects resulting from the interaction between several impacts on components of the physical, biological, and human environment.



9. Assessment of Impacts on the Biophysical and Human environments and on Indigenous peoples

9.1 Delimitation of Study Areas

The spatial boundaries of the study areas for assessing the project’s impacts were determined by considering the extent of direct and indirect impacts that the project could cause on the environmental components of the biophysical and human environments. They were defined based on ecological, technical, socio-economic, cultural, and health considerations. The boundaries take into account the knowledge of the public and indigenous peoples and consider their rights, traditional knowledge, and the current and potential use of the land by communities identified by the AECB. The spatial boundaries are defined by three types of zones:

- **The project area (PA):** also known as the restricted study area is defined by the territory where the project infrastructure will be located.
- **The local study area (LSA):** the area where the direct and indirect impacts of the project are felt during the construction and operation phases. The size of this area varies depending on the target VAC.
- **The regional study area (RSA):** an area bounded by ecological, social or economic boundaries that allow for consideration of the region where cumulative effects may extend.

The temporal limits of the assessment take into account the potential effects during the construction, operation, dismantling, and closure phases of the project on the relevant time scales.

Table 9-1 presents the extent of the local study area considered for the description of each component of the biophysical and human environment. Depending on the nature of the component and its interactions with the environment, different boundaries are considered to adapt to the nature of the component and the likelihood that the Project will cause direct or indirect impacts.

Table 9-1 Local study areas considered according to the component valued

| Component | Local study area |
|----------------------------------|---|
| River environment and geohazards | Section of the Saint Lawrence River between the Saint-Ours Island sector upstream and the city of Sorel-Tracy downstream, covering a distance of approximately 18 km |
| Sediment quality | Project area |
| Air quality | Modelling domain (10 km x 10 km) |
| Acoustic environment | Area within a 2 km radius of the project area and along truck routes connecting Highway 30 to the entrance of the future port terminal where sensitive receptors are located. |
| Groundwater quality | Project area |



| Component | Local study area |
|---|---|
| Surface water quality | Local land study area: Area within 200 m of the PA River study area: Area 1 nautical mile (1.852 km) downstream of the proposed wharf and 0.75 nautical miles (1.389 km) upstream of the PA |
| Climate | Province of Quebec |
| Wetlands and riparian areas | Local terrestrial study area: Area of 200 m around the PA River study area in the aquatic portion: Area extending 1 nautical mile (1.852 km) downstream from the proposed wharf and 0.75 nautical miles (1.389 km) upstream from the PHA |
| Fish and fish habitat | Restricted river study area: area 250 m upstream to 500 m downstream of the PA River study area: Area 1 nautical mile (1.852 km) downstream from the proposed wharf and 0.75 nautical miles (1.389 km) upstream from the PA |
| Pied-billed Grebe and its habitat | Restricted river study area: area 250 m upstream to 500 m downstream of the PA River study area: Area 1 nautical mile (1.852 km) downstream of the proposed wharf and 0.75 nautical miles (1.389 km) upstream of the PA |
| Birds and their habitat | Area 500 m around the PA |
| Mammal and herpetofauna species with special status | Area 200 m around the PA |
| Bat species with special status | 300 m zone around the PA |
| Visual environment (landscape) | Up to 1.25 km north and south of the PA |
| Visual environment (lighting) | Area 300 m around the LSA |
| Human environment | Includes the boundaries of the cities of Sorel-Tracy and Saint-Joseph-de-Sorel. It also includes, depending on the documented impact, the neighbouring towns of Contrecoeur (only the urbanized area near the administrative boundary between Sorel-Tracy and Contrecoeur, i.e., the Grèves sector), Saint-Roch-de-Richelieu, and Sainte-Victoire-de-Sorel. |
| Indigenous peoples | The local study area, which is different for each Indigenous people, refers to the spatial extent where members of a community exercise, have exercised, or will exercise their rights. |

9.2 Summary of the Impact Assessment

A summary of the positive and negative, temporary and permanent environmental impacts associated with the construction and operation of the future port terminal in the Saint-Laurent sector of the Sorel-Tracy industrial-port zone, as well as the sources of impacts, mitigation measures and residual impacts, is presented in Table 9-2. The analysis is based on the foreseeable interaction between the sources of impacts, i.e., the work to be carried out and the presence and operation of permanent infrastructure, and the valued physical, biological, and human



components. The assessment presented is based on information available at the end of the preliminary engineering phase of the project.

The effects were assessed using the following general approach:

- Identification of the most sensitive components of the environment (valued components) by providing baseline conditions (description of the physical, biological, and human environment) to understand the environmental and social context in which the Project is located;
- Identification and correlation of Project activities that could be considered a source of impact, based on the technical characteristics of the project during the construction and closure phases (if applicable);
- Determination of the spatial and temporal limits of the impact assessment;
- Qualification of the nature of the impact (positive or negative) and description of the impact;
- Avoidance or identification of measures to mitigate relatively predictable negative effects;
- Identification of residual impacts, i.e., those that will remain after mitigation measures have been implemented, and assessment of their significance based on criteria such as intensity, extent, duration, and frequency;
- Compensation for significant residual impacts;
- Identification of the cumulative effects of the Project;
- Development of monitoring and surveillance programs to verify both the accuracy of the impact assessment (predictions) and the effectiveness of mitigation measures.



Table 9-2 Summary of impacts and design, prevention, and mitigation measures for the two wharves variants

Legend

| | | | | | | |
|-----------------|------------------|---------------|-----------------|------------------|--------------------|---|
| <u>Phase</u> | <u>Intensity</u> | <u>Extent</u> | <u>Duration</u> | <u>Frequency</u> | <u>Probability</u> | <u>Significance of residual impacts</u> |
| C: Construction | L: Low | P: Punctual | S: Short | C: Continuous | L: Low | Ma: Major |
| O: Operation | M: Medium | L: Local | M: Medium | R: Regular | M: Medium | M: Medium |
| | H: High | R: Regional | L: Long | O: Occasional | H: High | Mi: Minor |
| | | | | | | N: Negligible |

| Component | Phase | Description of impact | Common mitigation measures | Design elements, specific mitigation measures, and enhancements | Impact assessment | | | | | | Significance of residual impacts | Monitoring, follow-up and/or compensation program |
|--|-------|---|----------------------------|--|-------------------|-----------|--------|----------|-----------|-------------|----------------------------------|---|
| | | | | | + | Intensity | Extent | Duration | Frequency | Probability | | |
| Physical environment | | | | | | | | | | | | |
| Hydrodynamic and hydrosedimentary regime | C | No anticipated impact | — | — | | | | | | | | |
| | O | Coastal and riverbank erosion due to changes in flow velocity | — | Protection against scouring designed to prevent coastal erosion in areas where there was a risk of erosion | (-) | L | L | L | O | L | Mi | Bathymetric survey in the first and third years of operation and photographic monitoring of the banks |
| Ice conditions | C | No impact anticipated | — | — | — | — | — | — | — | — | — | — |
| | O | <ul style="list-style-type: none"> ▪ Modification of flow patterns due to the presence of piles and mooring dolphins (variants 1 and 2) ▪ Modification of flow patterns due to the presence of the approach barge in winter (variant 1) | — | — | (-) | L | P | L | R | H | Mi | — |
| Sediment quality | C | Dissemination in river water of sediment particles contaminated by the removal of contaminated sediment inside the concrete piles (variant 1 and variant 2) | G1, G2, G4, C1, H7 | Removal of sediments from the hopper and transfer to a settling device | (-) | L | R | S | O | L | Mi | A sediment quality monitoring program will be implemented to ensure the contamination level of sediment that will be handled. |
| | O | Mobilization of contaminated sediment particles due to possible scouring areas or other external factors affecting the stability of the riverbed | — | Development of the wharf location offshore from the contaminated sediment area | (-) | L | L | L | O | L | E | — |



| Component | Phase | Description of impact | Common mitigation measures | Design elements, specific mitigation measures, and enhancements | Impact assessment | | | | | | Significance of residual impacts | Monitoring, follow-up and/or compensation program |
|----------------------|-------|---|---|--|-------------------|-----------|--------|----------|-----------|-------------|----------------------------------|--|
| | | | | | + | Intensity | Extent | Duration | Frequency | Probability | | |
| Air quality | C | Increase in concentrations of particulate matter and gaseous contaminants in the atmosphere | G1, G2, G4, M5, TT1, TT4 | Apart from measures to optimize (minimize) their use, when required only, the fleet of construction equipment could have a higher proportion of Tier 4 certified machines. | (-) | M | P | S | O | H | Mi | A program to monitor concentrations of PM2.5, PM10, SO2, and NO2 in the ambient air will be implemented at the construction site, including the terminal's surrounding area. |
| | O | Increased concentrations of particulate matter and gaseous contaminants in the atmosphere | M5, TT1, TT4 | Use of dust collectors along conveyor lines | (-) | M | L | M | R | H | M | A program to monitor PM2.5, PM10, SO2, and NO2 concentrations in ambient air will be developed. |
| Acoustic environment | C | Temporary change in the sound climate due to the execution of the works and the equipment used | G1, G2, G4 M6, M7, M8, M9, M11 | <ul style="list-style-type: none"> ▪ Installation of piles by vibratory driving rather than impact driving; ▪ Use of acoustic screens installed around the vibratory pile driver or suspended at the same level as the pile driver; ▪ Limit the actual operating time of the vibratory pile driver to one hour per day, between 7 a.m. and 7 p.m. | (-) | L | P | S | R | H | Mi | A noise monitoring program will be implemented to ensure that the mitigation measure applied complies with the ambient noise standard. |
| | O | Change in noise climate following project completion according to receptors | M7 | Implementation of a specific mitigation measure to comply with MELCCFP NI 98-01: installation of a noise barrier or enclosure to contain noise | (-) | L | P | L | R | H | Mi | A noise monitoring program will be implemented to ensure that the mitigation measure applied complies with the ambient noise standard. |
| Groundwater quality | C | Groundwater contamination in the event of accidental spillage of petroleum hydrocarbons (MAH, PAH and PH C10-C50) | G1, G2, G3, G4, H1, H2, H3, H4, H5, H6, H7, H8, MD1, MD2, MD3, MD4, MD5 | — | (-) | L | P | L | R | M | Mi | This program shall commence prior to construction and continue during operation. |



| Component | Phase | Description of impact | Common mitigation measures | Design elements, specific mitigation measures, and enhancements | Impact assessment | | | | | | Significance of residual impacts | Monitoring, follow-up and/or compensation program |
|-----------------------|-------|---|--|--|-------------------|-----------|--------|----------|-----------|-------------|----------------------------------|--|
| | | | | | + | Intensity | Extent | Duration | Frequency | Probability | | |
| | O | <ul style="list-style-type: none"> Spread of contaminants (hydrocarbons, oils and greases, etc.) into groundwater during repairs and maintenance of site infrastructure Contamination of groundwater by petroleum hydrocarbons (MAH, PAH and PH C10-C50) in the event of accidental breakage or road accidents Spread of materials on site during the transshipment of bulk materials Spillage of materials on site during the transshipment and loading of bulk materials Infiltration of contaminated water following contact with steel temporarily stored outdoors on the site Infiltration of contaminated water following contact with bulk materials stored in the warehouse | TT4 | <ul style="list-style-type: none"> Hoppers at transfer points between the ship and the conveyor, as well as dust collectors along the conveyor route to prevent the spread of bulk materials; Chemical fertilizers inside the warehouse will be protected from the weather and covered by a concrete slab acting as a waterproof barrier; The bulk storage area will be covered with an 80 mm thick layer of asphalt concrete, which will act as a physical barrier to the infiltration of water into the underlying soils; The pile(s) of bulk material in the bulk storage area will be covered with a tarp. A drainage system surrounds the bulk storage area. | (-) | M-L | P | L | O | L | Wed | |
| Surface water quality | C | <ul style="list-style-type: none"> Suspension of excess particulate matter during water works leading to a plume of turbidity in the aquatic environment Contamination of surface water by accidental spills of petroleum hydrocarbons (MAH, PAH and PH C10-C50) near the aquatic environment Input of suspended matter from runoff from unpaved surfaces | G1, G2, G3, G4, G5, C1, C2, DR2, DR4, E3, H1, H2, H3, H4, H5, H6, H7, H8, MD1, MD2, MD3, MD4, MD5, M1, M2, M3, M4, M10, N2, MR1, MR4 | <ul style="list-style-type: none"> Installation of a bubble curtain to limit the potential for sediment dispersion; Driving of caisson piles and removal of sediments from the hopper, then transfer to a settling system to limit contact between sediments and river water; Concrete work will be carried out using appropriate working methods to confine the work area and limit the flow of concrete residues into the water. | (-) | L-M | L | S | O | L | Mi | A surface water quality monitoring program will be implemented to ensure that the suspended solids content does not exceed the surface water quality standard for the aquatic life protection criterion. |



| Component | Phase | Description of impact | Common mitigation measures | Design elements, specific mitigation measures, and enhancements | Impact assessment | | | | | | Significance of residual impacts | Monitoring, follow-up and/or compensation program |
|-------------------------------|-------|---|--|--|--|-----------|--------|----------|-----------|-------------|----------------------------------|--|
| | | | | | + | Intensity | Extent | Duration | Frequency | Probability | | |
| | O | <ul style="list-style-type: none"> Failure of the runoff collection and treatment system resulting in particulate matter entering the aquatic environment Infiltration of contaminated water following contact with bulk materials stored outdoors on site Infiltration of contaminated water following contact with bulk materials stored in the warehouse Spread of materials on the site during transshipment and loading of bulk materials Contaminant and PM input from runoff from unpaved surfaces and storage of used snow | H1, H3, H5, H6, H8, MD1, MD2, MD3, MD4, MD5, M2, M3, N1, N2, MR1 | <ul style="list-style-type: none"> Hoppers at transfer points between the ship and the conveyor, as well as dust collectors along the conveyor route to prevent the spread of bulk materials; Presence of a runoff water management system, authorized by the MELCCFP, to ensure runoff water quality and erosion control during terminal operations; The bulk material pile(s) in the bulk storage area will be covered with a tarp; Chemical fertilizers inside the warehouse shall be protected from the elements; A sheet deflector system shall be installed between the vessel and the wharf to prevent accidental spillage of bulk material into the water between the vessel and the wharf. | (-) | M | M | S | R | L | Mi | <ul style="list-style-type: none"> In accordance with the authorization obtained from the MELCCFP, a register will be established to monitor the quality of surface water at the outlet of the proposed treatment facility during the operating period to verify the concentration of chlorides, suspended solids, and petroleum hydrocarbons (C₁₀-C₅₀). A surface water quality monitoring program will be implemented to ensure the proper functioning of the drainage system put in place and to ensure that the project does not impact the water quality of adjacent ditches discharging into the St. Lawrence River. |
| Climate change | C | GHG emissions during the construction period | — | — | (-) | L | R | S | R | H | E | — |
| | O | GHG emissions during the operating period | — | Consider electrification or the use of alternative fuels (hydrogen or renewable diesel) if conditions allow | + | L | R | M | O | H | E | — |
| Biological environment | | | | | | | | | | | | |
| Wetlands and riparian areas | C | No anticipated impact | — | — | — | — | — | — | — | — | — | — |
| | O | No anticipated impact except on aquatic plants (see fish and fish habitat) | — | — | Impacts are assessed in the section on fish and fish habitat | | | | | | — | — |



