TDK METRO TERMINALS EXPANSION PROJECT

VANCOUVER FRASER PORT AUTHORITY PROJECT AND ENVIRONMENTAL REVIEW SUPPLEMENTAL INFORMATION REPORT

July 2023

Hatfield

Prepared for:

TDK Logistics Ltd.

Delta, British Columbia

Hatfield Consultants LLP

#200 - 850 Harbourside Drive
North Vancouver, British Columbia, Canada V7P 0A3
Tel: 1.604.926.3261 • Fax: 1.604.926.5389
www.hatfieldgroup.com

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Prepared for:

TDK LOGISTICS LTD.
480 AUDLEY BOULEVARD
DELTA, BC
CANADA, V3M 5S4

Prepared by:

HATFIELD CONSULTANTS LLP
#200 - 850 HARBOURSIDE DRIVE
NORTH VANCOUVER, BC
CANADA V7P 0A3
TEL: 1.604.926.3261 • WWW.HATFIELDGROUP.COM

JULY 2023

MOTT11659
VERSION 4.0

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LIST OF ACRONYMS

AIA	Archaeological Impact Assessment
AOA	Archaeological Overview Assessment
AREMA	American Railway Engineering and Maintenance of Way Association
BC	British Columbia
BKL	BKL Consultants Ltd
BMPs	Best Management Practices
CDC	Conservation Data Centre
CEMP	Construction Environmental Management Plan
CFS	Container Freight Services
CPT	Cone penetration tests
EAA	Environmental Air Assessment
HMS	Hazardous Materials Survey
MSDS	Material Safety Data Sheet
PCB	Polychlorinated biphenyl
PER	Project and Environmental Review
SARA	*Species at Risk Act*
SPPP	Stormwater Pollution Prevention Plan
SRY	Southern Railway of British Columbia
t/a	Tonnes per annum
TDK	TDK Logistics Ltd.
TEU	Twenty-foot Equivalent Unit
VFPA	Vancouver Fraser Port Authority
VPH	Vehicles Per Hour

DISTRIBUTION LIST

The following individuals/firms have received this document:

Name	Firm	Email	FTP
Tish Kumar	TDK Logistics Ltd	✓	✓
Tegan Smith	Channel Consulting	✓	✓
Stuart Riddick	Mott Macdonald Group	✓	✓
Andrew Wells	Mott Macdonald Group	✓	✓

AMENDMENT RECORD

This report has been issued and amended as follows:

Issue	Description	Date	Approved by	
1	First version of the TDK Metro Terminals Expansion Project VFPA PER – Supplemental Information Report	20230131	Stewart Wright on behalf of Angus Johnston	Lianne Leblond Project Manager
2	Second version of the TDK Metro Terminals Expansion Project VFPA PER – Supplemental Information Report	20230315	Angus Johnston Project Director	Lianne Leblond Project Manager
3	Third version of the TDK Metro Terminals Expansion Project VFPA PER – Supplemental Information Report	20230508	Angus Johnston Project Director	Lianne Leblond Project Manager
4	Forth version of the TDK Metro Terminals Expansion Project VFPA PER – Supplemental Information Report	20230705	 Karen McMillan on behalf of Angus Johnston	 Lianne Leblond Project Manager

1.0 INTRODUCTION

TDK Logistics Inc. (TDK) Metro Terminals is a Canadian owned and operated Canada Border Services Agency (CBSA) container storage and transport logistics company. Started in 1997, in Richmond BC, TDK moved to Annacis Island and acquired Metro-Seacon terminals in 2008 to become TDK Metro Terminals In 2012 TDK Metro Terminals acquired additional land on Annacis Island and consolidated their operations at one location. TDK has been operating on Annacis Island for over 20 years and is a trusted industry leader with strong partnerships with global ocean carriers.

TDK is requesting a permit from the Vancouver Fraser Port Authority (VFPA) under the Project and Environmental Review (PER) process for a terminal expansion (the Project) at 480 Audley Boulevard on Annacis Island in Delta BC (the Project site). The Project site is located entirely on VFPA managed federal lands. The VFPA is responsible for the administration, management, and control of land and water within its jurisdiction. The PER process applies to all proposed physical works and activities on federal lands and waters that are partially or wholly within VFPA's jurisdiction. TDK has an existing lease agreement for the Project site for container storage and goods transportation operations.

A Location Plan (1:5,000) is provided in Figure 1.

The purpose of this document is to provide supplemental information that fulfills the requirements outlined in the PER checklist, including references to other supporting documents, as required. A concordance table of the PER checklist requirements is provided in Section 2.0.

The Project involves upgrades to their existing container storage and transport facility to accommodate increasing market demand for goods transport and container storage including the addition of rail service and agricultural transloading. Once approved and constructed, this Project will allow TDK to intensify and diversify their operations on the existing industrial site, allowing TDK to service more people and improve efficiencies. This full-service distribution hub will include import transload and export transload, in a fully sufferance bonded facility.

The proposed Project consists of:

- The demolition of one (1) existing warehouse;
- Reconfiguration of the existing container yard and truck gate;
- Two new tracks to accommodate rail operations; and
- Agricultural transload and related infrastructure.

An Overview Site Plan is provided in Figure 2.

The studies conducted for this PER application address the impacts of works within the VFPA jurisdiction.

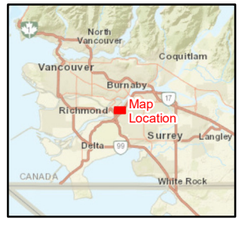
The studies indicate that the TDK Expansion Project is not expected to significantly impact traffic, water, air quality, noise, or the adjacent community and businesses in the surrounding area.

Figure 1 Location plan.

Legend

- Project Site
- VFPA Boundary

Data Sources:
a) Proposed work limit, Mott MacDonald 2022.
b) VFPA boundary, Port of Vancouver 2018.
c) 10 cm image, 13 April 2021, Esri Online Service.



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Scale: 1:5,000

Projection: NAD 1983 UTM Zone 10N

Hatfield

TDK Metro Terminals Expansion Project

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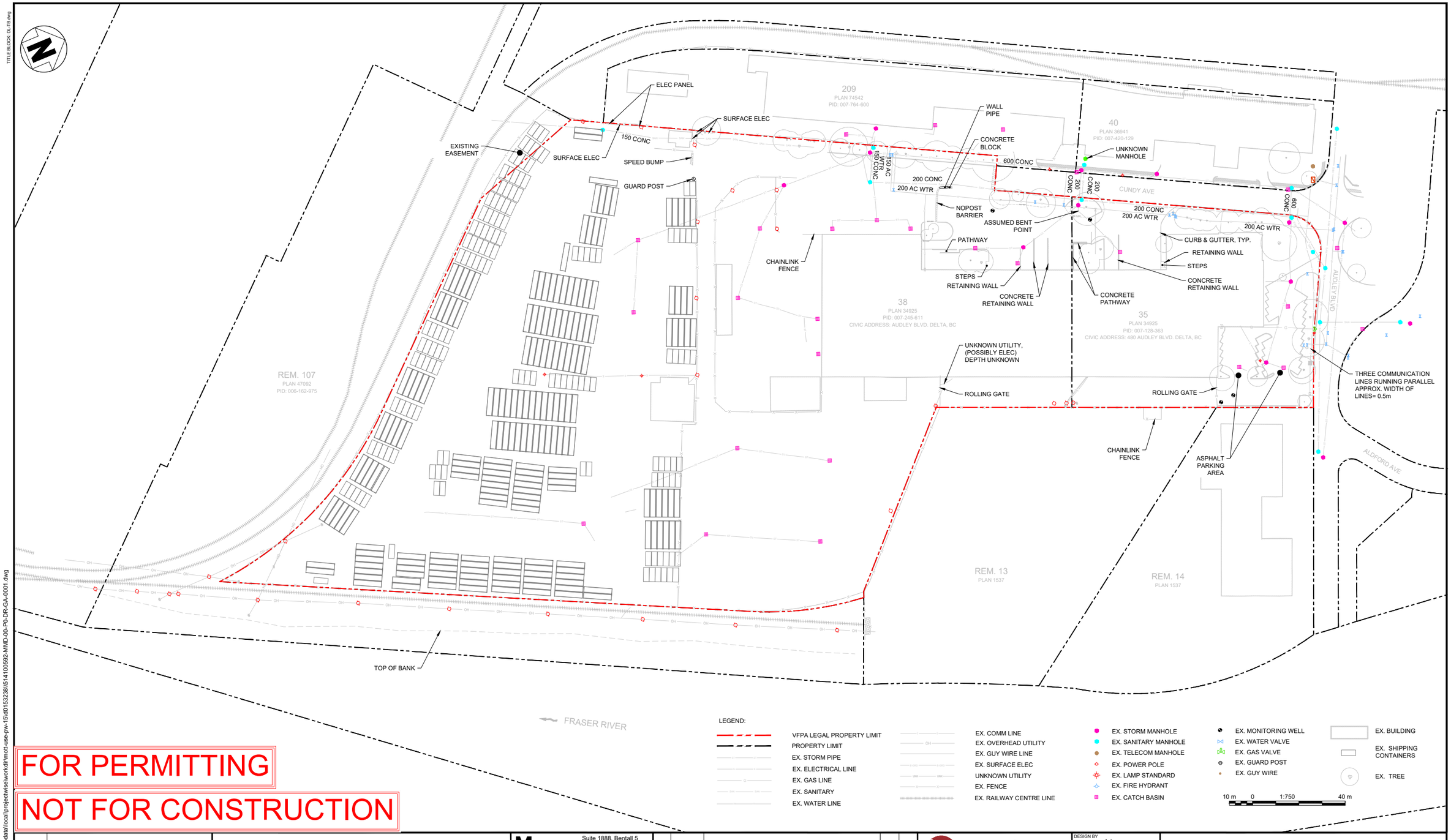
Figure 2 Overview site plan.