| Component | Phase | Description of impact | Common mitigation measures | Design elements, specific mitigation measures, and enhancements | Impact assessment | | | | | | Significance of residual impacts | Monitoring, follow-up and/or compensation program |
|-----------------------|-------|---|---|--|-------------------|-----------|--------|----------|-----------|-------------|----------------------------------|---|
| | | | | | + | Intensity | Extent | Duration | Frequency | Probability | | |
| Fish and fish habitat | C | <ul style="list-style-type: none"> Disturbance of fish by underwater noise Alteration of surface water quality | G1, G2, G3, G4, C1, C2, DR2, DR4, E3, H1, H2, H3, H4, H5, H6, H7, H8, MD1, MD2, MD3, MD4, MD5, M1, M2, M3, M4, M10, N2, R1, MR1, MR4, TM2 | <ul style="list-style-type: none"> Respect the protection periods for reproduction activities for species of interest, which run from April 1 to August 1 (DFO 2024), and for warm-water species in the St. Lawrence, which run from March¹ to August¹, and adapt activities that could disturb the Copper Redhorse. At the beginning of each year in which construction work takes place in the aquatic environment, conduct an inventory and relocation of the Hickorynut and any other mussels that could be negatively affected by construction in potentially impacted areas. A SARA permit and a SEG permit must be obtained to proceed with the inventory and relocation; Install a bubble curtain (air) at the front of the most sensitive grass beds to mitigate noise; Gradually increase the vibratory pile driving rate to allow fish to move out of areas of significant noise (more than 15 m from the noise source). Reduce the speed of work boats; Mark the grass beds upstream and downstream of the work area with buoys at the start of each work season; Install piles using vibratory driving rather than impact driving. | (-) | L-Lo | L | S | R-O | L-H | Mi | <p>A monitoring program will be developed to ensure that the concentration of suspended solids at 100 and 300 m from the work area does not exceed 25 mg/L of suspended solids above the background level.</p> <p>A monitoring program during construction will be developed to ensure that noise levels in the grass beds do not exceed the range of 132-146 dB as defined in the section on underwater noise impacts on the feeding of the Copper Redhorse.</p> |
| | O | <ul style="list-style-type: none"> Destruction, deterioration, and disturbance of aquatic habitats (434 m² variant 1; 624 m² variant 2) Disturbance of fish by underwater noise | — | Avoid operating engines when not necessary. | (-) | L | P-L | L | C-R | H | Mo | A program to compensate for fish habitat loss will be implemented |

| Component | Phase | Description of impact | Common mitigation measures | Design elements, specific mitigation measures, and enhancements | Impact assessment | | | | | | Significance of residual impacts | Monitoring, follow-up and/or compensation program |
|---------------------------------|-------|--|---|--|-------------------|-----------|--------|----------|-----------|-------------|----------------------------------|--|
| | | | | | + | Intensity | Extent | Duration | Frequency | Probability | | |
| Copper Redhorse and its habitat | C | <ul style="list-style-type: none"> Disturbance of fish by underwater noise Alteration of surface water quality | G1, G2, G3, C1, C2, DR2, DR4, E3, H1, H2, H3, H4, H5, H6, H7, H8, MD1, MD2, MD3, MD4, MD5, M1, M2, M3, M4, M10, N2, R1, MR1, MR4, TM2 | <ul style="list-style-type: none"> Respect the protection periods for reproductive activities for species of interest, which run from April 1 to August 1 (DFO 2024), and for warm-water species in the St. Lawrence, which run from March¹ to August¹, and adapt activities that could disturb the Copper Redhorse. Install a bubble curtain (air) in front of the most sensitive grass beds to reduce noise; Gradually increase the vibro-driving rate to allow fish to move out of areas of significant noise (more than 15 m from the noise source); Reduce the speed of work boats; Mark the grass beds upstream and downstream of the work area with buoys at the start of each work season; Install piles using vibratory driving rather than impact driving. | (-) | L-H | L | S | R-O | L-H | Mi | <p>An aquatic noise monitoring program will be carried out in aquatic herbaceous vegetation to ensure that perceived noise complies with underwater noise values limiting disturbance to the feeding activities of the c Copper Redhorse.</p> <p>A monitoring program will be developed to ensure that the concentration of suspended solids at 100 and 300 m from the work area does not exceed 25 mg/L of suspended solids above the background level.</p> |
| | O | <ul style="list-style-type: none"> Loss of adult feeding habitat (200 m² variant 1; 63 m² variant 2) Disturbance by underwater noise | — | <ul style="list-style-type: none"> Avoid operating engines when not necessary. | (-) | H | P-L | L | C-R | H | Ma | <p>A monitoring program will be carried out during the first five years of terminal operation to verify whether the grass beds around the facilities will be impacted differently than presented in the impact assessment.</p> <p>A program to compensate for the loss of adult feeding habitat for Copper Redhorse will be implemented.</p> |
| Waterfowl and water birds | C | <ul style="list-style-type: none"> Disturbance by noise Loss of aquatic vegetation in the approach section or bridge | G1, G2, M6, M7, M8, M11 | — | (-) | L | P | S | O | Mo | N | — |
| | O | Noise disturbance | — | — | (-) | L | P | L | O | Mo | Mi | — |
| Rapaces | C | Disturbance by noise | G1, G2, M6, M7, M8, M11 | — | (-) | L | P | S | O | Mo | N | — |
| | O | Noise disturbance | — | — | (-) | L | P | L | O | Mo | Mi | — |

| Component | Phase | Description of impact | Common mitigation measures | Design elements, specific mitigation measures, and enhancements | Impact assessment | | | | | | Significance of residual impacts | Monitoring, follow-up and/or compensation program |
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| | | | | | + | Intensity | Extent | Duration | Frequency | Probability | | |
| Land birds (including songbirds) | C | <ul style="list-style-type: none"> Disturbance by noise Risk of collision with vehicles and infrastructure Interaction of operations with nesting. | G1, G2, M6, M7, M8, M11 | <ul style="list-style-type: none"> Identification of active nests during construction work and protection zone for the duration of the nesting period | (-) | L | P | S | O | Mo | N | Monitoring will be carried out to check for nests before and during construction. |
| Land birds (including songbirds) | O | <ul style="list-style-type: none"> Disturbance by noise Risk of collision with vehicles and infrastructure Interaction of operations with nesting. | — | <ul style="list-style-type: none"> Identification of nests during the nesting period and avoidance of nests when present; Use of lighting with a reduced light spectrum, emitting mainly amber-yellow light and not exceeding 3,000 K, will be used to reduce blue light; Direct lights towards the ground or specific areas to be illuminated, avoiding pointing directly at neighbours' houses; Limit the use of lighting to when it is necessary, especially near residential areas, and use motion detectors and timers. | (-) | L | P | L | O | Mo | Mi | Monitoring will be carried out annually during the nesting period to check for nests, particularly when the terminal is not busy. |
| Peregrine falcon | C | Disturbance by noise | G1, G2, M6, M7, M8, M11 | — | (-) | L | P | S | O | Mo | N | — |
| | O | Noise disturbance | — | — | (-) | L | P | S | O | Mo | Mi | — |
| Sand martin | C | Destruction of a temporary nesting site | — | <ul style="list-style-type: none"> No storage or construction activities shall be carried out near a pile of unconsolidated earth if active swallow nests are present; The removal of earth piles shall be carried out between October 1 and April 1, if necessary; Piles of soil or sediment stored and unused for more than 48 hours shall be either temporarily covered with mulch or geotextile or watered. In addition, to limit their attractiveness to swallows, these piles shall be maintained with a slope of less than 60%. | (-) | M | P | L | O | H | Mi | — |
| | O | No anticipated impact | — | Cover any soil piles stored for a long period (more than one year) with a geotextile fabric from mid-April; this can be removed at the beginning of August. | — | — | — | — | — | — | — | — |
| Barn swallow | C-O | <ul style="list-style-type: none"> Risks of collision with vehicles and infrastructure Interaction of operations with nesting. | G1, G2, M6, M7, M8, M11 | <ul style="list-style-type: none"> Limit vehicle speed in the PA; Identify active nests during construction work and establish a protection zone for the duration of the nesting period; Carry out work on the water intake outside the barn swallow nesting season or check for their presence beforehand so that work can be carried out during this period | (-) | L | P | L | O | Mo | Mi | Monitoring will be carried out to check for nests before and during the work. |

| Component | Phase | Description of impact | Common mitigation measures | Design elements, specific mitigation measures, and enhancements | Impact assessment | | | | | | Significance of residual impacts | Monitoring, follow-up and/or compensation program |
|--|-------|---|---|---|-------------------|-----------|--------|----------|-----------|-------------|----------------------------------|---|
| | | | | | + | Intensity | Extent | Duration | Frequency | Probability | | |
| Eastern meadow warbler and wood thrush | C-O | Disturbance by noise | G1, G2, M6, M7, M8, M11 | — | (-) | L | P | L | O | H | E | — |
| Bald eagle | C-O | Disturbance by noise | G1, G2, M6, M7, M8, M11 | — | (-) | L | P | S | O | H | Mi | — |
| Turtles with special status | C | <ul style="list-style-type: none"> Potential functional loss, partial and intermittent loss of movement habitats Trapping of turtles in the work area prior to the start of work | — | If the work site is surrounded by a turbidity curtain, relocate any trapped turtles inside. | (-) | L | P | S | O | L | N | — |
| | O | <ul style="list-style-type: none"> Loss of aquatic vegetation over a very small area in the approach section Potential partial and temporary functional loss of migration habitats | — | — | (-) | L | P | S | O | L | N | — |
| Chiroptera | C-O | <ul style="list-style-type: none"> Deterioration of potential feeding habitats linked to artificial lighting Functional loss of potential feeding and resting habitats due to noise Contamination of water (surface and groundwater) in the event of accidental spillage of petroleum hydrocarbons | G1, G2, G3, C1, C2, DR2, DR4, E3, H1, H2, H3, H4, H5, H6, H7, H8, MD1, MD2, MD3, MD4, MD5, M1, M2, M3, M4, M6, M7, M8, M10, M11, N2, MR1, MR4 | <ul style="list-style-type: none"> Use of a lighting colour with a reduced light spectrum, emitting mainly amber-yellow light and not exceeding 3,000 K, shall be used to reduce blue light; Direct lights towards the ground or specific areas to be illuminated, avoiding pointing directly at neighbours' homes; | (-) | L | P-L | S-L | O | H | E | — |
| Human environment | | | | | | | | | | | | |
| Visual environment (landscape) | C-O | Change in the visual perception of river users and residents | — | <ul style="list-style-type: none"> Maintain the presence of tree, shrub, and herbaceous layers around the PA and within the LSA; Preserve existing green spaces during and after the work between the riverbank and Route 132. | (-) | L | L | L | R | H | Mo | — |
| | C | No anticipated impact | — | — | — | — | — | — | — | — | — | — |

| Component | Phase | Description of impact | Common mitigation measures | Design elements, specific mitigation measures, and enhancements | Impact assessment | | | | | | Significance of residual impacts | Monitoring, follow-up and/or compensation program |
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| | | | | | + | Intensity | Extent | Duration | Frequency | Probability | | |
| Visual environment (lighting) | O | Localized modification to the lighting atmosphere | L1, L2, L3 | <ul style="list-style-type: none"> Use of lighting colours with a reduced light spectrum, emitting mainly amber-yellow light and not exceeding 3,000 K, will be used to reduce blue light; Use luminaries that comply with BNQ standard 4930-100/2023; Direct lights towards the ground or specific areas to be illuminated, avoiding pointing directly at neighbours' homes; Limit the use of lighting to when it is necessary, especially near residential areas, and use motion detectors and timers. | (-) | L | P | L | R | H | Mi | — |
| Land and resource allocation and use | C-O | Disturbances to natural heritage | TT7, TM1, F1, F2 | <ul style="list-style-type: none"> Encourage/maximize work during the hours and days specified in the project (Monday-Friday/7 a.m. to 7 p.m.); Preserve as much vegetation as possible around the site to reduce the visual impact of activities; Produce a newsletter to inform local stakeholders, residents, First Nations, and other users near the work about the nature and schedule of the work; Post important information on the work site, such as the nature of the project, the address of the dedicated web page, and contact information for resource persons; Avoid work in the waters of the St. Lawrence River during holiday periods when non-commercial navigation is more intense. | (-) | L | L | S-L | R | H | Mo | — |

| Component | Phase | Description of impact | Common mitigation measures | Design elements, specific mitigation measures, and enhancements | Impact assessment | | | | | | Significance of residual impacts | Monitoring, follow-up and/or compensation program |
|------------------------------------|-------|---|----------------------------|---|-------------------|-----------|--------|----------|-----------|-------------|----------------------------------|---|
| | | | | | + | Intensity | Extent | Duration | Frequency | Probability | | |
| Infrastructure and public services | C | <ul style="list-style-type: none"> Increased traffic (deterioration in road safety, accessibility, or public transport service levels) Increased consumption of public services | TT2, TT3, TT5, TT6 | <ul style="list-style-type: none"> Install signs on Chemin du Golf to ensure that truck drivers follow the designated route and do not use Chemin du Golf to reach Marie-Victorin. Install a gatehouse at the entrance to the facilities to control the speed of trucks when entering and exiting; Ensure that roads used by trucks connected to activities near entrances/exits are cleaned to ensure the safety of cyclists; Ask the city to maintain vegetation along the truck route to ensure visibility at intersections, which is essential for the safe coexistence of trucks and cyclists. Adjust QSL's current procedure and communication channel for Saint-Joseph-de-Sorel to collect, manage, and process complaints from residents about truck traffic to and from the QSL site; Raise awareness among truck drivers about the importance of complying with regulations prohibiting truck traffic on certain roads in the area; Raise awareness among truck drivers of the presence of cyclists on several sections of the route, the rules regarding safety distances, and the necessary adjustments for maneuvering at intersections in the presence of cyclists; At the entrance to the site, install mirrors in both directions of traffic. This will improve visibility for trucks and inform road users that trucks are present and about to maneuver; Contact the city and the MTMD to request corrective measures regarding signage (markings and any other signage deemed necessary by the parties involved) or street layout to ensure the safety of users, especially cyclists. | (-) | L | L | O | O | H | E | — |
| | O | <ul style="list-style-type: none"> Increased traffic (deterioration in road safety, accessibility, or public transport service levels) Increased consumption of public services | — | <ul style="list-style-type: none"> Adoption of the 3RVE approach (Reduce, Reuse, Recycle, Recover, Eliminate) for better waste management. | (-) | L | L | L | R | H | Mo | — |
| Commercial navigation, | C | Disruption of commercial navigation, accessibility and recreational boating activities | G2, TT8, TM3, TM4, TM5 | <ul style="list-style-type: none"> Comply with applicable navigation rules and procedures; | (-) | M | L | S | R | H | E | — |



| Component | Phase | Description of impact | Common mitigation measures | Design elements, specific mitigation measures, and enhancements | Impact assessment | | | | | | Significance of residual impacts | Monitoring, follow-up and/or compensation program |
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| | | | | | + | Intensity | Extent | Duration | Frequency | Probability | | |
| recreational boating, and water recreation | O | <ul style="list-style-type: none"> ▪ Disruption of commercial navigation, accessibility, and recreational boating ▪ Interaction with Kildair Services operations | — | <ul style="list-style-type: none"> ▪ Provide vessels with the necessary equipment and support to facilitate their approach, mooring, and departure; ▪ Obtain approval from Transport Canada’s Navigation Protection Program (NPP) to carry out the work, as it will interfere with navigation; ▪ Comply with all conditions included in Transport Canada’s approval (navigation channel marking, buoy size, colour, and lighting as required, danger signs, etc.); ▪ Request the issuance of a notice to navigation by contacting the Canadian Coast Guard; ▪ Inform stakeholders in a timely manner of terminal activities and potential impacts on commercial navigation (temporary prohibitions, complaint management mechanism, etc.); ▪ Establish an emergency response plan in case of a spill or collision; ▪ Maintain constant contact with the CCG to ensure the safety of vessels; ▪ Frequently inform river users of safety standards through appropriate communication channels. | (-) | L-M | L | L | R | H | Ma | — |



| Component | Phase | Description of impact | Common mitigation measures | Design elements, specific mitigation measures, and enhancements | Impact assessment | | | | | | Significance of residual impacts | Monitoring, follow-up and/or compensation program |
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| | | | | | + | Intensity | Extent | Duration | Frequency | Probability | | |
| Economic benefits and jobs | C-O | <ul style="list-style-type: none"> ▪ Jobs generated directly and indirectly by construction work and operations ▪ Leverage effect on wages and wage equity in the construction sector ▪ New economic benefits for the community, Quebec, and Canada | — | <ul style="list-style-type: none"> ▪ Continue to prioritize local purchasing to stimulate the local economy; ▪ Continue to implement the employment equity program to ensure equitable redistribution of job opportunities and income ▪ The dialogue initiated during the construction phase with local development agencies, community organizations, and chambers of commerce will continue during the operational phase to keep businesses informed of labour, goods, and service needs. ▪ In collaboration with local stakeholders, labour requirements, including those of subcontractors, will be defined and communicated in advance to the relevant organizations in order to train the local workforce to maximize its involvement in the operation of the project; ▪ Within the limits of its activities, QSL will work with local organizations to contribute to the diversification of economic activities within the city of Sorel-Tracy and the surrounding region. | (+) | L | R | L | C | H | Ma | — |