FOR PERMITTING

NOT FOR CONSTRUCTION

Ref. No.	REFERENCE

MOTT MACDONALD
Suite 1888, Bentall 5
550 Burrard Street
Vancouver, BC, V6C 2B5
Canada
T 604.681.4400
W www.mottmac.com
ENGINEERS AND GEOSCIENTISTS BRITISH COLUMBIA PERMIT TO PRACTICE NUMBER: 1001591

514100592-MMD-00-P0-DR-GA-0001

No.	Date	REVISION	Dr'n	Ch'd
A	2023/01/31	ISSUED FOR PERMIT	KW	AL

PORT of vancouver
Vancouver Fraser Port Authority
ENGINEERING DEPARTMENT

DESIGN BY	A. L.
DRAWN BY	K. W.
APPROVED	A. K.
DATE	2023-JAN-31
SCALE	AS SHOWN
VFPA SITE	CNVXXX

VANCOUVER FRASER PORT AUTHORITY
TDK METRO TERMINALS EXPANSION

SITE PLAN - EXISTING CONDITION

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D	21-098-GA-001	1 of 1	A

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2.0 APPLICATION CONCORDANCE

The requirements defined in the PER checklist for the Project have been copied to Table 1 for reference. The concordance of the application with these requirements is also provided.

Table 1 VFPA PER checklist concordance.

Requirement	Description	Concordance
Section 1: General Submission Requirements		
Contact List	▪ Provide one central contact list for all Project team members, including name, title, address, and contact numbers.	See Appendix A1: Contact List
Section 2: Project Description Requirements		
General Scope	▪ Brief background of the applicant's company and business operations in the region; ▪ Description of the Project, including the purpose, use, and rationale; ▪ Description of the Project setting, including proximity to sensitive receptors such as schools or parks; ▪ Description of potential impacts to land, water, air, land and adjacent community and businesses, as a result of the Project; and ▪ List all studies that have been completed in support of the application.	An overview of the general scope of the Project is provided in Section 3.1. The Project setting is described in Section 4.0
Operations	▪ Description of existing and proposed capacities and throughput including vehicular, truck, train and marine vessel traffic, hours of operations, peak hours, parking requirements; ▪ Description of the hours or operation of the terminal, both current and proposed, and any changes to employment expected; ▪ Description of the proposed increase in storage capacity of the terminal, and product throughput in tonnes per week, month, or year; ▪ Description of any potential environmental and community impacts that may result from the construction or operation of the Project, and proposed mitigation strategies; and ▪ Description of how operations will function across the two sites. Consider at a minimum if the sites will function independently. Describe ways that the sites will be delineated (fencing, gates). Describe if and how personnel, vehicles, equipment, containers etc. will move between sites.	An overview of operations is in Section 3.2

Table 1 (Cont'd.)

Requirement	Description	Concordance
Section 2: Project Description Requirements (cont'd.)		
Construction and/or Demolition	▪ Proposed construction period (start and finish), hours, and method of construction and/ demolition; ▪ Demolition Methodology Description consistent with section 4.1 in the demolition guidelines; ▪ Description of construction staging activities; ▪ If you anticipate the need to construct outside of the standard VFPA construction hours, this can be requested in the application. Should this information not be provided at the time of application, the request can be processed at a later date, but will be subject to a permit amendment; and ▪ Prior to construction, Issues for Construction drawings must be provided in accordance with the Port Authority's Record Drawing Standards in both AutoCAD and PDF format. Both documents file names must correspond to the Port Authorities record drawing index number.	An overview of construction and demolition is provided in Section 3.3 See Appendix A2: Draft Construction Environmental Management Plan (CEMP) See Appendix A3: Demolition Plan
Section 3: Drawing Requirements		
Location Plan	▪ Plan showing the relationship of the proposed Project to the surrounding area at a 1:5,000 scale.	See Figure 1
Site Plan	▪ Lease and property boundaries, easements and right of way; ▪ Legal high-water mark where applicable; ▪ Location and dimensions of all existing and proposed buildings, structures, equipment, and marine structures; ▪ Access points including roadways, driveways, parking areas, walkways, berths, gangways, docks; and ▪ Area of construction staging/laydown area.	See Appendix A3: Site Plan
Lot Grading and Utilities	▪ Separate plans showing existing and proposed utilities; ▪ Plan showing utilities to be terminated and/or abandoned, including method of termination; ▪ The Applicant is responsible for location of all existing utilities. The port authority will provide known utility information, but location of buried utilities must be confirmed by the applicant; ▪ Lot grading plan showing existing/proposed paving and drainage. Separate to two plans if required for clarity; ▪ Discrete site plan showing existing/proposed fire hydrants and emergency vehicle access routes; ▪ Proposed service connections to utilities or systems (water, sewer, storm water, power, gas), both above and below ground; and ▪ Provide written confirmation of which other authorities or jurisdictions will need to provide consent or conduct works to establish connections to utilities, and confirmation that capacity exists within those 3rd party networks.	See Section 3.6 Appendix A3: ▪ Existing Site Plan and Utilities ▪ Lot Grading ▪ Utilities Plan

Table 1 (Cont'd.)

Requirement	Description	Concordance
Section 3: Drawing Requirements (cont'd.)		
Lighting Plan	▪ Lighting shown on the site plan for all proposed exterior lighting including the location, type of bulbs, orientation, and level of illuminance.	See Section 3.6 See Appendix A3: Lighting Plan
Parking and Access Plan	▪ Dimensioned site plan showing circulation, building new line painting, and any other proposed features; ▪ Widths of proposed roadways and driveways; ▪ Dimensions of maneuvering areas including turning radii; ▪ Proposed employee and/truck parking area with dimensioned and numbered parking stalls; and ▪ Typical cross-sections and proposed grades of all streets, and details of curbs, gutters, sidewalks, and other improvements.	See Section 3.6 See Appendix A4: Parking and Access Plan
Rail Plan	▪ Existing and proposed rail tracks, switches, and other associated rail works.	See Section 3.2 Appendix A3: Rail Plan
Section 4: Required Studies and Reports		
Hazardous Materials Report for Demolitions	▪ Inventory of any hazardous materials including asbestos, drywall, the contents in aboveground and underground storage tanks, polychlorinated biphenyls (PCBs), abandoned chemicals and others, material safety data sheets (MSDS); ▪ Description of hazardous materials storage and handling methods; ▪ Table of applicable regulations; and ▪ Hazardous materials reuse, removal, recycling, and disposal plan, prior to demolition of structures in accordance with all relevant regulations.	See Section 5.1 See Appendix A4: Hazardous Materials Inspection Report
Waste Management Plan	▪ Description of waste materials, percentage of waste materials being reused or recycled, destinations for waster materials, identification of whether the materials will be sorted on site or commingled. ▪ Construction materials such as asphalt, cardboard, cement and concrete, clean fill and soil, gypsum/drywall and green waste (landscaping) should be recycled. Remaining materials should be transported and disposed of in an appropriate manner unless they can be reused or recycled; and ▪ Details of any additional waste reduction measures.	See Section 5.2 See Appendix A2: CEMP

Table 1 (Cont'd.)