| Component | Phase | Description of impact | Common mitigation measures | Design elements, specific mitigation measures, and enhancements | Impact assessment | | | | | | Significance of residual impacts | Monitoring, follow-up and/or compensation program |
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| | | | | | + | Intensity | Extent | Duration | Frequency | Probability | | |
| Quality of life of the population | C | <ul style="list-style-type: none"> Deterioration of air quality Increase in ambient noise Deterioration of water quality that could affect recreational activities and consumption of locally sourced fish | In addition to the mitigation measures proposed for air quality, the acoustic environment and water quality: TT2 | <p>In addition to the mitigation measures proposed for air quality, the acoustic environment and water quality:</p> <p>Air quality Encourage the use of Tier 4F certified mobile equipment, which would reduce NOx (NO2) emissions.</p> <p>Noise exposure In addition to mitigation measures for the acoustic environment:</p> <ul style="list-style-type: none"> Maintain direct and ongoing communication with immediate neighbours regarding key phases of the work and discuss with them to find mutually acceptable solutions in the event of conflict; Establish and promote a complaint management system (mail and email) to respond within a reasonable time frame to any requests or issues raised by the wider neighbourhood due to construction noise and non-compliance with construction hours; Raise awareness among construction teams and subcontractors about the importance of adhering to the planned work schedule; Where possible, locate the noisiest construction equipment as far away as possible from sensitive receptors in the vicinity; Ensure that access roads to the project are well maintained to minimize noise from heavy trucks; Plan the execution of work so as to minimize as much as possible the need for reversing, which can trigger reversing alarms; Minimize the sound levels of reversing alarms to the lowest possible level without affecting the safety of site workers. <p>Surface water quality and use of water for recreational purposes or for consumption of fish</p> <ul style="list-style-type: none"> Staff training: Raise staff awareness of the importance of environmental protection. | (-) | M-L | P-R | S | R | H | T | — |



| Component | Phase | Description of impact | Common mitigation measures | Design elements, specific mitigation measures, and enhancements | Impact assessment | | | | | | Significance of residual impacts | Monitoring, follow-up and/or compensation program |
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| | | | | | + | Intensity | Extent | Duration | Frequency | Probability | | |
| Quality of life of the population | O | <ul style="list-style-type: none"> Deterioration of air quality Increase in ambient noise Deterioration of water quality that may affect recreational activities and consumption of locally sourced fish Increased brightness | — | <p>In addition to the mitigation measures proposed for air quality, the acoustic environment, water quality, and light conditions:</p> <p>Noise exposure</p> <ul style="list-style-type: none"> Establish and promote a complaint management system (mail and email) to respond within a reasonable time frame to any requests or issues raised by the neighbourhood due to operational noise. Identify specific areas for temporary truck parking, as far away as possible from nearby sensitive receivers; Train drivers to turn off engines when stopped for long periods; Ensure regular maintenance of trucks to minimize mechanical noise. <p>Lighting</p> <ul style="list-style-type: none"> Communication with neighbours: Inform neighbours about the work and discuss with them to find mutually acceptable solutions; Lighting assessment: Ensure that lighting is strictly necessary and used reasonably. | (-) | H | R | L | R | H | T | — |
| Indigenous peoples | | | | | | | | | | | | |
| Natural heritage | C | <p>Impacts on natural heritage are linked to impacts on:</p> <ul style="list-style-type: none"> Wetlands and riparian areas Fish and fish habitat; Birds and their habitat; Endangered wildlife species (fish, birds, mammals, herpetofauna). | See all current mitigation measures for biological components | — | Impacts on natural heritage are related to impacts on: | | | | | | — | — |
| | | | | | <ul style="list-style-type: none"> Wetlands and riparian areas; Fish and fish habitat; Birds and their habitat; <p>Endangered wildlife species (fish, birds, mammals, reptiles and amphibians).</p> | | | | | | | |



| Component | Phase | Description of impact | Common mitigation measures | Design elements, specific mitigation measures, and enhancements | Impact assessment | | | | | | Significance of residual impacts | Monitoring, follow-up and/or compensation program |
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| | | | | | + | Intensity | Extent | Duration | Frequency | Probability | | |
| Archaeological heritage | C | No impact is anticipated. | — | <p>In the event of accidental discovery of archaeological remains:</p> <ul style="list-style-type: none"> Construction work at the site of the discovery or within a perimeter deemed relevant by experts must be stopped immediately; The developer must then notify the Ministry of Culture and Communications without delay (in accordance with Article 40 of the Cultural Property Act). The developer must ensure the protection of the discovery by establishing a buffer zone around the archaeological site to ensure its integrity; Archaeological monitoring will be put in place, in collaboration with the local authorities and the First Nations concerned; Work may only resume after appropriate excavations have been carried out, if necessary, and following expert advice. | — | — | — | — | — | — | — | — |
| Land use and culturally valued species | C-O | <ul style="list-style-type: none"> Changes in land use by indigenous communities Changes to resources present on the territory (quality and quantity) and to culturally valued species for the continuation of traditional activities | — | <ul style="list-style-type: none"> Ensure proactive and regular communication with First Nations throughout the project, informing them in advance of work schedules and situations that may affect community safety or health, while remaining attentive to potential impacts on water, wildlife, and plants. Promote the involvement of Indigenous peoples in the biological and environmental monitoring program for species present in the project area (for the construction and operation phases). | (-) | L | L | L | O | H | Mi | — |
| Native peaches | C-O | <ul style="list-style-type: none"> Water quality alteration leading to a decrease in catch quantity and quality (bioaccumulation of contaminants) | See current mitigation measures for fish and fish habitat | During the operational phase, as needed or at the request of Indigenous Nation representatives, QSL will make itself available to meet with each Indigenous Nation on an annual basis. These meetings will provide an opportunity for QSL to present a review of port operations at the site and to discuss issues of concern to Indigenous communities, including environmental protection and applicable environmental monitoring, particularly fish and fish habitat monitoring programs. | (-) | L-H | L | L | O-R | H | Mi-Ma | — |

| Component | Phase | Description of impact | Common mitigation measures | Design elements, specific mitigation measures, and enhancements | Impact assessment | | | | | | Significance of residual impacts | Monitoring, follow-up and/or compensation program |
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| | | | | | + | Intensity | Extent | Duration | Frequency | Probability | | |
| Health and quality of life of indigenous peoples | C-O | <ul style="list-style-type: none"> Impacts on environmental conditions affecting the well-being of the Nation, food, ritual, and social activities; The anticipated impacts on the integrity of resources (quality, quantity, and food security), the experience in the territory (alteration and insecurity), as well as the transmission of knowledge and community cohesion in relation to the practice of traditional activities. <p>To better understand the impacts on the health and quality of life of Indigenous peoples, it is important to consider the interactions between environmental conditions and ancestral and treaty rights. Furthermore, the impacts of individual projects have a limited scope on the health and quality of life of Indigenous peoples, and it is important to consider the cumulative effects on this component rather than the individual impacts of the project.</p> | — | <ul style="list-style-type: none"> QSL will make itself available to meet with the W8banakiak, Mohawks, and Huron-Wendat on a semi-annual basis to hold follow-up meetings where issues and potential challenges related to the health and quality of life of Indigenous peoples can be discussed. During the operational phase, as needed or at the request of Indigenous Nations representatives, QSL will make itself available to meet with each Indigenous community on an annual basis. | — | — | — | — | — | — | — | — |
| Economic benefits and indigenous jobs | C-O | <ul style="list-style-type: none"> Job creation, contracts for various goods and services, and investment in the local and regional economy | — | <p>Once authorization to proceed with the project has been obtained, QSL will convene an initial meeting with the indigenous peoples to discuss:</p> <ul style="list-style-type: none"> future labour needs; the services and skills (businesses and workforce) of each of the indigenous peoples. <p>In addition, QSL undertakes to:</p> <ul style="list-style-type: none"> directly inform Indigenous peoples about how QSL's bidding process works; set up a system to monitor the economic benefits for the indigenous peoples. | (+) | — | — | — | — | — | — | — |



| Component | Phase | Description of impact | Common mitigation measures | Design elements, specific mitigation measures, and enhancements | Impact assessment | | | | | | Significance of residual impacts | Monitoring, follow-up and/or compensation program |
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| | | | | | + | Intensity | Extent | Duration | Frequency | Probability | | |
| Exercise of ancestral and treaty-based Indigenous rights | C-O | Several components will be affected (natural heritage, cultural well-being, visual environment, health and quality of life, traditional foods, etc.), but it is the cumulative impact of past, present and future projects that will have the greatest impact on the exercise of rights. The significance of the impact must therefore be assessed in relation to the St. Lawrence River and its ecosystem. | — | | — | — | — | — | — | — | — | — |

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|--|--|---|--|--|---|
| The St. Lawrence River and its ecosystem | <p>The project's impact on the St. Lawrence River and its ecosystem is limited, but it adds to the effects of past and future projects:</p> <ul style="list-style-type: none"> ▪ Overall reduction in GHG emissions due to fewer ships waiting at the Saint-Joseph-de-Sorel wharf. These ships will be redirected to the new port terminal; ▪ No impact on speed increases downstream of the structures, therefore no impact on speeds in the feeding habitat of adult Copper Redhorse; ▪ Minor impact on sediment quality and the dispersion of potentially contaminated sediments. The volumes of sediment to be handled during construction (approximately 3,000 m³) are isolated inside the concrete piles; the volumes that could be suspended are therefore significantly lower than the total volume handled. During operation, protection against scouring prevents the risk of contaminated sediment being suspended. ▪ Minor impact on surface water quality due to failure of the runoff management system or accidental spillage of hydrocarbons; ▪ Minor impact on increased wave action, as the increase in the number of vessels associated with the operation is less than 1% of the traffic of 4,000 merchant ship passages annually (CGVMSL 2023; 2024). These impacts may be felt as far as the Great Lakes if some of these vessels continue further upstream in the Seaway to reach the Great Lakes network; ▪ Local increase in underwater noise that could alter the feeding behaviour of adult Copper Redhorse; ▪ Loss of 285 m² (variant 1) to 612 m² (variant 2) of fish habitat, including 200 m³ (variant 1) to 63 m³ (variant 2) of aquatic vegetation, which are feeding habitats for adult Copper Redhorse; ▪ No impact on other coastal wetlands; ▪ Negligible impact on birds and turtles and minor impact on bats, particularly on feeding activity; | — | <p>QSL wants to maintain an open dialogue where issues related to the value of the river and its environment for Indigenous peoples and the exercise of their rights can be addressed. QSL is sensitive and attentive to the impacts of the project on the components valued by Indigenous peoples and on the exercise of their rights. Initiatives are being developed individually with each community through a collaboration plan aimed at minimizing the project's impacts on the components valued by Indigenous peoples and on the exercise of their rights. The collaboration plans include, in particular, objectives for participation in additional inventories, if necessary, participation in environmental monitoring stages, and participation in the development of compensation projects.</p> <p>QSL will make itself available to meet with each of the Indigenous peoples on a semi-annual basis during the construction phase, and will then make itself available to meet with each of the Indigenous peoples on an annual basis during the operational phase, or as required or requested by the representatives of the Indigenous Nations if the desired frequency proves to be higher.</p> <p>QSL will also communicate annually a summary of the follow-up activities carried out in the previous year with each of the indigenous communities and invite them to participate in the follow-up or comment on the results provided. QSL will make itself available for any meetings or communications requested by the communities. These exchanges may take place in person or virtually, depending on the preferred method of each community.</p> <p>QSL has already begun discussions to define its participation in certain programs for the transmission of culture, knowledge, and techniques.</p> | <p>The effects on the St. Lawrence River and its ecosystem cannot be reduced to an assessment based on evaluation criteria. The effects are regional and have been ongoing for several decades. The intensity of the effects felt depends on the individual perception of each member and each First Nation, but all First Nations agree that their experience with the St. Lawrence River and its ecosystem is deteriorating with respect to the exercise of their ancestral and treaty rights.</p> | — |
|--|--|---|--|--|---|



| Component | Phase | Description of impact | Common mitigation measures | Design elements, specific mitigation measures, and enhancements | Impact assessment | | | | | | Significance of residual impacts | Monitoring, follow-up and/or compensation program |
|-----------|-------|---|----------------------------|---|-------------------|-----------|--------|----------|-----------|-------------|----------------------------------|---|
| | | | | | + | Intensity | Extent | Duration | Frequency | Probability | | |
| | | <ul style="list-style-type: none"> ▪ Localized impact on lighting conditions; ▪ Visual impact noticeable by river users, leading to a deterioration in the sense of well-being and security essential to the activities of indigenous peoples; ▪ Impact on the availability of indigenous fishing sites. At least one site is known to be located very close to the future port terminal. Increased navigation could also affect indigenous fishing by causing more wave action, a phenomenon that makes fishermen feel unsafe and may cause users to relocate or cease their activities; ▪ Impact on the quality of life of Indigenous peoples, particularly by interfering with the exercise of Indigenous rights, the transmission of culture and identity, food security, access to resources, etc. | | | | | | | | | | |



10. Assessment of Cumulative Effects

Cumulative effects are defined as changes to the environment and to health, social, and economic conditions resulting from the combination of the residual effects of the project and the effects of other past, existing, or reasonably foreseeable projects and activities.

Cumulative effects may occur if:

- the implementation of the project may cause residual adverse effects on VECs; and
- the same VECs have been affected or may be affected by other past, existing, and future concrete projects and activities.

The Sorel-Tracy new port terminal project will have effects on the receiving environment, as will other major projects in or near the local study area. Therefore, as prescribed in the guidelines issued by the AECB, the method described in the Agency's guidance documents on cumulative effects (*Cumulative Environmental Effects Assessment under the Canadian Environmental Assessment Act*) was used.

The SCAs selected for the cumulative effects assessment include

- those where medium to significant residual effects related to the project are anticipated;
- those identified as of particular concern to the public and Indigenous peoples due to cumulative effects;
- those where the anticipated residual effects do not necessarily warrant a cumulative effect assessment, but which are highly dependent on uncertain mitigation measures;
- and those for which cumulative effects were identified as a concern during the preparatory stage.

Table 10-1 presents the rationale for selecting and excluding VCs for cumulative effects analysis following the project impact assessment. VCs highlighted in green were selected for cumulative effects assessment, while those highlighted in gray were not selected. VCs that are not highlighted are included in another VC.