Requirement	Description	Concordance
Section 4: Required Studies and Reports (cont'd.)		
Fire Safety	Fire Safety Plan (or updated existing Plan): ▪ Site entrance point(s); ▪ Access routes within terminal/site: ▪ Hydrant locations; and ▪ Site layout including names of each building. Construction Fire Safety Plan: ▪ Description of project scope, activities, construction schedule, and any hazards specific to construction; ▪ Interim site access points; and ▪ Any temporary modification to site annunciator panel functionality. Both plans to include other points in keeping with industry best practice and scaled to the site and project scope.	See Section 5.3 See Appendix A5: Fire Safety Plan See Appendix A2: CEMP
Geotechnical Report	▪ Description of site seismic and geologic hazards; ▪ Description of construction measures, precautions and corrective actions recommended for preventing structural damage and reducing the risk of terrestrial, marine, and riparian geotechnical hazards to acceptable levels; and ▪ Geotechnical investigation and assessment for new buildings, structures, and pavement design.	See Section 5.4 See Appendix A6: Geotechnical Report
Stormwater Pollution Prevention Plan	▪ Description of daily operations as they relate to storm water management, given the local climate and water capture and treatment systems.	See Section 5.5 See Appendix A7: Stormwater Pollution Prevention Plan
Traffic Impact Study	▪ An assessment of current site traffic as well as truck volumes anticipated, on site circulation, traffic distribution throughout the day and impacts to adjacent and nearby roads, access/egress and storage analysis for vehicles accessing site as well as parking requirements; and ▪ Include proposed hours of operation and staffing number.	See Section 5.6 See Appendix A8: Traffic Impact Assessment
Rail Operations Study	▪ An assessment of the rail operations expected, including length and number of cars, average number and peak number of trains per day anticipated at the site, how rail cars are delivered to the site and managed while on the site, and total site capacity – length of tracks and total number of trains that can be accommodated on-site; ▪ Overview of how shunting or car switching is conducted or managed, and design speed for arriving and departing trains; ▪ Provide a letter of support with the participating carrier for the project; ▪ Description of the design capacity and specifications for the rail components that are specified for all on-site rail; and ▪ Account for operations traffic up to the 10-year horizon.	See Section 5.7 See Appendix A9: Rail Operating Plan

Table 1 (Cont'd.)

Requirement	Description	Concordance
Section 4: Required Studies and Reports (cont'd.)		
Noise Study	▪ An assessment of how the proposed development will affect the noise levels experienced by the adjacent community; ▪ Complete the Noise Assessment Project Score sheet to determine if further noise assessment will be required. If score sheet indicated that a noise assessment is required, it is expected that a Noise Assessment will be commissioned and submitted as part of the application package; and ▪ The noise assessment must evaluate contributions to noise associated with the emission sources/activities within both the facility boundary and the projects supply chain boundary.	See Section 5.8 See Appendix A10: Noise Study
Air Assessment	▪ A Preliminary Air Assessment meeting is required; ▪ Conduct an air assessment of contributions to air quality and climate change associated with the emissions sources. Activities within both the facility boundary and the projects supply chain boundary; ▪ Provide a Level 1 (emissions estimation) Environmental Air Assessment (EAA); and ▪ Applicant will be required to demonstrate continuous improvement in air emission management and implementation of mitigation measures as identified in the EAA.	See Section 5.9 See Appendix A11: Air Assessment
Project Energy Information	▪ Preliminary design information about energy conservation measures and low carbon electrification considered for the project.	See Section 5.10
Archaeological Potential – Preliminary Assessment	▪ Footprint and depth of ground alteration works, if proposed; ▪ Identify if the proposed Project is situated on fill or native soil, and what the anticipated impacts to native soil may be; ▪ Identify if the proposed Project is within 100 m of potable water (historically present or currently present); ▪ Location of proposed Project in relation to the original shoreline or river/stream bank; and ▪ Determine if the proposed Project is situated on relatively level ground.	See Section 5.11
Archaeological Overview Assessment	▪ Identify and assess archaeological resource potential or sensitivity within a proposed Project area; and ▪ Provide recommendations concerning the appropriate methodology and scope of work for subsequent inventory and/or archaeological impact assessment studies.	See Section 5.11.1 See Appendix A12: Archaeological Overview Assessment

Table 1 (Cont'd.)

Requirement	Description	Concordance
Section 4: Required Studies and Reports (cont'd.)		
Construction Environmental Management Plan (CEMP)	▪ Description of how the site will be managed during construction such that the work does not result in adverse impacts to the environment, heritage resources, public (municipal, stakeholders, community), indigenous groups, and including potential effects from noise, vibration, light, dust emissions, or other deleterious discharges; ▪ The project is located in an area that has been proposed as critical habitat for Barn Owls. Please include a brief description of potential impacts and proposed mitigation strategies for Barn Owl as part of the CEMP; and ▪ If Barn Owl critical habitat is finalized prior to completing construction, activities that result in destruction of critical habitat may require a permit under the Species at Risk Act (SARA). Such activities could include loss of foraging habitat (e.g., grassy ditches/margins along roads and railway tracks that could support small mammal prey) or nesting/roosting sites (e.g., physically protected cavity sites in buildings). Nest surveys must be undertaken prior to demolition of structures with potential barn owl nests/residences.	See Appendix A2: Draft CEMP
Spill Prevention and Emergency Response Plan (on land and water)	▪ Emergency Response plan as it relates to reportable spills; ▪ Inventory and description of hazardous materials storage and handling methods and table of applicable regulations of those anticipated to be handled or stored on site during normal operations; ▪ Copies of any relevant MSDS as it may related to products handled, used, or stored on the site; ▪ A description of spill prevention, containment and clean up plan for hydrocarbon projects (including fuel, oil and hydraulic fluid) and any other deleterious substances using standards, practices, methods and procedures to a good commercial standard, conformation to applicable laws; ▪ Description of proposed employee training, emergency response communication plan, emergency procedures, spill tracking and reporting, records of facilities inspections; and ▪ Reference to appropriate containment and clean-up supplies available on site at all times and that all personnel working on the Project are familiar with the spill prevention, containment and clean-up plan.	See Appendix A2: Draft CEMP
Flood Protection	▪ Conduct a vulnerability assessment of any areas of the site which may be at risk of flooding in light of the value and vulnerability of the commodities, contamination risk, as well as day-to-day operations.	See Section 5.12 See Appendix A13: Flood Vulnerability Assessment

Table 1 (Cont'd.)

Requirement	Description	Concordance
Section 5: Notification, Consultation and Engagement		
Indigenous Groups	▪ Provide all records of previous information sharing activities, agreements, or other interactions with Indigenous groups with respect to the proposed Project; and ▪ Provide information on any known Indigenous interests in the Project area, if known.	Submission not included in this document.
Stakeholders	▪ City of Delta; and ▪ Other stakeholders may be consulted – list to be confirmed at time of complete application	Submission not included in this document.
Public	The type of engagement activities that are required to be led by the Applicant for this Project includes: ▪ Project webpage; ▪ Public Notification of public engagement period and opportunities; ▪ Public engagement for a 25 business day period and which may include an online feedback form or questionnaire, and an online information session (depending on COVID-19 restrictions); and ▪ Depending on the scope, public interest and potential impacts to the surrounding community, additional engagement activities may be required.	Submission not included in this document.
Public Engagement Materials	The Applicant is required to submit drafts of the following upon submission of a complete application: ▪ Public Engagement Plan; ▪ Project website text and any online information; ▪ Draft text of emails to existing applicant distribution lists (if applicable); ▪ Public notification letters; ▪ Project overview document; ▪ Online questionnaire or feedback form; ▪ Presentation; ▪ Coloured renderings, schematics, or other visual representations of the Project; and ▪ Other materials to be used (i.e., videos, brochures, social media posts, newspaper advertisements)	Submission not included in this document.
Completion of Public Engagement	▪ Upon completion of public engagement, The Applicant will be required to submit the following: Public Engagement Summary and Consideration Report; and ▪ Any additional information as required staff.	Submission not included in this document.

Table 1 (Cont'd.)

Requirement	Description	Concordance
Section 5: Notification, Consultation and Engagement (cont'd.)		
Construction Communications Plan	▪ The proposed Project may have an impact on the adjacent community during the construction period, and therefore the applicant may be required to notify area residents and the municipality prior to construction and/or demolition – in keeping with an approved Construction Communications Plan. Submission of a plan may be required at a later date determined by staff (not at the time of application); ▪ The Plan should include a brief description of the proposed Project, background, construction timelines, considerations and challenges, engagement objectives, key audiences and stakeholders, key messages, contact information and public and stakeholder notification activities prior to construction and/or demolition. Also include a map of the notification area and mechanism to receive feedback and respond to/resolve issues that may be raised during construction; and ▪ Submission of a plan may be required at a later date determined by staff (not at the time of application).	To be provided prior to construction once determined.
Section 6: Other Requirements/Considerations		
Project Construction and Operations Spanning Multiple Jurisdictions	▪ PER 16-268 Fibreco Terminal Enhancement Project provides a successful example of a permit where construction and operations spanned multiple jurisdictions – in this case the District of North Vancouver and the port authority.	Not included as the proposed Project does not currently include the adjacent property and is wholly within VFPA managed federal lands.

3.0 PROJECT OVERVIEW

3.1 GENERAL SCOPE

Located on the south of Annacis Island, TDK currently operates a 6.5-acre container yard facility at 480 Audley Boulevard that provides storage for loaded and empty containers for ocean lines, leasing companies, and retail customers, reefer storage service and pre-trip servicing, full-service container maintenance and repairs and modifications, and a customs sufferance bonded container yard.

Additionally, TDKs facility includes a Container Freight Station (CFS) Warehouse, allowing for additional services such as bulk commodity loading/unloading activities and CFS stuffing and de-stuffing services. Container yard services (e.g., customs sufferance bonded container yard storage, refrigerated container storage and reefer plugs, etc.) are also available at TDK Metro Terminals.

To accommodate increasing market demand for goods transportation and container storage, TDK is planning to upgrade its existing container storage and transport logistics facility and are proposing an import and export distribution hub with annual throughput of approximately 150,000 TEU. The proposed Project would expand the existing container yard operation. Upon Project completion, the anticipated truck volume would increase from 65,000 gate transactions to an estimated 80,000 gate transactions annually. The proposed upgrades would allow additional bulk transload services (i.e., lumber, pulp, steel, pipe), and trucking for all investor services (i.e., local dray, inland Full Truckload, flat-deck, local pickup, and delivery). In addition to the existing container storage and distribution operation; the expansion will enable TDK to implement a transload operation for agricultural product. The proposed Project is also estimated to handle 4,000 rail cars per year with a throughput of 100,000 tonnes per annum (t/a) of agricultural product.

The Project is expected to be partially complete in 2025, and operating at full capacity by 2026.

The proposed Project consists of:

- The addition of rail trackwork: Two (2) new rail siding tracks accessed via a Southern Railway of British Columbia (SRY) spur track. Each stacked track can accommodate 10 cars (for a total of 20);
- The reconfiguration of the existing container yard: Demolition of one (1) existing warehouse building, a reconfigured truck gate, three new (3) new onsite truck queuing lanes to accommodate up to twenty (20) trucks within the site, but outside the gate;
- Mobile grain conveyors: Commodity will arrive via rail in grain hoppers. There will be two (2) mobile conveyors, two (2) reach stackers, and two (2) container tippers. The mobile conveyors will slide under rail cars that will then dump grain directly onto the belt. The grain will then be conveyed into a tipped container. Containers will be moved off site via truck; and
- In summary, as outlined throughout this PER Application, this Project, if approved and constructed, would allow for a more intensive use of the existing industrial Project site, allowing TDK to service more people and improve efficiencies onsite.

3.2 OPERATIONS

TDK currently operates a 6.5-acre container yard facility that provides:

- Storage for loaded and empty containers for ocean lines, leasing companies, and retail customers;
- Reefer storage service and pre-trip servicing;
- Full-service container maintenance and repairs and modifications; and
- Customs sufferance bonded container yard.

In addition, TDK currently provides a Container Freight Station (CFS) Warehouse and services:

- 40,000 sq ft warehouse (indoor and outdoor);
- CFS stuffing and de-stuffing services;
- Less than load poolcar services offering multiple departures per week to Eastern Canada, Prairies, and Seattle/Portland;
- Access to less than load/less than container load and container delivery in Lower Mainland;
- Specialized cargo handling equipment and expertise; and
- Bulk commodity loading and unloading.

The proposed expansion would increase the operating area with a significant increase for container storage. The warehouse operation and services would be moved offsite. The container yard services would continue and expand with the current proposal:

- Customs sufferance bonded container yard;
- Storage for loaded and empty containers for ocean lines, leasing companies, and retail customers;
- Full-service container maintenance, repairs, and modifications;
- Off-dock location for several ocean carriers and container leasing companies;
- Refrigerated container storage and reefer plugs and pre-trip servicing; and
- Loaded container storage for importers/exporters.

The expansion would allow for TDK to establish a new small transload operation for agricultural products. Using mobile conveyors and tippers, bulk grain would be unloaded from the rail, arriving in covered hopper cars, and then being containerized onsite.

The proposed Project will expand TDKs existing container yard operation. The anticipated truck volume will increase from 65,000 gate transactions annually currently to an estimated 80,000 gate transactions annual upon project completion. This would increase the expected peak hour truck entries from 35 vehicles per hour (vph) to 43 vph. Due to the removal of warehousing services, Project site staff numbers and associated

vehicle numbers are anticipated to reduce to 10 full-time staff onsite at a given time. The addition of queuing lanes for truck entry and exit will ensure that offsite queuing along City of Delta roads will be minimized.

The new rail operation is expected to accommodate over 4,000 rail cars a year, with an anticipated daily throughput of up to 20 cars per weekday. The Project site's two 10-car railway spurs will have a total capacity of 20 cars onsite at a given time. The cars would arrive onsite during the graveyard shift as part of a pre-existing SRY assignment. The addition of railcar unloading is not anticipated to result in any additional services for SRY.

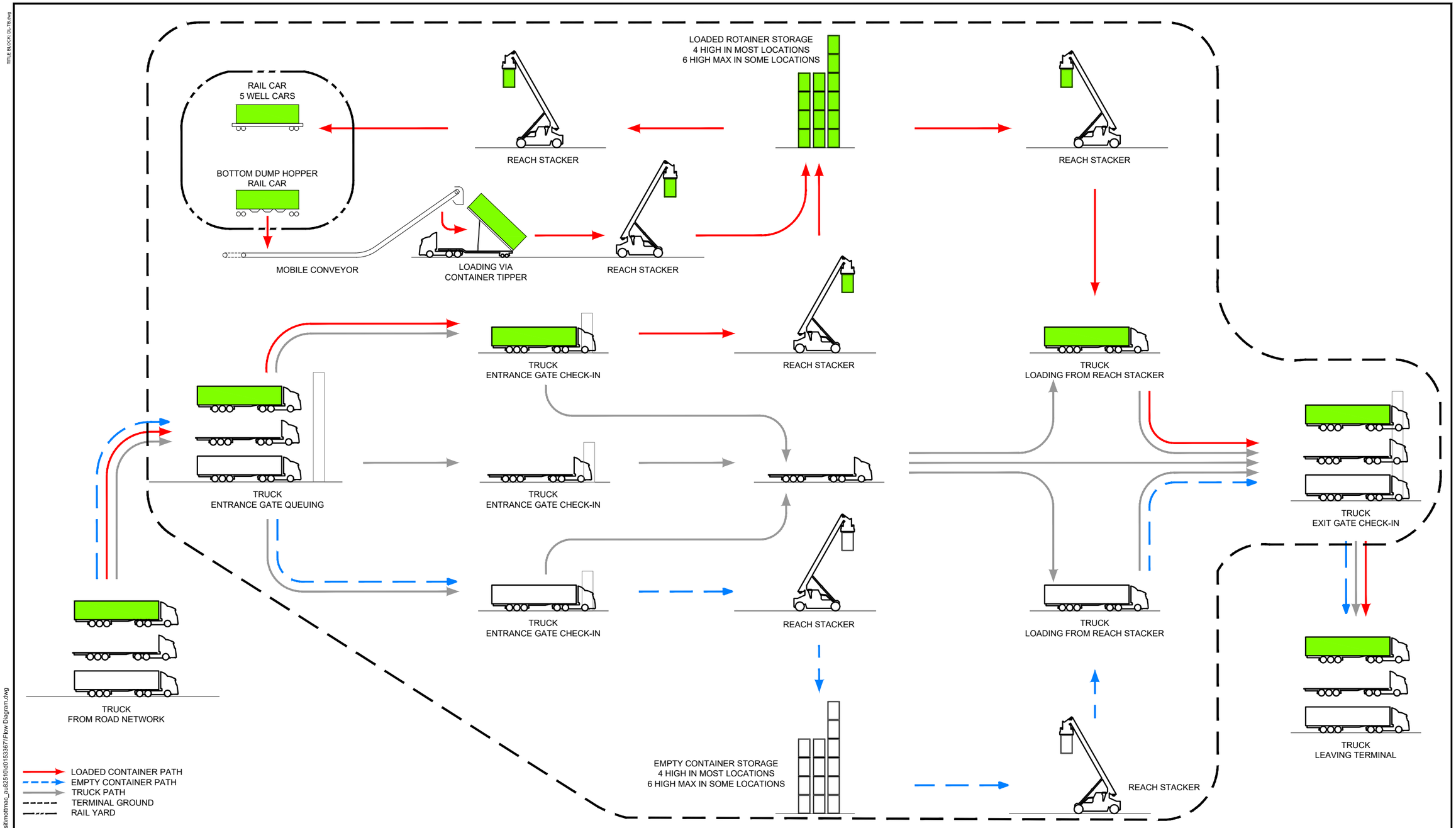
Current hours of operation are Monday to Friday 7:00 am to 11:00 pm, and Saturday to Sunday by appointment and will remain the same following the proposed expansion. Peak hours are anticipated to remain the same (7:00; 11:00; 15:30; 19:00).