Table 10-1: Selection of valued components for cumulative effects assessment

| Environment | Valued component | Importance of residual impact | Component selected | Justification |
|-------------|--|-------------------------------|-----------------------------------|---|
| Physical | Hydrodynamic and hydrosedimentary regime | Minor | No | <ul style="list-style-type: none"> A concern has been raised regarding increased coastal erosion caused by the project and ship wake. The project will have no impact on the artificialization of banks and shorelines, as the banks are already artificialized in the PA and the natural shorelines of the LSA upstream and downstream of the proposed wharf will not be modified. Hydraulic modelling carried out for the impact analysis shows that changes in velocity under the projected conditions will be felt near the structures and on the banks, downstream of the PA, but within the river LSA. These changes in velocity could cause coastal erosion during high water periods, but the intensity of the impact is considered to be low due to the installation of scour protection that will limit sediment mobilization and coastal erosion. The residual impact is minor only because of the wharf's operating life (50 years). |
| | Ice regime | Minor | None | No public concerns were raised for this CV. The project's impact on the ice regime will be limited since pack ice already forms where the piers are being built and the structure will have little interaction with the free movement of ice. The expected residual impact is low in intensity and limited in extent, located in the immediate vicinity of the wharf structure. The significance of the anticipated residual impact on the ice regime is considered minor due to the wharf's operating life (50 years) and its regular frequency. |
| | Sediment quality | Minor | No | <ul style="list-style-type: none"> No public concerns have been raised for this CV. The methods selected for the construction of the wharf (vibro-driving and removal of sediments by hopper, then transfer to a sedimentation basin on a barge) will greatly limit the potential for contact between contaminated sediments and river water, and a sediment quality monitoring program will be implemented to ensure the level of contamination of the sediments that will be handled. The probability of residual impact is considered low and, in the event of accidental occurrence, it would be of low intensity since the quality of the dispersed sediments would comply with the criteria for discharge into open water (below the concentration threshold for frequent effects) (EC and MDDEP 2007). During terminal operation (>50 years), sediment particles could be resuspended by wave and current conditions, but the planned scour prevention measures should minimize this risk. |
| | Air quality | Average | Yes | Air quality is a CV for which concerns have been raised in the context of the project, particularly with regard to impacts on human health. The project will have an impact on air quality during both the construction and operational phases due to atmospheric emissions from the combustion of fossil fuels by ships and tugs, as well as trucks and other mobile equipment used. As the project is located in an area where industrial activities are already taking place and are ongoing, this impact will be added to those of past, present, and future projects in surrounding industries, including the Sorel-Tracy industrial port development project in the Saint-Laurent sector. Concerns have also been raised about possible exceedances of emission standards, as air quality in the area is poorer than the regional average. |
| | Acoustic environment | Minor | Included in Quality of life | Concerns have been raised about the noise level of construction and operations affecting the peace and quiet of residents located near the future terminal. Modelling of anticipated noise levels shows that pile vibro-driving during construction and certain nighttime handling activities could exceed established thresholds. The implementation of mitigation measures during construction and operation will reduce noise levels below the thresholds. However, for some receivers, residual noise could be close to the defined thresholds and affect residents' quality of life. Compliance with the thresholds depends on the effectiveness of the mitigation measures. For this reason, the CV is retained but is addressed in the assessment of cumulative effects on the quality of life of the population. |
| | Groundwater quality | Average to minor | No | Although the assessment of impacts on groundwater quality reveals a medium to minor significance, the higher significance (medium) is directly related to accidental hydrocarbon spills, with the intensity of impacts being higher for this contaminant than for any other contaminant. Given the emergency response plans for construction and operation and the spill response plans, the likelihood of such an accident occurring is reduced. During the operational phase, the implementation of mitigation measures for the transshipment, loading, and storage of bulk materials will limit the infiltration of contaminants into the groundwater. |
| | Surface water quality Surface | Minor | Included in Fish and fish habitat | The hydrographic context of the site consists of a rainwater drainage system that flows into the St. Lawrence River. Precipitation will be directed to this drainage system for quality management of surface water around the storage area. Any impacts that could occur on water quality are considered in the cumulative effects on fish and fish habitat. |

| Environment | Valued component | Importance of residual impact | Component selected | Justification |
|-------------|---|-------------------------------|-----------------------------------|---|
| | Climate change | Minor | Included in Air | The project has the potential to reduce net GHG emissions in the country by optimizing operations at the Saint-Joseph terminal and improving bulk material transport logistics in the region by adding an additional terminal. Given the positive impact on GHGs that could be generated by the project, this component was not included in the cumulative effects assessment. The impact of GHGs on air quality is addressed in the “air quality” component. |
| Biological | Wetlands and riparian | Minor | Included in Fish and fish habitat | No impact is anticipated on terrestrial wetlands and riparian areas of the St. Lawrence River, as construction work will be carried out from barges. The development of the storage area east of Route 132 (Marie-Victorin Road) will not alter the drainage of the surrounding land and will therefore have no impact on nearby wetlands. Finally, the emergent grass bed located upstream of the future wharf will not be affected by construction work or routine operations, as wash-up is not expected to have an impact in this area. Impacts on coastal wetlands (submerged grass beds) are addressed in the following components: fish and fish habitat, and Copper Redhorse and its habitat. |
| | Fish and fish habitat | Average | Yes | Fish and fish habitat is a valued CV for which concerns have been raised. Fish and fish habitat will be directly impacted by construction due to disturbance from underwater noise and possible alteration of water quality generated by pile driving, as well as the destruction, deterioration, and disruption of aquatic habitats and increased marine traffic during the operational phase. In addition, impacts on other components, such as sediment quality and surface water quality, will indirectly impact fish and fish habitat. |
| | Copper Redhorse and its habitat | Major | Yes | <ul style="list-style-type: none"> The Copper Redhorse and its habitat is a valued CV for which significant concerns have been raised. As with fish and fish habitat, several direct and indirect impacts are anticipated on the Copper Redhorse and its habitat during the construction and operation phases. These impacts will be cumulative with those of other projects completed, underway or planned in the area. The Copper Redhorse is a fish species endemic to Quebec and endangered, whose essential adult feeding habitat overlaps the project’s LSA. |
| | Birds, migratory birds, and their habitat | Minor | No | No loss of terrestrial habitat, construction of access roads, or deforestation, stripping, excavation, earthworks, or grading are planned during the construction phase, including on the shoreline. In addition, impacts related to noise disturbance, loss of aquatic vegetation, and the risk of collision with vehicles and infrastructure during the construction phase are considered negligible. The only residual impact anticipated during the operational phase is noise disturbance, but this impact will be low in intensity as it will not alter the CV, abundance or distribution of the species, and its extent will be limited as the ambient noise level will not exceed 50 dB within a radius of more than 200 m. |
| | Birds with special status | Minor | No | <ul style="list-style-type: none"> The construction of the storage area will eliminate the presence of the unconsolidated earth mound used as a nesting site for bank swallows. However, vegetation growth on this mound may render it unusable for bank swallows within a window of less than two years, regardless of the nature of the work carried out around it. No storage or construction activities will be carried out near an unconsolidated earth pile if active swallow nests are present. Earth piles will be moved between October 1 and April¹ if necessary. Impacts on bald eagles and peregrine falcons are considered negligible. The eastern wood-pigeon and the wood thrush use the LSA during nesting season, but the project won’t cause any habitat loss, and the good habitats in the project’s noise impact zone will only be slightly affected by the increase in background noise. |
| | Turtles with special status | Negligible | No | The significance of residual impacts has been assessed as negligible for turtles with special status, both during the construction and operational phases. In this context, no cumulative effect assessment is considered relevant. |
| | Special status bats | Minor | No | No net loss of potential resting or maternity habitats is anticipated during the construction and operational phases. However, bats will be impacted by artificial lighting in the maneuvering and storage areas and on the traffic routes, which could result in a minimal loss of potential feeding habitats. The installation of appropriate lighting to limit light pollution and UV radiation will limit the intensity of the impact of artificial lighting on the feeding behaviour of bats. No functional loss of potential resting and feeding habitats related to noise emissions during construction and operation is anticipated for bats. For surface water quality, since this impact would be very limited in time and given the dilution factor of the St. Lawrence River, the adverse effect on insect production would be low. |

| Environment | Valued component | Importance of residual impact | Component selected | Justification |
|-------------|--|-------------------------------|---|---|
| Human | Land use and land use change | Average | Included in Commercial, recreational and nautical activities | <p>This CV encompasses land use planning, archaeological, cultural and natural heritage, and recreational and tourism activities.</p> <ul style="list-style-type: none"> In terms of land use planning, the project complies with land use guidelines. There is no archaeological heritage due to the multiple disturbances that the site has undergone over the years. Recreational and tourism activities are addressed in the cumulative effects section dealing with commercial, recreational and nautical activities. Impacts on natural heritage, which concern fauna and flora, are addressed in the cumulative effects section on the VECs selected for cumulative effects analysis, namely fish and fish habitat and the Copper Redhorse and its habitat. The residual impact is rated as moderate based entirely on its duration (long). |
| | Public infrastructure and facilities | Average | Yes | <ul style="list-style-type: none"> Refers to all facilities and infrastructure belonging to the public domain (roads, sewers, aqueducts, hydroelectric network, etc.). The aspect included in this CV and for which impacts have been determined is public safety, which refers to road safety, i.e., the safe development of the area to prevent accidents, incidents, or conflicts of use. Water safety is addressed in the cumulative effects assessment for commercial and recreational boating and water sports. The project will increase truck traffic on a portion of the road network between the project site and Highway 30, which could exacerbate road deterioration or traffic problems. Public infrastructure and facilities were selected as CVs due to the safety issues for road users that were raised in the concerns. |
| | Commercial and recreational boating and water-based activities | Major | Yes | <ul style="list-style-type: none"> Concerns have been raised about the safety of watercraft users and the impacts of the new wharf on recreational and tourism activities. Recreational boating and water sports refer to water activities (boating, paddleboarding, kayaking, swimming, etc.) for recreational purposes. Construction and operation of the wharf in a portion of the St. Lawrence River used by recreational boaters will have impacts. Commercial navigation refers to navigation for the purpose of transporting people or solid, liquid, containerized, or bulk goods. Given the presence of the nearby Kildair Services wharf and the proximity of the Seaway, the new port terminal will have some impacts on commercial navigation. Mooring requirements, wharf safety, ship maneuvers and the use of tugboats have been designed to sufficiently mitigate the impacts. The impacts on Kildair Services are not influenced by other projects. For this reason, this aspect is not addressed in the cumulative effects. |
| | Visual environment (lighting) | Minor | No | For safety reasons, the wharf will be lit at night. However, the lighting levels perceived by nearby residences and natural areas will be well below the recommendations for low-density rural areas. For this reason, the CV was not included in the cumulative effects assessment. |
| | Visual environment (landscape) | Average | Included in the St. Lawrence River Saint Lawrence and its ecosystem | <ul style="list-style-type: none"> Concerns have been raised about this CV by Indigenous users of the territory. In the land portion of the project, the distance of the project from the various landscape units indicates a neutral impact on the visual environment. In the river portion of the project, the VAC will be addressed in the section on Indigenous natural and cultural heritage, even though the impacts affect both non-Indigenous and Indigenous users of the river. |
| | Economic benefits and jobs | Major (positive effect) | No | As the project will have a positive impact on the local and regional economy, this VA has been excluded from this analysis, even though the economic benefits will be significant, especially when combined with the effects of other projects planned in the area. |
| | Quality of life of the population | Major | Yes | <ul style="list-style-type: none"> Quality of life is a difficult concept to define, as it refers to the interaction of several valued components such as air quality, the acoustic and visual environment, public safety, public infrastructure and facilities, recreational and tourist activities, and the economic benefits for psychosocial health, and the significance of these impacts can vary from one person to another. The construction and operation of the new terminal will involve interactions with several valued components related to quality of life that will be impacted (air quality, noise environment, etc.), which could have psychosocial impacts. This component is therefore valued. The protection of the long-term quality of life of residents closest to the project site was raised several times during consultations, and this component was therefore included in this analysis. |
| Indigenous | Natural and cultural | Yes | Included in the St. Lawrence River and its ecosystem | <ul style="list-style-type: none"> Archaeological and historical heritage: The preservation of archaeological and historical heritage was a concern raised by all Indigenous peoples involved. However, the potential impact was deemed negligible due to the absence of any potential archaeological remains. For this reason, this aspect is not addressed in the cumulative effects. Visual environment (visual experience of the St. Lawrence River): Several members and families of Indigenous peoples who frequent the portion of the river between Montreal and Lake Saint-Pierre. The transformation of the landscape will have impacts on the experience of the territory by members of Indigenous peoples who use the river. As this component is closely linked to the exercise of ancestral rights, this CV will be addressed in the assessment of cumulative effects on ancestral rights. |

| Environment | Valued component | Importance of residual impact | Component selected | Justification |
|-------------|---|-------------------------------|--|--|
| | Past, current, and future potential use of lands and resources for traditional purposes | Yes | Included in the St. Lawrence River and its ecosystem | <ul style="list-style-type: none"> Land use and culturally valued species: Concerns regarding traditional land use and occupation and culturally valued species are shared by all Indigenous peoples involved. The absence of specific known sites for hunting, fishing or gathering activities cannot be interpreted as an absence of use or occupation. As this component is closely linked to the exercise of Aboriginal rights, this CV will be addressed in the cumulative effects assessment on Aboriginal rights. Indigenous fisheries: As the project is located partly on the St. Lawrence River and along its banks, Indigenous nations have raised several concerns about the project's impacts on fish and fish habitat, including changes that the project could bring to their members' fishing activities and to fish quality (bioaccumulation). This CI will be addressed in the cumulative effects on the St. Lawrence River and its ecosystem. |
| | Health, social, and economic conditions | Yes | Included in St. Lawrence River and its ecosystem | <ul style="list-style-type: none"> Health and quality of life: To better understand the impacts on the health and quality of life of Indigenous peoples, it is important to consider the interactions between environmental conditions and ancestral rights, as these are intrinsically linked to this component. As this component is closely linked to the exercise of ancestral rights, this CI will be addressed in the assessment of cumulative effects on ancestral rights. Economic benefits and Indigenous employment: Indigenous peoples are concerned about the economic benefits of the project and want to ensure that benefits are shared with their members and Indigenous businesses throughout the project (construction and operation). Since the impacts are expected to be positive for Indigenous peoples, this CV is not addressed in the cumulative effects assessment. |
| | Ancestral rights and land claims | Yes | Included in the St. Lawrence River and its ecosystem | The proposed project site does not interfere with any existing comprehensive or specific claims of the Mohawks, W8banakiak, or Huron-Wendat Nation. These First Nations nevertheless have concerns about the project's potential environmental impacts that could affect the exercise of their rights. The anticipated impacts related to the exercise of ancestral rights concern, in particular, the integrity of resources (quality, quantity, and food security), the experience of the territory (alteration and insecurity), and the transmission of knowledge and community cohesion related to the practice of traditional activities. This CV will be addressed in the cumulative effects on the St. Lawrence River and its ecosystem. |
| | St. Lawrence River and its ecosystem | — | Yes | <ul style="list-style-type: none"> This component raises significant concerns for each of the Indigenous communities consulted. This VEC refers to the interaction and synergy of several valued components of the physical and biological environment related to the St. Lawrence River and its ecosystem that will interact during the construction and operation of the wharf. Due to its holistic nature, this CI is sensitive to cumulative effects and is therefore addressed in the cumulative effects assessment. |

Spatial and temporal scales were established to examine both the potential environmental effects on the project’s VECs and those of other past or future concrete activities. The spatial scales are tailored to each component and generally extend to the local study area and beyond.

Table 10-2 summarizes the spatial boundaries considered for the cumulative effects assessment, and the boundaries are illustrated in Map 10-2. Detailed justification for the selection of these boundaries is provided in each of the sections on VECs selected for the cumulative effects assessment.

The time limit for the cumulative effects analysis was set in 1950, where possible, in order to include the cumulative effects of past industrial activities and urban and economic development in the region and to consider the main developments of the St. Lawrence Seaway. However, for some components, no data are available that far back in time. The rationale for the time limits selected for each component assessed is presented in the respective sections.

The future time limit refers to the lifespan of the infrastructure, which is 50 years. However, it is impossible to predict most of the concrete activities that can reasonably be expected beyond 2030.

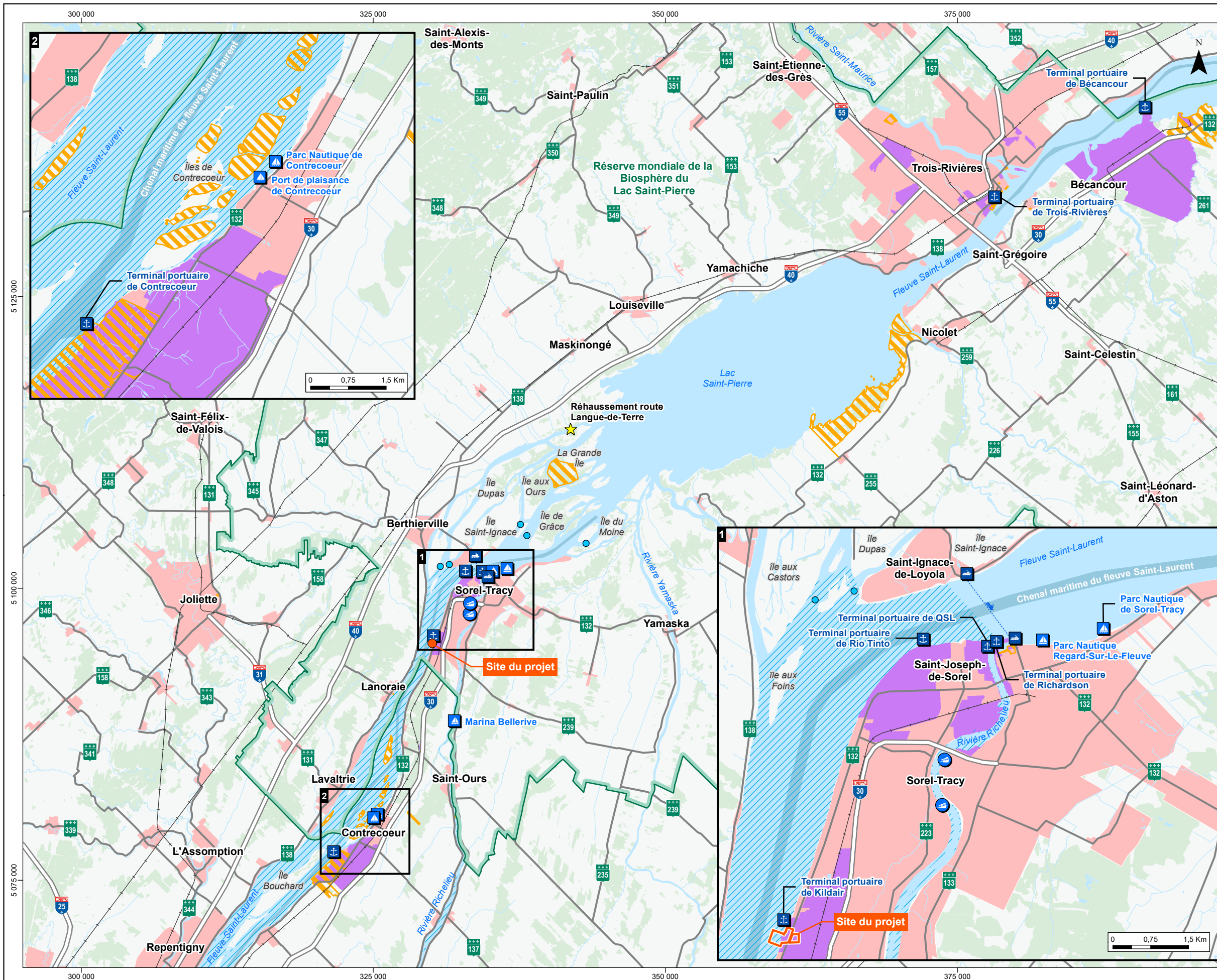
Map 10-1 shows the projected location of these various projects. To be included, projects and activities must have a significant impact on at least one of the components assessed in this study for the evaluation of cumulative effects. Activities and projects have been grouped together given the limited information available on these activities individually, but also because, taken in isolation, these activities and projects would not have the same type of impact. Table 10-3 summarizes the interactions between past, present, and future projects and activities and the valued components.