In 2022, the container yard had an average of 2,480 TEU stored onsite at a time, with a maximum occupancy of 3,536 TEU. The future layout is intended to have a max capacity of 7,000 TEU. The current annual throughput is 120,000 TEU, while expanded operations is anticipated to have an annual throughput of 150,000 TEU and approximately 100,000 t/a of agricultural products.

In the future, the container yard at 480 Audley Blvd would function independently from the future offsite CFS warehouse facility. The Project site at 480 Audley Boulevard would be fenced in its entirety other than the interface with the road and rail networks. Currently, the CFS warehouse and container yard operate independently with limited interaction between the two, 50 daily truck movements in each direction are anticipated. Operating staff would not be travelling between the two sites.

The future operations flow diagram is in Figure 3.

Figure 3 **Project flow diagram.**



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Ref. No.	REFERENCE

MOTT MACDONALD
Suite 1888, Bentall 5
550 Burrard Street
Vancouver, BC, V6C 2B5
Canada
T 604.681.4400
W www.mottmac.com
ENGINEERS AND GEOSCIENTISTS BRITISH COLUMBIA PERMIT TO PRACTICE NUMBER: 1001591
514100592-MMD-00-P0-DR-RW-0001

No.	Date	REVISION	Dr'n	Ch'd
B	2023/03/10	ISSUED FOR DISCUSSION	HK	SR
A	2022/10/11	ISSUED FOR DISCUSSION	HK	SR

PORT of vancouver
Vancouver Fraser Port Authority
ENGINEERING DEPARTMENT

DESIGN BY	C. A.
DRAWN BY	C. A.
APPROVED	A. W.
DATE	2023-JAN-31
SCALE	AS SHOWN
VFPA SITE	CNVXXX

VANCOUVER FRASER PORT AUTHORITY
TDK METRO TERMINALS EXPANSION

FLOW DIAGRAM

SIZE	DWG.	SHEET	REV.
D	21-098-XXL-00XX	1 of 1	A

3.3 DEMOLITION/CONSTRUCTION

The Project involves the demolition of one existing warehouse building currently used by TDK and two other tenants. Demolition of this building is required to provide space for the expansion of the TDK container yard operations. Demolition entails the dismantling and removal of the building, including appropriate onsite management of construction demolition materials and appropriate handling and disposal of hazardous wastes.

Demolition shall be undertaken by a qualified contractor and shall generally consist of removal of hazardous materials and recyclable materials, dismantling the existing building structures and cladding, building floor slabs and foundations, and appropriate disposal of the materials (construction demolition materials, hazardous materials, recyclable materials, and domestic waste).

A Draft Construction Environmental Management Plan (CEMP) has been prepared for the Project. The CEMP is the primary document to guide overall environmental management and protection practices to be implemented for the duration of Project construction and fulfills many of the PER requirements. The CEMP provides the roles of key environmental staff members, reporting requirements, and identified areas of environmental risk. The objective of the CEMP is to present mitigation measures, Best Management Practices (BMPs), and guidance for Contractor Work Plans that may be required to avoid or minimize adverse project effects. The CEMP follows the VFPA PER CEMP Guidelines (VFPA 2018) and will be provided to the construction contractor as the basis for developing work plans and associated Environmental Protection Plans

The Draft CEMP is in Appendix A2, and the Demolition Plan is in Appendix A3.

3.4 DEMOLITION/CONSTRUCTION SEQUENCING

The Contractor will prepare detailed construction and demolition Work Plans for the Project prior to commencement of the work. The demolition Work Plan will be consistent with VFPA Demolition Guidelines (VFPA 2022) and will be sealed by a qualified professional engineer registered in British Columbia. An outline of the phased sequencing plan is as follows:

- Shut down east side of property's operations and prepare the Project site to continue operating exclusively on west side;
- Decommission and demolishing of existing building;
- Install utilities (water, sanitary, stormwater, power) in east side as much as possible;
- Targeted trenching within west side of property for stormwater connection to be maintained;
- Provide temporary maintenance of stormwater drainage on west side (as new designs do conflict with existing layout so temporary work will be required to maintain that connection once existing utilities have been disconnected from network grid);
- Decommission and remove remaining existing utilities in east side of property;
- Complete grading in east side of property;
- Partially pave far east of the Project site (paving area will be determined based on minimum operable area to maintain operations);

- Commission utilities in east side of property;
- Install temporary entrance gate to east of the Project site;
- Install maintenance shed;
- Shut down west side of property's operations and start up east side of properties operations:
    - Complete decommissioning and construction of existing west side utilities;
    - Complete grading in west side of property;
    - Complete construction of rail works;
    - Paving west side of container yard.
- Complete entrance gate and install remaining temporary buildings; and
- Operate in full property.

See Demolition Plan and Construction Phasing Plan in Appendix A3.

3.5 PROPOSED CONSTRUCTION AND/OR DEMOLITION PERIOD

It is planned that construction work would commence in July 2025 subject to lease agreements.

It is currently anticipated that the construction duration will be approximately 12 to 18 months (of which 9 months is anticipated to be building decommissioning and demolition) and the construction work hours will follow the standard VFPA working hours (07:00 to 20:00 Monday to Saturday).

3.6 SUPPORTING PLANS

All supporting plans listed below are in Appendix A3:

- Site Plan – Existing Conditions;
- Proposed Site Plan;
- Demolition Plan;
- Proposed Container Arrangement;
- Construction Phasing Plan;
- Flow Diagram;
- Grading Plan;
- Grading Sections;
- Proposed Parking and Access Plan;
- Proposed Utilities Plan;
- Lighting Plan; and
- Rail Plan.

4.0 PROJECT SETTING

Annacis Island is predominantly industrial, and the Project site is a designated port terminal in VFPA managed federal lands and waters, Planning Area 5; Fraser River Central. The southern part of the island is connected to Delta via the Alex Fraser Bridge, which is part of Highway 91.

The Project site is relatively flat, with the highest point approximately 3 m above sea level. On Annacis Island there is a small amount of green space along Audley Boulevard (Audley Boulevard Canal Park) and Way Ravine Environmental Reserve, approximately 750 m southeast, off of Annacis Island.

The British Columbia Institute of Technology's (BCIT) Annacis Island campus is just under 3 km away and the nearest elementary school, Brookes Elementary, is approximately 1 km away, off Annacis Island in the City of Delta.

The closest residential property is off Annacis Island at 9071 Collings Way, approximately 750 m south of the Project site in the City of Delta. The nearest hospital is Surrey Memorial Hospital, approximately 6 km to the east.

4.1 DESKTOP REVIEW

A desktop literature review of information was performed prior to the field assessment. Information in and around the Project site was collected using the following databases:

- BC Species and Ecosystems Explorer (BC CDC 2022a);
- Conservation Data Center (CDC) iMap (BC CDC 2022b);
- iNaturalist Canada (Canadian Wildlife Federation et al. 2020); and
- eBird Canada (eBird 2021).

A search within Annacis Island was completed for plant species and terrestrial vertebrate species at risk. The list obtained was refined to include only those species that are provincially (CDC) or federally (*Species at Risk Act*) listed[1] and known or believed to potentially occur within, or in proximity, to the Project site based on current, local habitat conditions and with potential to be impacted by the Project. It was assumed that the riparian vegetation along the Fraser River would not be removed and that no work would be done within the Fraser River.

Although there are no known occurrences of plant or wildlife species at risk at the Project site (BC CDC 2022b), the desktop study identified seven terrestrial wildlife species at risk that have the potential to occur (see Table 2).

[1] Provincially red- or blue-listed and federally listed as endangered or threatened on Schedule 1 of SARA.

Table 2 Species at risk with potential to occur on the Project site.

Common Name	Scientific Name	Provincial Designation[1]	Federal Designation[2]	Potential to be Impacted	Justification
Barn owl	*Tyto alba*	Blue	Threatened	No	Critical habitat overlaps with the study area, but no suitable habitat was observed onsite.
Barn swallow	*Hirundo rustica*	Yellow	Threatened	Yes	Observations have been made on Annacis Island and there is potential for nests to be built in/on structures onsite.
Common nighthawk	*Chordeiles minor*	Blue	Threatened	Yes	Nearby observations have been made and there is potential for them to nest at the Project Site.
Hoary bat	*Lasiurus cinereus*	Blue	N/A	No	No roosting habitat observed onsite.
Killdeer	*Charadrius vociferus*	Blue	N/A	Yes	Observations have been made on Annacis Island and there is potential for them to nest onsite.
Little brown bat	*Myotis lucifugus*	Blue	Endangered	No	No roosting habitat observed onsite.
Yuma bat	*Myotis yumanensis*	Blue	N/A	No	No roosting habitat observed onsite.

[1] Red-listed: Any species that is at risk of being lost (extirpated, endangered, or threatened); Blue-listed: any species that is of special concern.

[2] Schedule 1 of the Species at Risk Act is the official list of species at risk in Canada. It includes species that are extirpated, endangered, threatened, and of special concern; however, the general prohibitions do not apply to species of special concern.

4.2 PROJECT SITE SURVEY

A field assessment was conducted on October 18, 2022, which included reconnaissance of the Project site, and a search of wildlife habitat features and invasive species that may pose Project constraints. General habitat conditions (e.g., vegetation types), and representative photographs were collected during the field assessment completed by a qualified biologist (see Section 4.2.5). The Project site and surrounding area was surveyed for raptor nests and for other wildlife habitat features including potential amphibian breeding wetlands, riparian areas, mammal dens, and wildlife trees.

4.2.1 Wildlife

During the field assessment, no species at risk were observed; however, potential habitat for three of the species at risk identified during the desktop study were observed. Structures, such as light fixtures in the warehouse, could be used by barn swallow (*Hirundo rustica*) to build nests. Gravel/sand piles and vegetative ground cover could provide nesting habitat for common nighthawk (*Chordeiles minor*) and killdeer (*Charadrius vociferus*), respectively.

During the field assessment a bald eagle (*Haliaeetus leucocephalus*) nest was observed approximately 15 m east of the eastern fence line at the south end of the Project site, and a pair of bald eagles were observed perched approximately 80 m southwest from the nest (see Photo 1 and Photo 2).

The active nests of all raptors are legally protected in BC, and the inactive nests of the bald eagle, golden eagle, peregrine falcon, gyrfalcon, osprey, and burrowing owl are also protected year-round. Prior authorization is required to alter or remove a protected raptor nest tree. For bald eagles, it is recommended to retain undisturbed natural vegetation within a minimum of 1.5 tree lengths and a 100 m buffer free of human disturbance during active breeding season (January 1 to August 31) (BC MOE 2013; Develop with Care 2014). If construction occurs within the active breeding season the nest should be surveyed by a Qualified Environmental Professional (QEP) to determine if the nest is active. A mitigation plan will be prepared if the nest is active and works are to occur within the buffer during the breeding season.

An American crow (*Corvus brachyrhynchos*) was observed flying out of a tent in the northeast of the property; however, no nests were observed. A northern flicker (*Colaptes auratus*) and gull species (*Larus* sp.) were observed flying over the Project site. Some limited nesting habitat (i.e., dense shrubs, small trees, herbaceous ground cover, and gravel piles) was observed at the Project site. Two gravel/sand piles, one in the southwest corner and the other in the southwest of the Project site, may provide nesting habitat for common nighthawk (see Photo 3). Herbaceous ground cover around the fences could provide nesting habitat for killdeer. Although no nests were observed, the vegetation at the Project site, such as black cottonwood (*Populus trichocarpa*), and denser shrubs (including invasive species), may provide nesting habitat for passerines (see Photo 3, Photo 4, Photo 5, and Photo 6). Some mature trees were observed along Cundy Avenue and adjacent to the buildings, which could provide nesting habitat for both stick and cavity nesters (see Photo 6). Structures on the Project site, such as the warehouse and tents, may be suitable for barn swallow to build nests, but none were observed (see Photo 7). The main warehouse does not appear to have roosting habitat for bats and no guano was observed.

Raccoon (*Procyon lotor*) prints were observed in the southeast corner and near the entrance to the container yard on the west side of the property (see Photo 8). A worker reported seeing a marmot, likely a yellow-bellied marmot (*Marmota flaviventris*), in the past, but not within the last year. The same worker reported rabbits present with tunnels previously observed under a stack of pipes along the fence at the north end of the Project site.

The Project is located in an area that has been designated as critical barn owl (*Tyto alba*) habitat. Barn owl feed on small mammals, particularly voles, and require open habitats including grasslands, meadows, agricultural land, and grassy marshes that will support a healthy small mammal population (BC CDC 1995; BC MoE 2013; BC MoE 2014). Barn owl are heavily associated with agricultural lands and predominantly nest in human-made structures like barns, silos, hangars, and water towers (BC CDC 1995; BC MoE 2013; BC MoE 2014). Natural nesting sites include cracks in cliffs, as well as cavities in dead or live black cottonwood (*Populus trichocarpa*), Douglas-fir (*Pseudotsuga menziesii*), bigleaf maple (*Acer macrophyllum*), and western redcedar (*Thuja plicata*) (BC MoE 2014).

The western population of barn owl is listed as threatened on SARA Schedule 1 and is provincially blue-listed (BC CDC 2022a). The Project site occurs within a detailed unit polygon within which critical habitat is found (ECCC 2022); however, the Project site is primarily paved or gravel substrate and has little to no

vegetation present in the main container yard. Trees and shrubs occur along internal and external fence lines but this vegetation is limited in extent. The Project site itself does not have the biophysical attributes associated with suitable barn owl foraging, nesting, or roosting habitat and is excluded from identification as critical habitat (ECCC 2022). A permit under SARA for destruction of critical habitat is not required.

4.2.2 Freshwater Resources

The Fraser River runs along the south-east boundary of the Project site. The Fraser River contains fisheries resources including Pacific salmon species (*Salmonidae* spp.) and white sturgeon (*Acipenser transmontanus* pop. 4), however, these freshwater species are not expected to be affected by works completed at the Project site. The Project will avoid the foreshore and intertidal area and will have a buffer of approximately 25 m from the Fraser River high water mark.

4.2.3 Vegetation

The Project site was observed to consist primarily of paved and gravel substrate, and little to no native vegetation was observed in the main container yard where traffic is concentrated (see Photo 9). The site assessment determined that approximately 8% of the Project site is covered with vegetation, predominantly invasive species. No flora or fauna species at risk were observed.

Vegetation was observed growing around the perimeter of the Project site and along fences (see Photo 4 and Photo 5). The Project site was observed to be dominated by black cottonwood and willow species (*Salix* spp.). Other species observed, but less dominant, include paper birch (*Betula papyrifera*), red alder (*Alnus rubra*), pearly everlasting (*Anaphalis margaritacea*), tall Oregon-grape (*Mahonia aquifolium*), dull Oregon-grape (*Mahonia nervosa*), and sword fern (*Polystichum munitum*). Vegetation observed adjacent to the buildings and along the proposed northeast fence line (i.e., along Cundy Avenue) include a mix of planted native tree species and ornamental species. Native tree species include Douglas-fir (Pseudotsuga menziesii), oak species (*Quercus* sp.), shore pine (*Pinus contorta* var*. contorta*), ponderosa pine (*Pinus ponderosa*), and common snowberry (*Symphoricarpos albus*). In these areas, trees were observed to be more mature.

East of the Project site, along the Fraser River, mature black cottonwood trees were observed with a dense shrub understory that provides habitat for stick and cavity nesting species, as well as cover for small mammal species (see Photo 5).

4.2.4 Invasive Species

Invasive species were observed along the exterior and interior fences (see Photo 3, Photo 5, Photo 10). Himalayan blackberry (*Rubus armeniacus*) and scotch broom (*Cytisus scoparius*) were dominant throughout the Project site in low to high density patches. Common tansy (*Tanacetum vulgare*) and other herbaceous weedy species were observed throughout.

4.2.5 Site Photos

Photo 1 A bald eagle nest was observed approximately 15 m east of eastern fence line. (2022-10-18)

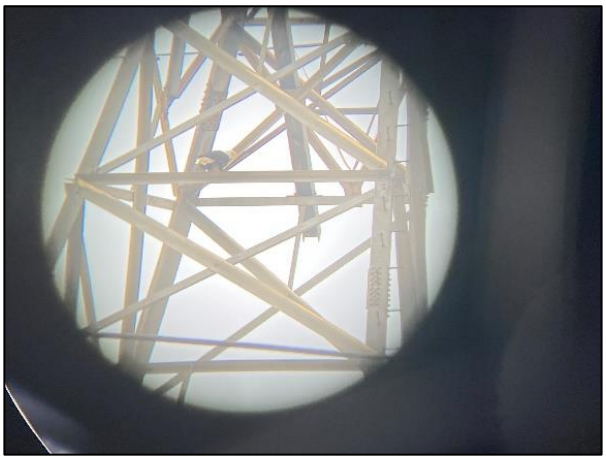

Photo 2 Bald eagle was observed perched about 80 m southwest of their nest. (2022-10-18)

Photo 3 Gravel/sand pile with native and invasive vegetation observed growing along the fence in the southeast corner of the property. (2022-10-18)

Photo 4 Young trees and shrubs observed growing along an interior fence line on the east side of the property. (2022-10-18)

Photo 5 Vegetation along the eastern exterior fence line observed with mature black cottonwood trees adjacent to the Fraser River in the background. (2022-10-18)

Photo 6 Trees adjacent to Cundy Avenue where the proposed northeast fence line would be. (2022-10-18)

Photo 7 Interior of main warehouse on the property. (2022-10-18)

Photo 8 Raccoon tracks in the southeast corner of the property. (2022-10-18)

Photo 9 Representative conditions within the container yard. (2022-10-18)

Photo 10 Scotch broom and Himalayan blackberry observed growing along the southern exterior fence line. (2022-10-18)

5.0 STUDIES AND REPORTS

5.1 HAZARDOUS MATERIALS REPORT FOR DEMOLITION

A hazardous materials survey (HMS) was conducted by Astech Consultants Ltd. (Astech) on October 13, 17, 18, 19, and 20, 2022 in order to assess the potential for hazardous materials in the office and warehouse building which is slated for demolition. The HMS was conducted on the multi-tenant warehouse/storage building and included the ground floor, upper floor, both exterior and interior. The HMS was conducted while the building was still occupied and therefore was non-destructive. No attempt was made to investigate concealed or inaccessible areas, or roofing materials that would require damaging or dismantling portions of the building. Due to the non-destructive nature of the testing survey, additional testing will be required just prior to demolition.