Table 10-2 Spatial boundaries considered for the assessment of cumulative effects

| Valued components | Spatial boundaries for cumulative effects | Justification |
|--------------------------------------|--|--|
| Air quality | Southwestern Quebec (QA) Province of Quebec (GHG) | The study area for assessing cumulative effects on air quality and GHGs has been expanded to a regional study area, including southwestern Quebec (the St. Lawrence Valley from the Ontario border to Quebec City), to provide a better picture of past, current, and future air quality trends at this scale. GHG emissions are considered at the provincial and national levels. |
| Fish and fish habitat | Regional study area | Since the essential feeding habitat of the Copper Redhorse is located in the river section between Montreal and Sorel, this geographical area was selected. The spatial boundaries for fish habitat are the same. |
| Copper Redhorse and its habitat | Regional study area | |
| Public infrastructure and facilities | Along the roads connecting Highway 30 to the entrance of the future port terminal. | Since the aspect selected for the cumulative effects assessment is the population’s sense of safety on the road, the spatial boundary includes the route where QSL will have impacts and roads where there is uncertainty regarding compliance with regulations regarding authorized truck routes. |



| Valued components | Spatial boundaries for cumulative effects | Justification |
|--|---|--|
| Commercial navigation, pleasure boating, and water-recreational activities | Regional study area | Since the aspect selected for the cumulative effects assessment is the sense of safety of navigators and the impacts on recreational and tourism activities, the spatial boundary includes a section of the river where it is reasonable to assess cumulative effects in relation to the scale of the project. |
| Quality of life of the population | Along the roads connecting Highway 30 to the entrance of the future port terminal and between Highway 30 and the current terminal operated by QSL in Saint-Joseph-de-Sorel. | Since the project will have impacts both near the project along truck routes (noise, air quality) and in downtown Sorel (reduction in transit truck traffic, fewer boats waiting), the spatial boundary of the cumulative effects assessment focuses on the authorized truck routes between the future port terminal and Highway 30 and also includes receptors that may be affected by air quality, then between Highway 30 and the current terminal operated by QSL in Saint-Joseph-de-Sorel. In order to take into account the uncertainty regarding the use of authorized truck routes by heavy vehicles transiting the future port terminal, the spatial boundaries also include Chemin du Golf, between the future port terminal and Highway 30. |
| St. Lawrence River and its ecosystem | Section of the St. Lawrence River from Kahnawake to Île d'Orléans River section of the St. Lawrence River from Montreal to Quebec City. | Since the concerns of Indigenous peoples relate in particular to the spatial extent of the river that intersects their respective territories, the study area selected extends from Kahnawake to Île d'Orléans. |



PROJET

- Zone du projet

INSTALLATIONS NAUTIQUES ET PORTUAIRES

- Terminal portuaire
- Terminal de traversier
- Port de plaisance, parc nautique, marina
- Rampe de mise à l'eau

ÉLÉMENTS SENSIBLES

- Réserve mondiale de Biosphère
- Habitat essentiel du chevalier cuirré (alimentation)

MILIEU HUMAIN

- Bien immobilier fédéral
- Périmètre d'urbanisation
- Zone industrialo-portuaire

INFRASTRUCTURES

- Chemin de fer
- Autoroute
- Route principale
- Liaison maritime
- Chenal maritime du Saint-Laurent
- Réservoir de l'archipel du lac Saint-Pierre

QSL **AtkinsRéalis**

ÉTUDE D'IMPACT
Nouveau terminal portuaire de Sorel-Tracy - secteur Saint-Laurent

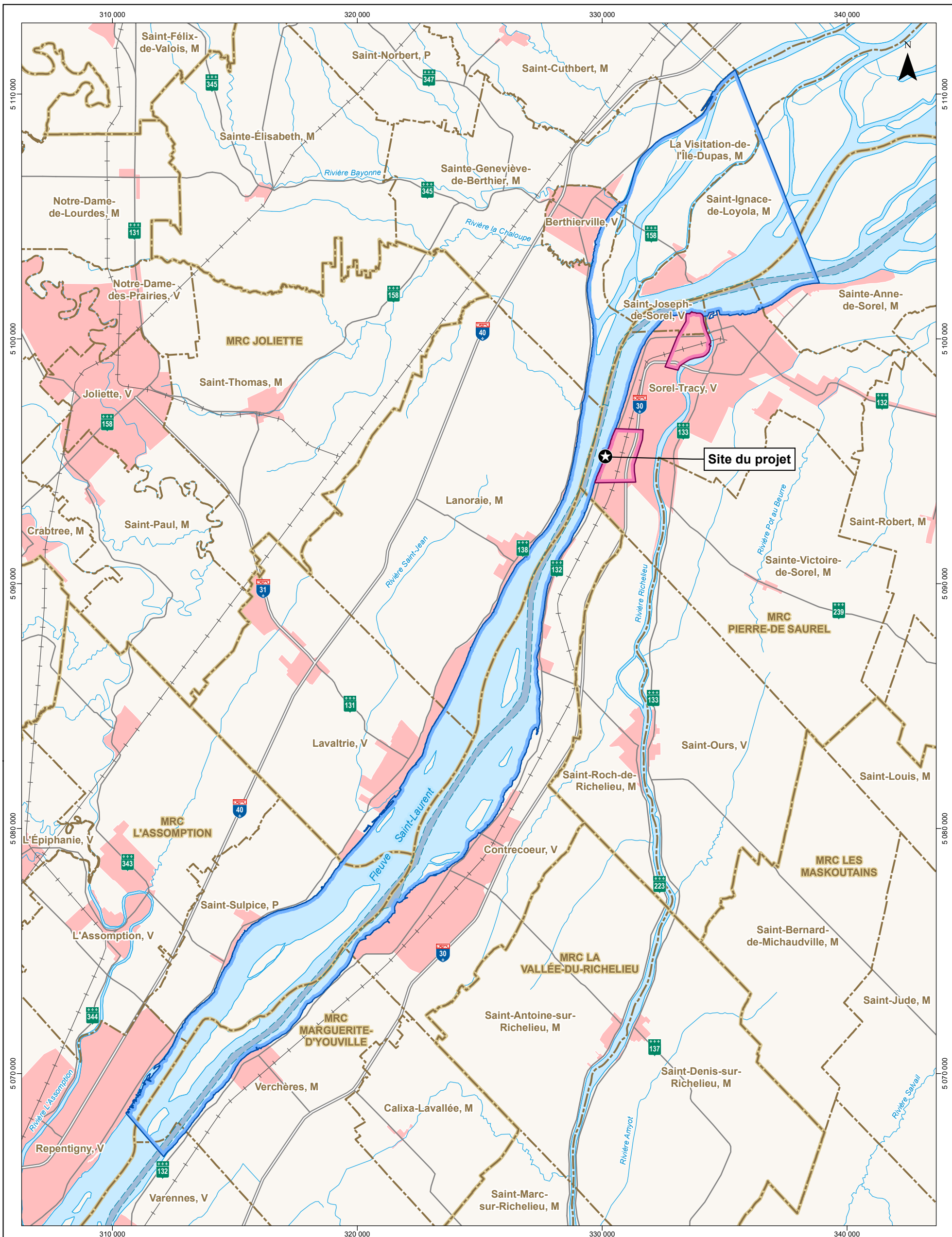
Localisation des activités concrètes passées, présentes et futures

Sources :
 Adresse Québec, MERN Québec, mai 2024
 BDTA, 1/250 000, MRN Québec, 2002
 CanVec, RNCAN, 2017
 Carte marine, 1/40 000, Pêche et Océans Canada, 1999
 Chenal maritime, MPO Canada, 2017
 Forum 2023 de la Table de concertation régionale du Lac Saint-Pierre, MPO Canada, novembre 2023
 GESTIM, MERN Québec, 20 septembre 2021
 Habitats essentiels, MPO Canada, février 2024
 Répertoire des biens immobiliers fédéraux, SCT Canada, novembre 2024
 Réserve mondiale de la Biosphère du lac Saint-Pierre, Comité ZIP Lac Saint-Pierre, 2024
 MAXAR image, résolution 31cm, ESRI, 7 septembre 2022



Projet : 695075
 Fichier : 695075-4E-EI-C13-1-effCumul-250205-00.mxd

0 3,25 6,5 Km
 1/325 000
 MTM, fuseau 8, NAD83 (SCRS)



Février 2025 **Carte 10-1**







ZONE D'ÉVALUATION DES EFFETS CUMULATIFS

-  Poisson et habitat du poisson, chevalier cuirvé et son habitat, navigation de plaisance et activités nautiques
-  Infrastructures et équipements publics et qualité de vie de la population

LIMITES ADMINISTRATIVES

-  Limite de municipalité
-  Limite de municipalité régionale de comté (MRC)

INFRASTRUCTURES

-  Autoroute
-  Autre route
-  Voie ferrée
-  Chenal maritime du Saint-Laurent



ÉTUDE D'IMPACT

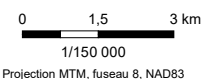
Nouveau terminal portuaire de Sorel-Tracy -
Secteur Saint-Laurent

Limites spatiales de l'analyse des effets cumulatifs

Sources :

BDTA, 1/250 000, MRN Québec, 2002
GESTIM, MERN Québec, 20 septembre 2021
Pêches et Océans Canada, carte Voies navigables du Saint-Laurent, VN200, 1/100 000
SDA, 1/20 000, MERN Québec, septembre 2023

Projet : 695075
Fichier : 695075-4E-EI-C13-2-localisation-250205-00.mxd



Février 2025

Carte 10-2

Table 10-3 Past, present, or future projects and activities likely to have an impact on valued components

| Specific activities | Past | Present | Future | Valued components | | | | | | | | | |
|---|------|---------|--------|-------------------|-----------------------|---------------------------------|--------------------------------------|--|-----------------|---|---|---------------------------------------|---|
| | | | | Air quality | Fish and fish habitat | Copper Redhorse and its habitat | Infrastructure and public facilities | Navigation and recreational activities recreational boating | Quality of life | St. Lawrence River and its ecosystem | | | |
| | | | | | | | | | | Visual environment (visual experience on the river) | Indigenous fishing, natural heritage, and species of interest | Indigenous health and quality of life | Practice of ancestral and treaty rights |
| Dredging and maintenance of the shipping channel | X | X | X | | X | X | | X (positive) | X | | X | X | X |
| Port terminals, marinas, and boat ramps | X | X | X | | X | X | | X | X | X | X | X | X |
| Urbanization and development | X | X | X | X | X | X | | X | X | X | X | X | X |
| Construction and operation of Highway 30 | X | X | X | X | | | X | | X | | | X | X |
| Elevation of the Langue-de-Terre road | X | | | | X | X | | | | X | X | X | X |
| Increase in commercial shipping | X | X | X | X | X | X | | X | X | X | X | X | X |
| Development of the Sorel-Tracy IP zone, Saint-Laurent sector | | X | X | X | X | X | X | | X | X | | | |
| Development of the Sorel-Tracy IP zone, Saint-Joseph-de-Sorel and Richelieu sectors | X | | | X | X | X | | X | X | X | X | X | X |
| Development of the Contrecoeur-Varennes IP zone | X | X | X | X | | | | | | | | X | X |
| Expansion of the Contrecoeur port terminal | | | X | X | X | X | X | X | | X | X | X | X |
| Expansion of port facilities in Trois-Rivières (Terminal 21) | | | X | X | X | X | X | X | | X | X | X | X |
| Expansion of the Port of Bécancour | | | X | X | X | X | X | X | | X | X | X | X |
| Repair of the spillways in the Saint-Pierre Lake archipelago | | | X | | X | X | | | | | X | X | X |
| Bank stabilization (rip-rap over 950 m) at the Rio Tinto Iron and Titanium complex in Sorel-Tracy | | | X | | X | X | | | | X | X | X | X |
| Reconstruction of the Saint-Ignace-de-Loyola and Sorel-Tracy river terminals | | | X | | X | X | X | | X | X | X | X | X |

10.1 Air Quality

Historically, between 1950 and 1970, air quality in southwestern Quebec gradually deteriorated with industrial development and the rapid expansion of automobile use. Since 1975, air quality has improved overall in Quebec, thanks in particular to the adoption of regulations to limit road and wood heating emissions and measures to promote public transportation and active transportation.

Since 1996, the decrease in contaminant concentrations has been less pronounced, and a slight decrease in fine particulate matter (PM_{2.5}) has also been noted. For the Vallée-du-Richelieu region, where the new terminal is located, air quality can be described as essentially “good to acceptable” for the past 15 years. Although no cause-and-effect relationship can be drawn, this transition occurred at the same time that the Sorel-Tracy thermal power plant was closed and its emissions were eliminated from the overall picture for the region. Whether in Quebec, Canada or the United States, air quality monitoring and the implementation of increasingly stringent emission and air quality standards suggest that air quality will continue to improve in the future.

The addition of the project could result in exceedances of the RAA standard for PM_T, the WHO guideline values for PM₁₀, the RAA standard for PM_{2.5} at a few residences, and SO₂ and NO₂ according to the CAAQS. Since the Saint-Laurent sector of the Sorel-Tracy IP zone, where the new port terminal is located, is under development and the nature of the projects is unknown, it is difficult to estimate the impact on air quality of the new businesses and industries that will be established there. Assuming that some projects could emit SO₂, NO_x (industry with combustion) and PM_{2.5} (dust production), higher exceedances are expected.

The project will reduce GHG emissions during operation by reducing emissions at the existing QSL terminal in Saint-Joseph-de-Sorel through improved logistics for the transport of bulk materials.

No additional mitigation measures or monitoring programs are proposed for this component, as each future project will be responsible for mitigating its impact on air quality.

10.2 Fish and Fish Habitat

The cumulative effects on fish and fish habitat concern fish fauna and molluscs.

The characteristics of aquatic habitats and fish community structure have changed significantly over the past two decades. These observations reflect an evolving ecosystem that is tending to deteriorate in some areas. In Lake Saint-Pierre, the majority of the fish community present until the early 2000s depended on aquatic vegetation and the floodplain. The fish community is now dominated by opportunistic species that feed at the bottom of the lake or in the water column. In addition, eutrophication of aquatic environments can significantly alter habitats and food chains. Eutrophication is attributable to high nutrient inputs combined with declining water levels and rising water temperatures.

It has been observed that the proliferation of large, dense aquatic herbaceous vegetation creates oxygen-depleted zones downstream of the vegetation, as water percolation through the vegetation is difficult. Effects were felt throughout the food chain, including the fish community, and these areas were now colonized by benthic cyanobacteria.

Fish communities in the St. Lawrence remain very fragile. Some fish species are showing encouraging signs of recovery, suggesting that key pressures have diminished over time and thanks to restrictive management



measures. However, several exploited fish stocks have experienced episodes of decline over the years and are slow to recover due to several factors other than fishing pressure, including the arrival and expansion of black goby populations.

Sources of disturbance that can lead to the degradation of fish habitat quality and quantity or harm individuals include habitat degradation, habitat loss, harm to individuals (mortality, competition), and 1 disturbance. For molluscs, the threats are similar, but the construction of retaining structures, the introduction of dreissenid mussels (zebra mussels and quagga mussels), short-term toxic water pollution caused by heavy industry, and the long-term chronic effects of agriculture have had significant impacts on certain mussel species.

The QSL project will make a noticeable contribution to the development of industrial projects, as certain types of industry and businesses may move to the vicinity of the port terminal to take advantage of the port facilities. However, without the new port terminal, the Joseph-Simard industrial park would still develop given the current zoning. The project itself will destroy fish habitat, including aquatic grass beds that are a feeding habitat for the Copper Redhorse. However, since the anticipated destruction and disturbance of the species' feeding habitat (aquatic grass beds) by the project will be offset at a ratio greater than 1:1, the impact of the QSL project is considered low.

The contribution of the QSL project to increased shipping (transport corridors) would only be 5 to 8 ships. The increase in commercial shipping associated with the project is expected to have a low impact on wave action.

The contribution of the QSL project to the introduction of invasive alien species is closely linked to the increase in the number of ships that will be associated with the operation of the port terminal, since ships are known to be vectors for the spread and emergence of such species. The project will also create new structures where exotic invasive mussels could become established and locally deteriorate habitat quality. However, the increase in the number of vessels associated with the operation of the new port terminal is less than 1% compared to current shipping, and due to its location, the port terminal could not be expanded to accommodate more vessels.

The contribution of the QSL project to marine pollution and habitat degradation will be locally and slightly noticeable.

No additional mitigation measures or monitoring programs are planned beyond those already proposed, but the monitoring program for cumulative effects on the Copper Redhorse and its habitat will also cover fish and fish habitat.

10.3 Copper Redhorse and its Habitat

The Copper Redhorse, a species endemic to Quebec and found nowhere else in the world except Canada, was more abundant at various times in history and prehistory, but inventories conducted in the spring of 2003 show significantly lower abundances. Since the mid-1980s, the relative abundance of Copper Redhorse relative to its congeners has declined significantly. The population is aging, recruitment is extremely low and is considered insufficient to balance natural mortality. The eutrophication of waterways could favour certain co-occurring species such as carp and tench, which are potential competitors of the Copper Redhorse due to their greater ability to survive in enriched and less oxygenated environments. The appearance of these species and competition for resources may be factors contributing to the decline of the population.

At the habitat level, water contamination by toxic substances, accelerated erosion and increased turbidity) resulting from agricultural activities, deforestation and urbanization threaten the integrity of aquatic ecosystems by damaging habitats and disrupting the entire food chain, including molluscs, which are an essential food source for



Copper Redhorse. More frequent and prolonged periods of low flow in the St. Lawrence River may pose an additional threat to the species by limiting the size of its feeding areas. Climate change may also exacerbate the effects of invasive species on the Copper Redhorse and its habitat by increasing water temperatures. Global warming could also cause certain invasive alien species to migrate northward, where they could compete with the Copper Redhorse. Studies have shown that the species may have been severely weakened by overfishing in the 19th century, when the Copper Redhorse was prized as food and therefore sought after in markets. Although commercial fishing for red drum and river red drum has been banned for nearly twenty years, fishing for other drum species is still permitted, including yellow drum, which can easily be confused with red drum by inexperienced anglers.

The QSL project will make a noticeable contribution to the development of industrial projects, as certain types of industries and businesses may set up near the port terminal to take advantage of the port facilities. However, without the new port terminal, the Joseph-Simard industrial park would still develop given the current zoning. The project itself will result in the destruction of aquatic vegetation that provides a feeding habitat for the Copper Redhorse. However, since the anticipated destruction and disturbance of the species' feeding habitat (aquatic vegetation) by the project will be offset at a ratio greater than 1:1, the impact of the QSL project is considered low.

The QSL project would only increase shipping (transport corridors) by 5 to 8 vessels. The increase in commercial shipping associated with the project is expected to have a low impact on wave action.

The contribution of the QSL project to the introduction of invasive alien species is closely linked to the increase in the number of ships that will be associated with the operation of the port terminal, as ships are known to be vectors for the spread and emergence of such species. The project will also create new structures where exotic invasive mussels could become established and locally deteriorate habitat quality. However, the increase in the number of vessels associated with the operation of the new port terminal is less than 1% compared to current shipping, and due to its location, the port terminal could not be expanded to accommodate more vessels.

The contribution of the QSL project to marine pollution and habitat degradation will be locally and slightly noticeable.

The future port terminal project in the Saint-Laurent sector of the Sorel-Tracy IP Zone does not contravene the objectives of the Copper Redhorse recovery program. The project minimizes encroachment on important habitats, and a compensation project will create additional habitats (ratio greater than 1:1) in the river section of the Copper Redhorse's essential adult feeding habitat. The implementation of mitigation measures to prevent accidental spills of contaminants into the river will not interfere with the objective of improving water quality and habitat. In-depth studies conducted as part of the project have also demonstrated that connectivity between feeding habitats would be maintained.

The proposed additional mitigation measures and monitoring program are

- Under construction:
 - Delineate the beds downstream of the wharf with buoys to avoid unnecessary work boats in the Copper Redhorse feeding habitat during construction.
 - Monitor water quality and seaweed beds specific to the Copper Redhorse before and during construction to ensure that acceptable suspended solids (SS.) conditions are maintained.
- During operation:



- Monitor the physical and chemical conditions and grass beds downstream of the wharf annually during the first years of operation and in accordance with the DFO authorization to ensure that the impact assessment is accurate.
- In the event of significant changes to the feeding habitat downstream of the wharf due to terminal operations, the compensation plan will be enhanced in consultation with DFO.

10.4 Public Infrastructure and Facilities

The project area has been used for agriculture since at least 1950. In 1954, Route 132 was listed as a hard surface road, i.e., paved, and was likely used for transporting goods between Contrecoeur and Sorel-Tracy. The road was also likely used as a transit route for residents and farmers living along Route 132, as the next east-west road was located near Île Saint-Ours. The Tracy thermal power plant and Chemin du Gold appeared around 1969, and the only industry capable of generating heavy traffic on the network is the thermal power plant. Between 1968 and 1972, Highway 30 appeared on topographic maps, allowing heavy vehicles to travel more quickly. Since Industrial Street, Joseph-Simard Street, and Chantiers Street did not appear on topographical maps until 1999, heavy vehicles travelling to Highway 30 from the Tracy power plant or the few industries that had set up nearby had to use Gold Road. There are currently no major traffic problems during rush hour, with all vehicle movements indicating smooth traffic flow without significant delays or queues. As elsewhere, trends in terms of pressure on the road network are increasing with urbanization and the emergence of industries that generate heavy truck traffic.

The project will result in increased truck traffic on a portion of the road network between the project site and Highway 30, which could exacerbate road deterioration, traffic problems, or conflicts of use. It has been determined that several sections of the truck route that would use the terminal coexist with major bike paths and that some recreational sites are located at or near intersections of the truck route. During construction, the impact of the QSL project will be limited, with traffic flow increasing by only about 400 truck trips per day, spread unevenly over a period of 16 to 17 months. During operation, the anticipated increase in traffic is relatively low, with an annual growth rate of 2.3% and a peak-hour truck volume of 10 trucks per hour.

QSL plans, within the limits of its operations, to interact with certain third parties to improve coexistence between heavy vehicles, cyclists, and pedestrians. No additional mitigation measures to the proposed mitigation measures or any monitoring program are proposed.

10.5 Commercial Navigation, Pleasure Boating, and Water-Recreational Activities

The St. Lawrence River has historically been used to transport people and goods. Cruises took place throughout the 19th century on several major waterways, including the St. Lawrence, and companies were based in Montreal, Sorel, and Quebec City, among other places. At the beginning of the 20th century, only sailboats could travel on the St. Lawrence River. The arrival of steamboats and the dredging of the river facilitated navigation between Quebec City and Montreal, and trade began to expand in 1830. Swimming in the St. Lawrence River is a long-standing practice, although poorly documented. In the Montreal area, water recreation on the outskirts of the island of Montreal dates back to the second half of the 19th century and remained popular until the second half of the 20th century. The poor water quality of the river led to a decline in this practice in organized areas, and people were discouraged from swimming, but improvements in water quality caused a resurgence.

The river has been frequented by fishermen since time immemorial; Indigenous peoples have practised traditional fishing for a long time, and settlers also took up fishing. Recreational activities (canoeing, kayaking, windsurfing,



yachting, etc.) are also ubiquitous. In the 1960s, several marinas and pleasure ports were built. Several tours are now organized for recreational boaters, and it is not uncommon to see individuals sailing on the river in small non-motorized boats, while motorboats are ubiquitous throughout the navigable season.

The QSL project is not expected to have a significant impact on wave action, but wave action can affect boating safety by making certain maneuvers, boarding, and disembarking dangerous. In addition, any project on the St. Lawrence River creates obstacles to recreational boating, whether during construction (redirection of navigation) or during operation (no-boating zones).

No additional mitigation measures or monitoring programs are proposed for this component.

10.6 Quality of life of the population

In the project area, residents had been living there long before the first industry appeared in 1964, namely the Tracy thermal power plant. At that time, the area where the project is located was agricultural, and the portion of the land along Route 132 and west of the railway line is cultivated. The power plant generates large amounts of SO₂ and dust and affects the local noise environment. In addition, trucking associated with the power plant's activities generates noise.

In 1964, the only industry still present was the Tracy power plant, and Highway 30 had not yet been built. Around 1979, the first industries moved to the corner of Chemin du Gold and the future Industrial Street, and Route 132. Since Industrial Street, Joseph-Simard Street, and Chantiers Street did not appear on topographical maps until 1999, heavy vehicles travelling to Highway 30 from the Tracy power plant or the few industries that had set up nearby had to use Golf Road.

The industrial zone therefore developed around the existing residences. This is why the residences along Route 132 are in conflict with the activities of this industrial zone.

Air quality in the area where the terminal will be located is a concern, as some exceedances have already been observed due to past activities, notwithstanding the addition of the port terminal. Although it is difficult to estimate the impact on air quality of the new businesses and industries setting up in the industrial park, the addition of certain projects could lead to higher exceedances for SO₂, NO_x (industry with combustion) and PM_{2.5} (dust production), which would adversely affect residents' quality of life. For downtown Sorel-Tracy, where fewer trucks would travel between the Saint-Joseph-de-Sorel terminal and the Saint-Laurent sector of the Sorel-Tracy IP zone thanks to the new port terminal project, there could be a positive effect on air quality and the quality of life of residents in the area.

The impact of the QSL project on the acoustic environment will be noticeable at one of the sensitive receptors near the site. QSL has therefore proposed mitigation measures that could reduce noise levels by 3 to 5 dBA, bringing noise levels into compliance with regulatory criteria. However, the addition of new industrial activities in the area could negatively affect residents, as noise criteria could be exceeded at certain receivers if several noise sources were added, which would affect residents' quality of life. In downtown Sorel-Tracy, where fewer trucks would transit between the Saint-Joseph-de-Sorel terminal and the Saint-Laurent sector of the Sorel-Tracy IP zone, there could be a positive effect on average noise levels, which could improve the quality of life for residents in the area.

The proposed port terminal project will have no impact on incident light at the nearest receptors. Simulations show lighting variations well below recommendations for rural areas, and the impact does not extend beyond the immediate residences to the north and south. Although this aspect is not considered in the lighting-level simulation



as it is not within QSL's jurisdiction, the potential addition of vessels mooring off the terminal could have an impact on the lighting levels perceived by residents.

Local residents have seen their view gradually change with the increase in the size of commercial vessels using the Seaway. For many of the current residents, the Tracy power plant and Kildair Services facilities, which have been there since 1964, have already altered the view. However, the addition of the QSL terminal will change the view of the river for some residents. The addition of industries in the industrial park could also alter the views of the project and reduce the visual screen between some residences located further away near Golf Road and the industries.

No additional mitigation measures to those already proposed, nor any monitoring program, are being proposed.

10.7 St. Lawrence River and its ecosystem

The proliferation of projects and accelerated development in the watersheds feeding the St. Lawrence River have led to widespread degradation of the St. Lawrence River and its ecosystem, in terms of water quality, sediment, ecosystem integrity, the quantity and quality of habitats supporting biodiversity, the reconciliation of uses, and landscape quality.

According to the study assessing the cumulative effects of maritime activities in the St. Lawrence and Saguenay rivers, several environmental stressors, including anchoring, accidental spills, dredging, shipwrecks, navigation, commercial fishing, and marine pollution, can affect the St. Lawrence River. Based on this study, the assessment of cumulative stressors shows that the entire river section is exposed to at least low levels of environmental stressors related to maritime activities and that large port cities and the waterway are particularly exposed to stressors. Between Kahnawake and Île d'Orléans, the regions of Quebec City, Trois-Rivières, Sorel-Tracy, and Montreal are at risk. Since the river is narrow from Quebec City onwards, environmental stressors are concentrated there, suggesting that an increase in maritime traffic in the maritime sector is likely to have disproportionate consequences in the river sector if this traffic is directed towards the Great Lakes. The passage of an additional ship in Quebec City cannot therefore be interpreted in the same way as an additional ship in Montreal.

Thus, the implementation of several additional projects along the St. Lawrence River will have impacts on valued biological, physical, and social components that may be more or less significant depending on the quality of the proposed mitigation measures, the rigour of their implementation, and the proposed compensation measures. All of these changes may have impacts on various biological components (birdlife, mammals, fish and molluscs, riparian wetlands, aquatic herbaceous vegetation, species in a precarious situation), physical components (air, surface water, groundwater and sediment quality, sound and visual environment, ice regime, erosion) and social components (heritage, cultural and historical sites, hunting and fishing activities, sense of security of water users, tourism activities, food security, quality of life of residents, access to water, exercise of Indigenous peoples' rights, etc.).

By studying the pathways between stressors and valued components, it appears that shipping and marine pollution are significant sources of effects on all valued components considered. The types of vessels with the most significant effects are those related to freight transport (oil tankers, dry cargo ships, cargo ships, and container ships). Cultural, heritage, and archaeological sites are the most exposed to the effects of stressors from maritime activities. The activities identified by the regional study as most likely to be affected are plant harvesting, navigation, fishing, and hunting; However, this interpretation is biased and depends on the location of the identified sites and the intensity of environmental stressors at that location. The activities carried out at these sites should be



viewed as a whole that allows Indigenous peoples to fully exercise their rights, and exposure to stressors at sites of interest identified by Indigenous peoples should be considered as affecting the exercise of those rights.

With regard to the valued components identified by Indigenous peoples (natural heritage, safety of members of Indigenous communities engaging in activities on or near the river, visual experience of the St. Lawrence River, culturally valued species, Indigenous fisheries, exercise of ancestral and treaty rights), the proposed future port terminal in the Saint Lawrence sector of the Sorel-Tracy industrial-port zone could have the following effects:

- Natural heritage, Indigenous fisheries, and culturally valued species:
 - Overall reduction in GHG emissions due to fewer ships waiting at the Saint-Joseph-de-Sorel wharf. These ships will be redirected to the new port terminal;
 - No impact on speed increases downstream of the structures, therefore no impact on speeds in the feeding habitat of adult redfish;
 - Minor impact on sediment quality and the dispersion of potentially contaminated sediments. The volumes of sediment to be handled during construction (approximately 3,000 m³) are isolated inside the concrete piles; the volumes that could be suspended are therefore significantly lower than the total volume handled. During operation, protection against scouring prevents the risk of contaminated sediment being suspended.
 - Minor impact on surface water quality due to failure of the runoff management system or accidental spillage of hydrocarbons;
 - Minor impact on increased wave action, as the increase in the number of vessels associated with the operation is less than 1% of the traffic of 4,000 merchant ship passages annually (CGVMSL 2023; 2024). These impacts may be felt as far as the Great Lakes if some of these vessels continue further upstream along the Seaway to reach the Great Lakes network;
 - Local increase in underwater noise that could alter the feeding behaviour of adult Copper Redhorse;
 - Loss of 285 m² (variant 1) to 612 m² (variant 2) of fish habitat, including 200 m³ (variant 1) to 63 m² (variant 2) of aquatic herbaceous vegetation, which are feeding habitats for adult Copper Redhorse;
 - No impact on other coastal wetlands;
 - Negligible impact on birds and turtles and minor impact on bats, particularly for feeding activity;
- Health and quality of life and the exercise of ancestral and treaty rights:
 - Localized impact on lighting conditions;
 - Visual impact noticeable by river users, leading to a deterioration in the sense of well-being and security essential to the activities of Indigenous peoples;
 - Impact on the availability of indigenous fishing sites. At least one site is known to be located very close to the future port terminal. Increased navigation could also affect indigenous fishing by causing more wave action, a phenomenon that makes fishermen feel unsafe and may cause users to move or cease their activities;
 - Impact on the quality of life of indigenous peoples, particularly by interfering with the exercise of indigenous rights, the transmission of culture and identity, food security, access to resources, etc.