The assessment was performed to establish the location and type of hazardous building materials within the warehouse structure and its finishes. Samples were collected from warehouse to confirm the presence and location of asbestos containing building materials, lead, Polychlorinated biphenyls (PCBs), mercury, stored chemicals, and silica. Astech's survey and report format is designed specifically to satisfy the current applicable regulation from the Workers' Compensation Board of British Columbia Occupational Health and Safety Regulation 20.112 regarding hazardous building material assessments by a Qualified Person for buildings and structures (Government of BC 1997).

The HMS identified asbestos-containing materials, lead finishes, lead construction materials, PCBs, mercury, stored chemicals, and silica within the building. Prior to demolition of the building, hazardous materials shall be removed and disposed of by a qualified hazardous materials abatement contractor in accordance with the WorkSafeBC (WCB) Occupational Health and Safety Regulation.

The Hazardous Materials Inspection Report is in Appendix A4.

5.2 WASTE MANAGEMENT PLAN

A waste management plan is included in the Draft CEMP (see Appendix A2).

5.3 FIRE SAFETY

A Fire Safety Plan was developed to specify the design measures, and operational and maintenance strategies for fire protection.

The Fire Safety Plan is in Appendix A5.

5.4 GEOTECHNICAL REPORT

A geotechnical investigation was conducted by GeoPacific Consultants Ltd. on October 5, and 6, 2022 using the subcontracted services of Southland Drilling. The geotechnical investigation comprised of 17 augured test hole and 2 cone penetration tests (CPT) sounding, supplemented with one shear wave velocity profile. Additionally, an investigation was conducted at the adjacent property at 410/420 Audley Boulevard, in Delta BC, on March 3rd and 7th, 2022. This investigation was comprised of 9 augured test hole and 6 CPT sounding, supplemented with one shear wave velocity profile.

The general geology of the region at the Project site is described as Fraser River Sediments according to the Geological Survey of Canada (Map 1484A). The Fraser River Sediments are characterized as deltaic and distributary channel fill which overlay and cutting estuarine sediments. These materials are often overlain by overbank deposits.

All test holes encountered fill material below the road base and silty clay to clayey silt in the overbank deposits. The silt was overlain by a sequence of channel deposited sand which extended to the maximum depth of the investigation of 30 m below grade. The sand is underlain by deep marine clay silt deposits inferred to be 60 to 70 m below grade.

The new rail tracks will be designed to American Railway Engineering and Maintenance of Way Association (AREMA) standards and will be designed such that during moderate earthquakes (475-year return period) will result in heavy, but repairable damage with only a short period of service disruption. Under higher magnitude but lower probability earthquake (2,475-year return period) events, the tracks are expected to experience severe damage resulting in reconstruction and indefinite disruptions to track service. The seismic hazard referenced in AREMA is the National Building Code of Canada and the latest version (2020) was referenced to estimate the seismic hazard at the site. It is generally accepted that loose to compact and saturated non-plastic silts and sands are prone to liquefaction or strain softening during cyclic loading caused by earthquakes. Once liquefaction has been triggered, it is expected that significant permanent vertical and horizontal movements may occur, however, the analysis indicates that liquefaction is triggered under both the 475- and 2475-year return period seismic events. The resulting displacements are relatively typical for the Fraser Delta, except near the foreshore where larger movements are expected. To minimize the potential for large-scale movements near the foreshore, densification is proposed at an offset from the top of bank as a protective measure.

The tracks and pavement structures proposed for the site improvements will be conventional with typical aggregates and compaction methods used for construction. The site is generally surfaced with a layer of granular soil which supports these improvements from a geotechnical perspective. Excavations are expected to be relatively minimal and above the groundwater table. Ground improvement is only proposed near the top of bank and would be constructed using full-displacement methods, meaning that no soil is removed from the ground as part of the densification process. Large gravel is introduced into the ground by a vibrating mandrel advanced to the design depth, supported with a crane or other hydraulic equipment.

The Geotechnical Report is in Appendix A6.

5.5 STORMWATER POLLUTION PREVENTION PLAN

A Stormwater Pollution Prevention Plan (SPPP) was prepared in accordance with the VFPA's SPPP guidelines (VFPA 2015). The SPPP describes potential effects of Project operations on stormwater quantity and quality and addresses the risk of stormwater pollution. It has been developed to support permanent post-development stormwater pollution prevention.

The Stormwater Pollution Prevention Plan is in Appendix A7.

5.6 TRAFFIC IMPACT ASSESSMENT

A Traffic Impact Assessment was conducted to evaluate the effects of the Project on the surrounding road network, in particular the implementation of the new truck gates and queuing lanes. An analysis of existing and future traffic volumes and gate operations was completed using SimTraffic based on network traffic surveys and entrance gate numbers. The horizons analyzed were present-day 2023, future operations in 2026 and a future year of 2031. The expansion is not expected to generate any additional truck trips over and above generalized background traffic growth rates. A minimal amount of traffic (less than 100 daily trips) will be rerouted within the network due to the warehouse relocation. The analysis demonstrated a significant improvement in the network post-construction with queuing from the container yard entrance reduced by 80%.

The Traffic Impact Assessment is in Appendix A8.

5.7 RAIL OPERATIONS

The Rail Operating Plan outlines the proposed onsite operation and SRY service to the Project site with an initially planned 4,000 rail cars per year. The Project site will see two types of rail traffic: container and grain transload, with both laden and unladen containers arriving and departing the Project site and loaded grain cars being unloaded onto mobile conveyors and then fed into tipped empty containers for further distribution. The total anticipated number of cars per working day will be 16 to 20. The cars will be delivered during the graveyard shift as part of existing SRY manifest assignments. No additional train journeys would be generated by the new operation. The Rail Operating Plan further summarizes the proposed railyard, proposed rail volumes and capacity and the proposed onsite operations.

The Rail Operating Plan is in Appendix A10.

5.8 NOISE STUDY

An Environmental Noise and Vibration Assessment for the proposed Project was conducted by BKL Consultants Ltd. (BKL) in compliance with the Port of Vancouver's Project & Environmental Review Guidelines – Environmental Noise Assessment (the PER Guideline).

BKL evaluated existing noise conditions by performing noise measurements at the site and in the community in Delta. The noise measurements captured various activities at the existing TDK site including truck movements, truck loading/unloading, train arrivals, processing, unloading and rail car movements.

BKL developed a Cadna/A computer noise model to assess Project noise levels using the measurement results, and information provided by TDK about expected sound sources and operating times of various activities.

BKL determined that annual average noise levels from the Project, would be well below the existing community noise levels, such that the resulting total future annual average noise levels will be the same as the existing measured noise levels and that Project-related noise would not exceed any of the PER Guideline criteria.

Since the Project will be greater than 700 m away from the closest residential receivers, potential impacts from ground-borne vibration associated with the Project are expected to be insignificant, and no quantitative study was performed.

The Environmental Noise and Vibration Assessment is in Appendix A10.

5.9 AIR ASSESSMENT

An Environmental Air Assessment of the proposed Project was conducted by Envirochem Services Inc. (Envirochem).

The assessment looked at emissions from rail, on-road and non-road vehicles and equipment and materials handling. Emissions associated with the immediate supply chain vicinity are also estimated.

Envirochem determined that while an increase in the overall emissions is expected, emission intensities (tonnes of Contaminant released/1,000 TEU) are largely projected to decrease as a result of improvements in equipment emissions and operational efficiencies associated with the Project. Increases in some contaminant categories can be attributed to the addition of a new source category (i.e., grain handling and rail). Based on the relative size and scale of TDK operations, emissions associated with the Project are not expected to significantly impact air quality in the surrounding area.

The Environmental Air Assessment is in Appendix A12.