The significance of the project's impact on this component is relatively low. However, QSL understands the value of the river and its environment to Indigenous peoples and the exercise of their rights. QSL wants to maintain an open dialogue where issues related to the value of the river and its environment to Indigenous peoples and the exercise of their rights can be addressed. As QSL is sensitive and attentive to the project's impacts on the components valued by indigenous peoples and on the exercise of their rights, initiatives are being developed individually with each community through a collaboration plan aimed at minimizing the project's impacts on the components valued



by indigenous peoples and on the exercise of their rights. QSL has already begun discussions to define its participation in certain programs for the transmission of culture and the transfer of knowledge and techniques.



11. Accidents and failures

11.1 Risk Analysis during Operation

The purpose of the technological risk analysis for the QSL International Ltd. marine terminal project in Sorel-Tracy is to identify major accidents that could occur, assess their potential consequences for the population and the environment, and determine the project's acceptability in terms of technological risks. It also serves to optimize the protective measures put in place to prevent these potential accidents or reduce their frequency and consequences.

The risks covered by this analysis are major accidental events that could have off-site consequences and harm the population or the environment. This analysis does not cover

- Risks related to occupational accidents;
- Risks to workers' health in the normal course of operations (occupational diseases).

Sensitive elements of the environment are those which, due to their proximity, could be affected by a major accident at the planned terminal. These mainly include the population, public places and buildings, infrastructure, industries, and sensitive or protected environmental elements.

Table 11-1 lists the main sensitive elements of the environment present in the study area, within one kilometre of the site, with the exception of sensitive environmental elements for which the area corresponds to the river section between the port terminal in the Saint-Laurent sector of the Sorel-Tracy IP Zone and the outlet of Lake Saint-Pierre, in connection with an accident and failure scenario involving a major hydrocarbon spill.

There are no schools, daycare centres, seniors' residences or health and social services centres located within 1 km of the project site. These sensitive elements are located at a distance ranging from 2.2 km to 9 km from the project.

A drinking water intake is located on the St. Lawrence River in the North Channel of Île-aux-Castors, in the Îles-de-Sorel archipelago. This intake supplies the towns of Berthierville, La Visitation-de-l'Île-Dupas, Sainte-Geneviève-de-Berthier and Saint-Ignace-de-Loyola. It is located approximately 7.9 km downstream from the project. There are no groundwater supply wells near the future port terminal.

Table 11-1 Main sensitive elements in the study area (within 1 kilometre of the PA) or in the river zone

| Category | Description | Distance from the site boundary |
|----------------|----------------------------|--|
| Population | Residences along Route 132 | From approximately 190 m south and 250 m north |
| Infrastructure | Section of Highway 30 | 1 km east |
| | Route 132 | 175 m east, running alongside the project site |
| | CN railway | 700 m east |
| | Provincial ATV Trail (30) | 930 m south-southeast, along Highway 30 |
| | 735 kV power line | 150 m south (east-west direction) |

| Category | Description | Distance from the site boundary |
|---------------------------|--|--|
| | 230 kV power line | 960 m east, arrives at Kildair and runs along Highway 30 northward |
| | Maisouna Park | 1 km northeast |
| Industries and businesses | Le Charentais Motel | 1 km southwest |
| | Denis Construction Inc | 875 m south |
| | Richelieu Sandblasting and Painting Inc | 430 m south |
| | Recycled Materials Sorel-Tracy | 970 m southeast |
| | Les Assemblages Métalliques Tracy | 850 m southeast |
| | Sorel-Tracy Industrial Warehouses Inc. | 830 m southeast |
| | Kildair Service Ltd. | Adjacent to the site, from 200 m north (port wharf) to Highway 30, 1 km east |
| | Pierre-De-Saurel Regional Ecocentre | 950 m northeast |
| | CLIMT Storage | 920 m northeast |
| | AUCA— Côté-Audet Machine Shop | 950 m northeast |
| | JMS Towing - S. Pinard Garage | 865 m northeast |
| | Michon Industriel | 905 m northeast |
| | Elecso | 830 m northeast |
| | Electromoteur Richelieu | 750 m northeast |
| A&B Industrial Mechanics | 790 m northeast | |
| EZSecur | 850 m northeast | |
| Boulet Doors and Windows | 950 m northeast | |
| Environmental features | waterbird concentration areas (WBCAs) | See maps 5-2 to 5-7 of the impact study |
| | Muskrat habitats | |
| | Grande-Île heronry | |
| | Protected areas (national reserve, nature reserve, wildlife refuge, other protected areas) | |



| Category | Description | Distance from the site boundary |
|----------|---|---------------------------------|
| | Shallow water grass beds | |
| | Sensitive banks and shorelines | |
| | Lake Saint-Pierre World Biosphere Reserve | |

External risks of natural origin, which are natural events unrelated to this project that could affect the operation or integrity of the new port terminal facilities, are as follows:

- Earthquake;
- Flooding;
- Land instability;
- Exceptional weather conditions.

External risks of anthropogenic origin include:

- Air transport;
- Rail transport of hazardous materials;
- Maritime transport;
- Nearby businesses and industries;
- Gas pipelines.

The project site is not exposed to any specific natural hazards. The Kildair Service Ltd. facility and the CN railway are the two main external man-made hazards.

Based on the current design of the port terminal, several materials that could be handled and stored at the terminal can be classified into two categories:

- Inorganic materials, minerals, and metals;
- Fertilizers.

Based on current market demand, only deicing salt and fertilizers are expected to be handled. If a new demand arises and involves a new material to be handled and stored, an assessment of the infrastructure work and an update of the procedures will be carried out.

None of the materials are listed in the technology analysis guides. Similarly, they are not subject to *the Environmental Emergency Regulations*. Not all fertilizers are classified under the *Transportation of Dangerous Goods Regulations*.

The history of accidents at similar facilities provides a better understanding of the nature of problems that may arise, thereby enabling accident scenarios to be developed for use in the risk analysis, improving the design of the terminal and its equipment, determining the safety equipment required, and better defining the risk management plan. Only two fires in fertilizer warehouses have been reported, one on Prince Edward Island and one in Logron, France. The warehouse in Logron, France, contained ammonium nitrate, which will not be the case at the QSL facility.



Table 11-2 summarizes the potential accident scenarios and their possible consequences. Although some material safety data sheets may indicate a risk of explosive dust generation for urea, BakerRisk conducted tests to verify the explosiveness of urea dust. The tests conclude that urea does not pose a credible explosion hazard at ambient temperature and pressure. No specific prevention or protection measures need to be implemented in this regard.



Table 11 -2 Potential accidents and their consequences

| Substance | Accident | Consequence | Probability | Severity |
|---|--|--|--------------------|-----------------|
| De-icing salt Slag Battery minerals | Spillage into the river during transshipment operations | <ul style="list-style-type: none"> ▪ Contamination of river water, more or less localized depending on the water solubility of the discharged material; ▪ Potential impacts on fish habitat, endangered turtles, and the feeding and watering habitat of bats. | Average | Low |
| Fertilizer | Spillage into the river during transshipment operations | <ul style="list-style-type: none"> ▪ Contamination of river water more or less localized depending on the water solubility of the discharged material; ▪ Potential impacts on fish habitat, endangered turtles, and bat feeding and watering habitat. | Medium | Low |
| | Exposure to heat from fire or high temperatures, accidental contact with incompatible substances | <ul style="list-style-type: none"> ▪ Formation of a toxic cloud that may affect employees and the population (may contain nitrogen oxides, sulfur oxides, phosphorus oxides, ammonia, chlorine, hydrogen chloride, hydrogen cyanide); ▪ Potential impacts on birdlife, fish habitat, endangered turtles, and bats. | Low | Medium |
| Diesel, marine diesel, fuel oil | Spills during refuelling of heavy machinery or refuelling of ships from tanker trucks | <ul style="list-style-type: none"> ▪ Contamination of river water; ▪ Contamination of soil and groundwater; ▪ Fire if ignited; ▪ Potential impacts on birdlife, fish habitat, endangered turtles, and bats. | Average | Low |
| | Spill from emergency generator tank | See Table 11-3 | Low | Low |
| | Spill from a ship's fuel tank following a collision or mechanical failure | | Low | High |



Numerous prevention and protection measures are in place at the various QSL terminals or will be specifically implemented for the port terminal project in the Saint Lawrence sector of the Sorel-Tracy IP Zone. These measures are grouped into various categories:

- General:
 - Access control;
 - Standard operating procedures;
 - Specific mitigation measures.
- Spills:
 - Preventive maintenance program;
 - Spill kits;
 - Contractor services in the event of oil spills in the river.
- Ground transportation:
 - Speed limits;
 - Traffic signs.
- Storage;
- Generator;
- Provisioning and refuelling;
- Navigation and vessel operation.

More specifically, in relation to the potential consequences of a major oil spill in the St. Lawrence River, Table 11-3 presents the consequences and protective measures in the event of a fuel spill from a vessel caused by human error (navigation), a mechanical problem with the engine or rudder, or adverse weather conditions such as fog.

Table 11-3 Consequences and protective measures in the event of a fuel spill from a ship (marine diesel, fuel oil, bitumen)

| Causes | Preventive measures | Potential consequences | Protective measures |
|---|--|---|---|
| Grounding (bad weather conditions, mechanical failure or human error) and fuel loss. | <ul style="list-style-type: none"> ▪ Mandatory pilotage by the Laurentian Pilotage Authority for vessels on the St. Lawrence River; ▪ Anchorage station near future port facilities; ▪ Inspection of commercial vessels (Transport Canada, IMO standards supervised by classification societies). | <ul style="list-style-type: none"> ▪ Fuel slick in the river and contamination of water and sensitive receptors downstream depending on the dispersion plume and response time; ▪ Fuel slick in the water, ignition | <ul style="list-style-type: none"> ▪ Any incident/pollution must be reported to QSL; ▪ Notify the Coast Guard (alert network), ECCC, and MELCCFP; ▪ Intervention by a subcontractor specializing in hydrocarbon spills and response in aquatic environments; |
| Collision with the wharf (bad weather conditions, mechanical failure, or human error) and loss of fuel. | | | |
| Collision with another vessel (bad weather conditions, mechanical failure, human error) and loss of fuel. | | | |



| Causes | Preventive measures | Potential consequences | Protective measures |
|---|---|------------------------|--|
| Mechanical failure of the vessel resulting in fuel loss (without collision or grounding). | Inspection of commercial vessels (Transport Canada). | and fire on the water. | <ul style="list-style-type: none"> ▪ Notify owners of water intakes downstream (town, industries). ▪ Notice to the Office of the Ndakina of W8banaki (formerly the Grand Council of the Waban-Aki Nation), the Office of the Nionwentsio of the Huron-Wendat Nation, and the Mohawk Council of Kahnawà:ke ▪ Firefighting equipment on board the vessel ready for use. |
| Loss of fuel during refuelling of vessels | <ul style="list-style-type: none"> ▪ Avoiding the need to refuel at the QSL wharf ▪ Comply with the requirements of the International Maritime Organization's International Convention for the Prevention of Pollution from Ships (MARPOL) and Transport Canada's standards for refuelling operations | | |
| Vandalism, terrorism | Fenced site with a control station. | | |

Modelling of two response scenarios, one involving a two-hour leak that was quickly sealed by emergency services and another involving a six-hour leak, which corresponds to a slower response time but is more realistic given the location of emergency services (Verchères), revealed the following constants:

- Depending on the type of hydrocarbon, the shape of the dispersion plumes is similar, but the dispersion time is slower for non-degradable hydrocarbons as they are denser.
- A larger quantity of non-degradable hydrocarbon molecules must be recovered, since this hydrocarbon does not volatilize (no molecules evaporate);
- In general, wind direction is the main factor influencing the dispersion trajectory of the hydrocarbon plume. Thus, plumes of similar shapes can form regardless of the season, but all plumes created under the influence of southerly winds move towards the town of Saint-Ignace-de-Loyola.
- In the presence of southwesterly winds, when the spill occurs at the Kildair wharf, the hydrocarbon plume drifts towards the right bank of the river (towards Sorel), to a greater or lesser extent depending on flow conditions.
- In most scenarios, an emergency response time of less than 6 hours would cause significant damage to sensitive environments on the Sorel Islands, both towards Île Dupas and Île de Grâce (depending on wind conditions).

As the density of the modelled fuels is lower than the density of water (1), the modelling assumes that all hydrocarbons will float on the surface. However, it should be noted that bitumen has a density greater than 1 and that bitumen particles could therefore more easily sink in the water column and wash up on the coastline, which could require a different response from emergency services compared to marine diesel and fuel oil, which should float in slicks and wash up on the shore or evaporate. In the latter case (diesel and fuel oil), it is mainly the banks and shallow waters that are likely to be contaminated, affecting the riparian and aquatic fauna and flora. In the case of bitumen, fish habitats further out to sea, where the water is deeper, could be more widely affected if



hydrocarbon particles sink to the bottom of the river. Species that frequent deeper waters could therefore be more severely impacted.

The various oil spill scenarios modelled may have different consequences for sensitive elements of the environment depending on the critical periods. In summary, the most critical periods for the majority of sensitive wildlife elements are

- Fish habitat: April 1 to September 15;
- Copper Redhorse: June 1 to September 15;
- Birdlife: April 1 to December 1;
- Turtles: April 1 to October 1.

Mammals, wetlands, and the human environment are other components that could be affected by an oil spill in the St. Lawrence River.

11.2 Risk Analysis during Construction

During the construction period, the main hazards will be spills or fires involving hydrocarbons present on the construction site. More specifically, the following accidental events could occur:

- Fuel leak with or without fire during refuelling of rolling stock and construction machinery;
- Hydraulic oil leak from rolling stock and construction machinery (hydraulic hose rupture);
- Spillage or fire involving temporary fuel tanks on the construction site;
- Spillage or fire at hazardous waste storage sites on the construction site.

The St. Lawrence River is particularly sensitive to hydrocarbon spills.

The potential consequences of an accident during the construction phase are summarized in Table 11-4.

Table 11-4 Consequences of accidental events during the construction phase

| Accidental event | Potential consequences |
|---|---|
| Oil spills on land | Localized contamination of soil and surface and groundwater |
| Major oil spill on land, but reaching the water environment | Localized contamination of the banks of the St. Lawrence River. |
| Minor oil spill into the river | Localized contamination of the banks of the St. Lawrence River. |
| Major oil spill in the river | Extensive contamination of the banks of the St. Lawrence River |
| Hydrocarbon fire | Danger to workers, minor impact on sensitive elements of the natural environment and the population due to the smoke plume. |

The worst credible accident during the construction phase would be a major fuel spill into the river during refuelling of machinery for the construction of the wharf due to a broken transfer hose.

Numerous prevention and protection measures will be implemented for the construction of the port terminal in the Saint-Laurent sector of the Sorel-Tracy IP Zone. These measures are grouped into various categories:



- Accidental spills;
- Use, maintenance, and refuelling of machinery;
- Hazardous waste management.

11.3 Risk management

To ensure the safety of people and property during terminal operations, the facilities will be designed and built in compliance with applicable laws, regulations, and codes.

With the operation of the new port terminal, QSL will continue and strengthen its risk management program to ensure the safety of workers, the public, and the environment. This program includes the following elements:

- Allocation of human and material resources for program management;
- Monitoring during the construction and operation of the terminal;
- Commissioning and start-up procedures;
- Safe operating procedures, including continuous monitoring of ship unloading operations;
- Equipment maintenance and periodic inspection program;
- Documentation and updating of information relating to
 - hazards associated with operating activities, chemicals and the technology used;
 - inventories of hazardous materials (quantities stored, delivered or shipped off-site);
 - equipment design and modifications;
 - operating procedures and safety systems in place.
- Visual identification system for stored products;
- Safety training for all employees. This training will cover the following main topics:
 - the operation and organization of the terminal;
 - the risks inherent in terminal activities;
 - safe working methods;
 - personal protection using the equipment provided to workers.
- External services (delivery, maintenance) subject to specific authorization and informed of safety instructions;
- Measures taken to monitor the activities of contractors working at the terminal:
 - knowledge of safety rules;
 - verification of skills (contractors accredited and familiar with the codes);
 - inspection of work carried out.
- Investigation of accidents and incidents to determine their causes and implement corrective measures;
- Change management and continuous improvement process;

11.4 Emergency Response Plans

11.4.1 During Operation

QSL's current emergency response plan will be modified to take into account the new port terminal facilities. The objectives of this modified plan will be



- To ensure the safety of employees, contractors, external responders, and the public;
- To reduce the risk of property damage and impacts on the environment and community in the event of an accident;
- To plan emergency procedures to minimize response and recovery times and costs;
- To define the responsibilities of employees and external responders in planning and executing emergency responses.

This revised emergency response plan includes:

- Alert, mobilization, and communication procedures;
- Response plans for various emergency situations;
- An emergency response team (external to the company) equipped with response equipment;
- Emergency response training for all employees;
- Posting of evacuation plans and safety instructions in the workplace.

11.4.2 During Construction

A specific emergency plan will be developed to respond to emergency situations during the construction period. The contractor assigned to the construction of the project will have a contractual obligation to implement the emergency response plan, adapted to the hazards inherent in its work.

Emergency response measures will enable personnel and equipment to be deployed quickly and efficiently to limit the consequences. In the event of spills, contaminated equipment and soil will be recovered and disposed of in accordance with applicable regulations.



12. Monitoring and Follow-up Program

12.1 Preliminary Monitoring Program

The preliminary environmental monitoring and follow-up program aims to provide a framework for the implementation of the project. It describes the measures, actions, and resources that will be implemented to prevent and mitigate the negative environmental impacts associated with the project.

More specifically, the monitoring program aims to ensure that QSL complies with the environmental requirements related to the project. It includes the means and mechanisms put in place to ensure, during the various phases of the project (construction, operation), compliance with the environmental measures determined in advance, generally during an environmental study.

The first step in designing the monitoring program will be to determine the responsibilities of stakeholders during the various phases of the Project.

During the construction period, environmental monitoring will cover all planned activities and will aim, in particular, to ensure that environmental concerns and proposed standard mitigation measures or specific mitigation measures are taken into account with regard to the following:

- Compliance with plans and specifications, particularly with regard to the application and effectiveness of mitigation measures;
- Control and treatment of site drainage water;
- Protection of watercourses and wetlands;
- Protection of wildlife and monitoring of the presence of individuals during construction activities (turtles, snakes, birds, etc.);
- Management of excavated sediments;
- Management of hydrocarbons and hazardous products;
- Protection against accidental spills;
- Noise levels during activities;
- Dust emissions from the construction site;
- Waste disposal (solid and hazardous RM) related to construction activities;
- Maintenance of identified protection perimeters;
- Compliance with work schedules (working hours, restrictions related to wildlife activities, etc.);
- Proper functioning of sanitary facilities.

During the operational phase, the specific objectives of the monitoring program are to monitor and control emissions associated with project activities, ensure compliance with the requirements and conditions of the permits and authorizations obtained, and finally, validate the implementation of mitigation measures and their effectiveness.

During construction, a monthly monitoring report will be produced to report on observations and field work. This report may include the work carried out, problems encountered, proposed changes to correct anomalies (non-conformity), corrective measures applied, etc. This report will include information on communications (stakeholders, contractors, relations with indigenous communities, complaints, etc.), health and safety data,



summaries and highlights of all activities and elements for which monitoring is carried out, a register of non-conformity, a description of inspection activities, corrective measures implemented and their effectiveness, etc.

QSL will keep the responsible authorities informed of the progress of the work and any major events that occur. Should a particular problem arise during the execution of the work, the responsible authorities will be notified and QSL will call upon specialists to determine the corrective measures to be implemented, if necessary.

The construction of the fish habitat and adult feeding habitat compensation project for Copper Redhorse shall be subject to its own environmental monitoring. The objectives pursued are the same, namely to ensure that the work is carried out properly, to ensure that the equipment and facilities put in place are functioning properly, to monitor any environmental disturbances caused by the project, to verify that mitigation measures are in place, and to ensure compliance with the conditions, commitments, and requirements set out in government or ministerial authorizations and in relevant laws and regulations.

An important part of monitoring the compensation project will be verifying the quality of the work carried out, since the compensation project must demonstrate a sufficient success rate to cover the losses caused by the port terminal project and since construction failures could compromise the project's success rate.

12.2 Preliminary Monitoring Program

A monitoring program is planned to validate compliance with regulatory requirements and the effectiveness of the mitigation or enhancement measures put in place, and to quickly propose corrective measures in the event of failure.

The environmental monitoring program will remain in effect until the objectives are achieved or until the effectiveness of the mitigation or compensation measures is demonstrated. The general procedure adopted under the monitoring program consists of comparing the condition of components before (initial condition) and after activities causing impacts. Table 12-1 lists the components that will be monitored. Monitoring reports will be prepared monthly or according to the sampling frequency and submitted to the relevant authorities annually throughout the monitoring period or as requested. The content of each monitoring report will be tailored to the authority for which it is prepared. The results of these reports will be presented to the indigenous groups at future meetings, where each community will be invited to participate in the monitoring or comment on the results submitted. These exchanges could take place in person or virtually, depending on the preference of each community.



Table 12-1 Components to be monitored

| Component | Construction | Operation | Objectives |
|---------------------------------|---------------------|------------------|--|
| Hydrosedimentary conditions | | X | No changes to bathymetry that would require maintenance dredging |
| Sediment quality | X | | Analytical sediment quality program for appropriate off-site management |
| Air quality | X | X | No exceedances of established thresholds |
| Noise | X | X | No exceedances of ambient noise standards |
| Groundwater quality | X | X | No signs of deterioration in groundwater quality compared to the reference condition |
| Surface water quality | X | X | <u>Under construction:</u> No exceedances of established thresholds <u>In operation:</u> No exceedances beyond the values authorized by the MELCCFP permit |
| Copper Redhorse and its habitat | X | X | <u>Under construction:</u> Compliance with noise levels where the Copper Redhorse is less reactive to noise <u>In operation:</u> Grass bed area greater than or equal to the residual area determined by the assessment of impacts on grass beds, appropriate speed, food source (gastropods) present |
| Social (neighbourhood) | X | X | Minimize complaints received regarding noise or conflicts of use |

12.3 Compensation Plans

The proposed project will result in fish habitat loss that must be compensated for in accordance with the *Fisheries Act* (FA). Since habitats recognized as essential for the feeding of adult Copper Redhorse will be lost, these specific losses must also be compensated for in accordance with the *Species at Risk Act* (SARA).

QSL has taken steps to find a site where a compensation project can be carried out. The site search is being conducted in submerged fill areas located near existing herbaceous vegetation favourable to the feeding of adult Copper Redhorse. This site will be characterized to confirm the gains in terms of habitat improvement (vegetation present at the site, delimitation of ecosystems and aquatic beds, grain size, current velocity).

The project will aim to create and improve fish habitat, mainly by recreating areas of aquatic grass beds suitable for feeding adult Copper Redhorse, i.e., medium- to high-density beds dominated by American pondweed located at depths between 1 and 3 metres with low to moderate current speeds of 0.2 to 0.6 m/s and where the substrate is relatively fine (clay-silt-sand).



This project would be located between Montreal and the mouth of the Richelieu River, within the mapped critical feeding habitat.

The compensation project must be monitored during the year in which the work is carried out to ensure that the project complies with the approved compensation plan. After the first year, an initial follow-up will determine whether the project is achieving its objectives in terms of creating adult feeding habitat for the Copper Redhorse, based on the specific characteristics of such habitat (velocity, presence of vegetation, presence of gastropods, grain size). Biannual monitoring will then be carried out in years 3 and 5 following the completion of the project. If the project does not meet its objectives, it will be improved until the regulatory authorities are satisfied, based on the areas initially agreed upon.



13. Adaptation to Climate Change

Several significant and well-documented trends have been observed in historical climate data since 1950 in southern Quebec:

- Upward trend in average annual temperatures (1 to 3 °C) and daily minimum and maximum temperatures;
- Increase in the frequency of extreme heat (hot nights and days) and the duration of heat waves;
- Decrease in the frequency of cold extremes (cool nights and days) and in the duration of cold spells;
- Upward trend in spring and fall rainfall, and also in some places in summer;
- Decreasing trend in precipitation in the form of snow in several locations;
- Increasing precipitation on the wettest days.

In southern Quebec, the anticipated effects of climate change include, among others:

- Increased frequency and severity of extreme weather events (e.g., torrential rain and flooding, freezing rain, and wind gusts);
- Rapid spring thaw and flooding events and increased average winter river flows by 2041–2070;
- A shorter frost season;
- A reduction in summer winds and a slight increase in winter winds;
- Increased periods without precipitation;
- Changes in the distribution of flora and fauna ranges;
- An increase in several thermal indices (length of the growing season, growing degree days).
- Increased heat waves.

Hazards likely to impact the land and water components of the future port terminal are linked to the following environmental conditions:

- hydraulic conditions (flooding, low water levels, water levels, flow rates);
- extreme weather events (heavy rainfall, winter thaws, heat waves, storm intensity)
- earthquakes.

In the context of the project, certain climate variables are likely to present a higher risk in the future. Certain design elements and mitigation measures will limit the effects of these climate change-related risks during the design and operation phases of the project. Table 13-1 summarizes the design elements and adaptation measures taken into account to mitigate the environmental effects of climate change on the project.



Table 13-1 Design elements and measures considered to mitigate climate change-related environmental effects on the project

| Effect of climate change on hazards likely to affect the project or impacts on the environment | Possible risks/consequences | Adaptation measure |
|---|---|---|
| <p>More severe and prolonged low water periods and lower water levels on the St. Lawrence River</p> | <ul style="list-style-type: none"> ▪ Dredging requirements ▪ Increased risk of grounding and, incidentally, reduced ship loading capacity to reduce the risk of grounding ▪ More complex docking and departure maneuvers for large vessels | <ul style="list-style-type: none"> ▪ Choice of technology (barge) that adapts to daily water levels ▪ Positioning of the wharf offshore to allow for greater draft. The design provides for a depth of 16 m in the maneuvering and mooring area; ▪ Pilotage studies have taken into account several scenarios to ensure the feasibility of docking and departure maneuvers. |
| <p>Increased intensity and frequency of storm surges</p> | <ul style="list-style-type: none"> ▪ Possible damage to quays and waterfront facilities; ▪ Safety of moored vessels. | <ul style="list-style-type: none"> ▪ Location of the warehouse at an elevation above the 100-year flood level; ▪ Removal of the barge in winter to avoid interfering with ice flow; ▪ For option 2, the current approach bridge configuration provides a vertical clearance of 1,990 mm above the 100-year flood level, which is more than 1.5 m above the MTMD requirements for road bridge design; ▪ For option 2, the vertical clearance under the soffit of the structure in ice conditions is 1,140 mm, which is nearly 800 mm higher than the MTMD requirements for road bridge design. |
| <p>Increased frequency of winter thaws</p> | <ul style="list-style-type: none"> ▪ Increased risk of erosion of banks that are normally protected by ice; ▪ Increased occurrence of freezing rain events; ▪ Extension of the St. Lawrence Seaway’s opening season. | <ul style="list-style-type: none"> ▪ QSL will conduct photographic monitoring of the banks to document bank erosion, if any. ▪ The detailed design of wharf option 2 (bridge) will take into account the risk of frazil ice on the structure, which will be present year-round. ▪ Risks associated with increased freezing precipitation are managed by QSL through its standard operating procedures applied to its other port terminals. |



| Effect of climate change on hazards likely to affect the project or impacts on the environment | Possible risks/consequences | Adaptation measure |
|---|---|--|
| Increase in heavy rainfall events | <ul style="list-style-type: none"> ▪ Impacts on the capacity of the stormwater management system to treat runoff quantitatively and qualitatively | <ul style="list-style-type: none"> ▪ The design complies with applicable codes and regulations. |
| Increase and intensification of heat waves | Reduction in the number of hours of outdoor work that could lead to slowdowns in operations and a build-up of ships waiting | N/A |
| | Machinery more at risk of breakdown during heat waves | A maintenance program is in place that takes into account occasional breakdowns and repairs |
| Increased intensity and frequency of earthquakes | <ul style="list-style-type: none"> ▪ Weakening of infrastructure and appearance of cracks in walls and foundations ▪ Damage to interior warehouse facilities ▪ Fire hazards. | <ul style="list-style-type: none"> ▪ Application of the National Building Code of Canada and the Canadian Highway Bridge Design Code (CAN/CSA-S6-06) for the design of structures ▪ Design of the wharf in accordance with the seismic criteria of applicable codes and standards. |



14. Sustainability

For the Government of Quebec, the fight against climate change is a priority and fundamental issue expressed in several programs and policies. The 2024-2029 Implementation Plan for the Government of Quebec's 2030 Green Economy Plan focuses on three main strategies:

- reducing greenhouse gas (GHG) emissions
- adapting to climate change,
- and supporting the transformation of society and the economy.

Compared to the trucking industry, the maritime industry is more efficient in terms of GHG emissions. First, ships can transport large quantities of goods over long distances with relatively low fuel consumption per ton-kilometer. This means that, for each ton of goods transported, GHG emissions are generally lower than those of trucks. In addition, ships have a greater load capacity than trucks. A single ship can carry the equivalent of several hundred trucks, reducing the number of trips needed to transport the same amount and thereby contributing to lower overall emissions. The maritime industry is constantly evolving and increasingly adopting alternative technologies and fuels to reduce its carbon footprint (ClearSeas n.d.). The new port terminal project in the Saint Lawrence sector of the Sorel-Tracy IP Zone is therefore a project that contributes directly to the fight against climate change.

Based on established and calculated scenarios, it has been determined that the project will avoid more than 2,654 t. CO₂ eq. due to an anticipated reduction in waiting times for ships using the QSL terminal in the Saint-Joseph sector on the river (50% of total emissions avoided), as the new terminal will improve logistics. The avoidance of bulk carriers at the Saint-Joseph terminal (15%) and trucking due to improved logistics for steel products (35%) adds to the reductions. QSL has also opted to use electric conveyors in the project design, which will reduce the need for mobile equipment compared to if no conveyors had been considered. QSL presented in its GHG emissions inventory study (AtkinsRéalis 2025b) a net zero emissions plan for 2050, with emission reduction options such as using renewable diesel fuel to replace conventional diesel or replacing off-road mobile equipment with equivalents with fuel cell engines such as hydrogen. Other measures, such as shore-side electrification, are not currently feasible as the vast majority of bulk carriers are not equipped with shore-side connection systems, or if they are, the connection systems are not uniform. However, QSL will monitor the situation and may consider installing an electrification system if the technical and economic conditions are acceptable.

With regards to climate change adaptation, QSL has considered in its preliminary design the potential impacts of climate change that could affect the terminal's infrastructure and operations.



The project takes into account the sustainable development principles of Quebec’s *Sustainable Development Act* (R.S.Q., chapter D-8.1.1):

| Sustainable development principles | |
|---|---|
| 1 | Health and quality of life |
| 2 | Social equity and solidarity |
| 3 | Environmental protection |
| 4 | Economic efficiency |
| 5 | Participation and commitment |
| 6 | Access to knowledge |
| 7 | Subsidiarity |
| 8 | Partnership and intergovernmental cooperation |
| 9 | Prevention |
| 10 | Precaution |
| 11 | Protection of cultural heritage |
| 12 | Preservation of biodiversity |
| 13 | Respect for the carrying capacity of ecosystems |
| 14 | Responsible production and consumption |
| 15 | Polluter pays |
| 16 | Internalization of costs |

Taken together, the conceptual elements of the project, together with QSL’s environmental and sustainable development policies, cover these 16 principles of sustainable development. These principles aim to achieve the following objectives:

- **Maintain environmental integrity** to ensure the health and safety of human communities and preserve the ecosystems that sustain life;
- **Ensure social equity** to enable the full development of all women and men, the growth of communities, and respect for diversity;
- **Seek economic efficiency** to create an innovative and prosperous economy that is environmentally and socially responsible.

Although the Government of Canada uses a different term, “sustainability,” the definition is based on the same principles, namely the ability to protect the environment, contribute to the social and economic well-being of the people of Canada, and maintain their health, for the benefit of present and future generations.