5.10 PROJECT ENERGY INFORMATION

TDK is committed to planning for a clean, reliable future as they continue to operate their business and will be an active member in supporting the VFPAs goal of becoming one of the most energy efficient ports in the world. Currently, the Project has not been developed to a level such that specific models of transportation equipment have been identified for use for the future operation.

TDK will implement a three-pronged approach to conserving energy throughout the life cycle of the Project:

- Maintaining existing fleet of equipment and extending their usable life as long as possible to reduce waste generation, while controlling emissions as much as possible;
- Selecting new or replacement equipment using an evaluation criterion that places significant weighting on energy efficiency; low-carbon scores for production, implementation, operation and end-of-life disposal; as well as cost, productivity and operational suitability; and
- Installing infrastructure to support the implementation of electric and low-carbon equipment as well as measuring equipment to monitor energy use and implementation of equipment automation where feasible to optimize energy efficiency in day-to-day operations and control outputs.

5.10.1 Existing Fleet of Equipment

TDK will phase out older high-emission equipment as new technologies become available. However, in the meantime, while the equipment remains operational, TDK will maintain their existing fleet of equipment to extend its usable life through:

- A preventative maintenance program that will be implemented such that all existing vehicles and equipment be maintained to manufacturers' guidelines to maximize efficiency; and
- Using equipment for its intended purpose and within rated load capacities.

In addition to prolonging the operable life of existing equipment to reduce waste generation, TDK will manage the emissions generated by the existing equipment through the following processes below. Should it be determined that individual pieces of equipment are generating unacceptable levels of emission, they will be replaced.

- Emission control devices to be fitted on all equipment, such that equipment remains in compliance with federal, provincial, and municipal regulations and standards;
- Combustion engines will be maintained and inspected regularly and thoroughly. If any elements are showing excessive signs of wear or malfunction and need to be promptly replaced, TDK will carefully consider replacing unit with electric equivalent before undertaking repairs; and
- An anti-idling policy will be applied on site; vehicle and equipment idling time will be restricted. Employees must turn off vehicles or heavy equipment when not in use unless idling is necessary for the machine to operate.

5.10.2 Choosing Future Equipment Strategy

When evaluating what pieces of equipment to purchase going forward, TDK will consider the following criteria in the decision-making process:

- Operating energy efficiency;
- Carbon emission scores for production, implementation, operation and end-of-life disposal
- Estimated length of life;
- Safety ratings;
- Cost of investing in the solution;
- Operating costs over the expected life cycle of the site;
- Logistics of delivering solution to the site;
- Fit for purpose; and
- Maintenance requirements.

Where there are both diesel/propane/gasoline options and electric options for equipment, higher priority will be given to the electric equivalents. Battery run vehicles will be gradually phased into operations to facilitate the adoption of zero emission equipment by 2050.

Electrification of any new purchased equipment and emissions standards criteria is an intention that will be noted in a written statement. We believe this can be addressed in a permit condition considering the level of design.

For example, the following products would be considered in the future by TDK:

- Reefer storage is expected to account for a high portion of the energy consumption at TDK. A number of options are available in the market that can provide possible solutions to reducing energy for the overall site:
    - CMA CGM and Helion has developed a mobile device that can power reefer containers using a hydrogen-powered generator set.
    - ArcticStore will soon offer reefer containers with solar cells mounted on the roof. Power will be generated during the daylight hours to power the reefer.
    - Energie Konzepte also produce solar powered reefers with an energy storage system for usage even without sunlight. The outer walls of these containers also use a double coating thermal insulation system to further reduce heat transfer.
- Light Emitting Diode (LED) Lightbulbs (TLC-LED-900 [890 MAX]) have been specified for the high mast lighting onsite.
- Zero Emission Loaded Container Handlers were introduced into that market in 2019. The technology has been improving ever since and will be considered for future implementation.
    - Taylor Forklifts now have 4 models of electric lift trucks, 3 of which have a capacity of 90,000 lbs., enabling the transportation of loaded containers.
    - Hyster aim to have models available in the near future.
- Electric Reach Stackers are now on the market:
    - The Kalmar ERG420-450 was the first electric reach stacker available and is the current market leader.
    - The Sany SRSC45E is another new entrant in the market with a 45 t capacity.
    - Hyster aim to have models available in the near future.
- Mobile conveyors with electric drive trains are becoming more and more common, brands available include:
    - Brandt;
    - Batco;
    - Volt; and
    - Hutchinson-Mayrath.

5.10.3 Infrastructure Supporting Energy Conservation

To support the implementation of energy-efficient equipment, provisions may need to be in place beforehand, such as power infrastructure which would support associated charging stations, energy monitoring and emission measuring systems, and other ancillary infrastructure. As the detailed design of the TDK expansion is developed, these items will be considered and allowed for within the design. We believe this can be addressed in a permit condition considering the level of design.

For example, the following would be considered by TDK for implementation:

- The Reefer Runner by Identec Solutions provides remote reefer monitoring of each individual reefer's temperature, humidity and energy and provides analysis on the energy consumption.
- Installing roof shades has been shown to reduce the effects of solar radiation as a heat source on reefers and may be considered as a potential design to be implemented.

5.11 ARCHAEOLOGICAL POTENTIAL PRELIMINARY ASSESSMENT

The Project site is on relatively level ground on a mixture of fill and native soil. In the 1950s, the Project site and eastern area of the island were filled to facilitate the development of an industrial park, and much of this fill was redeposited Fraser River Dredge sediment up to 3 m in depth (Terra Archaeology 2022). It was reported that post-1970s, sand and gravel fill were added to some portions of the foreshore to extend the shoreline between 10 and 50 m from the rail line (Terra Archaeology 2022).

The footprint of ground alteration works is 6 hectares, and the average depth of the excavation is ~1 m, however, deeper excavations are required for utility installations. Due to the potential for ground disturbance to alter potential undocumented archaeological sites, an Archaeological Overview Assessment (AOA) was conducted (see Section 5.11.1).

No water wells were identified within 100 m of the Project site (BC CDC 2022b).

5.11.1 Archaeological Overview Assessment

An AOA of the Project site was conducted by Terra Archaeology. The AOA consisted of a desk-based review of the Project site, and archaeological potential was assessed based on proximity to waterways (both past and present) and to documented archaeological sites.

The AOA indicated that one (1) known protected archaeological site (DhRr-73) is located at the southwest corner of the Project site and two (2) areas of archaeological potential were identified which cover the entire Project site.

Terra Archaeology determined that multiple overlapping types of potential are present at the Project site and made four recommendations for management as a result of the AOA:

- Avoidance of the protected site (DhRr-73). If ground disturbance is necessary within the boundaries of DhRr-73, the area should be surveyed in advance and works monitored by a professional archaeologist.

- Complete avoidance of the contemporary foreshore/intertidal area is planned. However, If avoidance is not practical, a pre-construction Archaeological Impact Assessment (AIA) along the contemporary shoreline and exposed intertidal area, are recommended.
- Introduced sediments/dredge fills have the potential to contain disturbed and displaced archaeological materials, which are protected by the *Heritage Conservation Act*. The disturbance of fills will be monitored by archaeologists during the initial stages of works to determine the risk of impacted imported archaeological materials.
- Ancient land surfaces buried beneath fills have the potential for intact deposits, including wet site deposits. An AIA in the form of archaeological monitoring concurrent with ground-altering activities will occur anywhere in the Project site where disturbances would extend beyond the depth of fill.

The Archaeological Overview Assessment report is in Appendix A12.

5.12 FLOOD PROTECTION

A desktop assessment was undertaken by Mott MacDonald to identify the potential vulnerabilities of the Project site in relation to flood risk and to understand how the commodities stored onsite and day-to-day operations would be affected in the event of flooding. Using information publicly provided by the Fraser Basin Council (FBC), the Project site was reviewed against varying floods for the base case, 2050 and 2100 horizons. While the risk of flooding on the baseline scenario was minimal, the risk increased in future year scenarios accounting for potential climate change. The northeast quadrant of the Project site is at highest risk for flooding. In the event of site-wide flooding, the contents of ground level containers are most at risk, along with electrical failures, vehicles and fuel tanks being swept away and rail infrastructure being damaged.

The Flood Vulnerability Assessment Memo is in Appendix A13.

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APPENDICES

Appendix A1

Contact List

Appendix A2

Draft Construction Environmental Management Plan

Appendix A3

Plans

Appendix A4

Hazardous Materials Inspection Report

Appendix A5

Fire Safety Plan

Appendix A6

Geotechnical Report

Appendix A7

Stormwater Pollution Prevention Plan

Appendix A8

Traffic Impact Assessment

Appendix A9

Rail Operations Study

Appendix A10

Noise Study

Appendix A11

Air Assessment

Appendix A12

Archaeological Overview Assessment

Appendix A13

Flood Protection