City of Richmond

# Report to Committee

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|---|---|---|---|
| **To:** | General Purposes Committee | **Date:** | August 30, 2016 |
| **From:** | John Irving, P.Eng. MPA<br>Director, Engineering | **File:** | 10-6060-01/2016-Vol 01 |
| **Re:** | **Vancouver Airport Fuel Delivery Project - Environmental Assessment Certificate Amendment Update** | | |

## Staff Recommendation

That the comments regarding the Vancouver Airport Fuel Facility Corporation's application for amendment to the approved Vancouver Airport Fuel Delivery Project's Environmental Assessment Certificate identified in the staff report titled "Vancouver Airport Fuel Delivery Project - Environmental Assessment Certificate Amendment Update" dated August 30, 2016, from the Director, Engineering, be endorsed for submission to the BC Environmental Assessment Office.

John Irving, P.Eng. MPA
Director, Engineering
(604-276-4140)

Att. 1

| REPORT CONCURRENCE | | |
|---|---|---|
| **ROUTED TO:** | **CONCURRENCE** | **CONCURRENCE OF GENERAL MANAGER** |
| Parks Services | ☑ | |
| Fire Rescue | ☑ | |
| Development Applications | ☑ | |
| Transportation | ☑ | |
| **REVIEWED BY STAFF REPORT / AGENDA REVIEW SUBCOMMITTEE** | **INITIALS:** | **APPROVED BY CAO** (Acting) |

## Staff Report

### Origin

On December 12, 2013 the Minister of Environment and the Minister of Natural Gas Development issued a conditional Environmental Assessment Certificate for the Vancouver Airport Fuel Delivery (VAFD) project. On April 18, 2016, the Vancouver Airport Fuel Facilities Corporation (VAFFC) submitted an application to the BC Environmental Assessment Office to amend the Environmental Assessment Certificate. On May 13, 2016, the City provided comments to the Environmental Assessment Office on the amendment application as directed by Council at the regular Council meeting held on Monday, May 9, 2016. The Environmental Assessment Office has distributed a draft Amendment Assessment Report and draft Section 19 Certificate Amendment for the VAFD (Attachment 1) for final comments from the Working Group. The Environmental Assessment Office has set a deadline for September 6, 2016) for comment on the draft material.. This report recommends comments to be sent to the Environmental Assessment Office for Council's consideration. An update on the VAFD Oil and Gas Commission Permit process is being presented in a separate report on the same Committee agenda.

### Analysis

At the regular Richmond City Council meeting held on Monday, May 9, 2016, City Council resolved to respond to the BC Environmental Assessment Office's invitation to comment on the Vancouver Airport Fuel Facilities Corporation's application for amendment to the approved Vancouver Airport Fuel Delivery Project and the comments were sent on May 13, 2016.

After considering stakeholder comments, the Environmental Assessment Office drafted an Amendment Assessment Report and a Section 19 Certificate Amendment (Attachment 1) for the VAFD amendment application and circulated these documents to the project Working Group for final comments. The report and Section 19 Certificate add additional corridors for potential pipeline installation but do not remove any that are in the original Environmental Assessment Certificate. They also allow the increase in pipeline diameter from nominal 300 mm to nominal 350 mm.

The following reviews the City's comments in order and the response to those comments in the Amendment Assessment Report and the Section 19 Certificate Amendment.

Comment 1

*That the City continues to oppose the development of the VAFD project in its current configuration and that options to deliver jet fuel directly to Sea Island be considered prior to implementation of the VAFD project.*

There is no reference to the City's objection in either the Amendment Assessment Report or the Section 19 Certificate Amendment.

Comment 2

*That the pipeline route in North Richmond be limited to the Bridgeport Road option due to the significant negative impacts to the future development of North Richmond inherent in the Bridgeport Trail and River Road options.*

The Amendment Assessment Report indicates that the City of Richmond has a preference for the Bridgeport Road option over the Bridgeport Trail and River Road options and includes Bridgeport as a potential pipeline corridor. However, it does not limit the pipeline corridor to Bridgeport Road and will continue to allow pipeline installation on the Bridgeport Trail or River Road at the discretion of the VAFFC.

Comment 3

*That pipelines constructed in unopened municipal road dedications be constructed in a manner that does not impact the City's ability to build roads on these dedications in the future.*

The Amendment Assessment Report does not explicitly indicate that the pipeline must be built in a manner that does not impact the City's ability to build roads on its unopened road dedications.

Comment 4

*That the VAFD installations and pipeline be limited to supplying jet fuel to YVR.*

There is no reference to limiting the VAFD installations and pipeline to supplying jet fuel to YVR in either the Amendment Assessment Report or the Section 19 Certificate Amendment. The original Environmental Assessment Certificate limits the VAFD to transferring jet fuel, but it does not preclude supplying jet fuel outside of Sea Island.

Comment 5

*Request that the Federal and Provincial governments change the process to include more than one option during the environmental assessment process.*

This comment is not addressed in either the Amendment Assessment Report or the Section 19 Certificate Amendment.

Further Comments

Staff recommends sending the City's five comments on the VAFD Environmental Assessment Certificate Amendment to the Environmental Assessment Office a second time given that the comments were not adequately addressed in the Amendment Assessment Report or the Section 19 Certificate Amendment.

**Financial Impact**

None

**Conclusion**

The VAFFC was issued a conditional EAC in December 2013 that identified overall VAFD system configuration and pipeline route. On April 18, 2016, the VAFFC applied to the BCEAO for an amendment to the approved EAC to include additional pipeline routes in North Richmond, South Richmond, and Sea Island as well as an increase in pipeline diameter from 300 mm to 350 mm. On May 13, 2016, the City provided comments to the Environmental Assessment Office on the amendment application. The Environmental Assessment Office reviewed stakeholder comments and drafted an Amendment Assessment Report and a Section 19 Certificate Amendment for the VAFD project. The City's concerns are not adequately represented in these documents and Staff recommends that the City's concerns be sent to the Environmental Assessment Office again in response to their request for final comments on the amendment.

Lloyd Bie, P.Eng.
Manager, Engineering Planning
(604-276-4075)

LB:lb

Att. 1: Environmental Assessment Office's draft Assessment of an Application for Amendment, Vancouver Airport Fuel Delivery Project, and Section 19 Certificate Amendment for the VAFD, 2016.

EAO | Environmental Assessment Office

# EAO's Assessment of an Application for Amendment

## *Vancouver Airport Fuel Delivery Project, EA Certificate # E13-02*

**Requested by:**

**Vancouver Airport Fuel Facilities Corporation**

**[Date], 2016 - *DRAFT***

*Pursuant to section 19 of the Environmental Assessment Act, S.B.C. 2002, c.43*

# 1.0 OVERVIEW OF PROPOSED AMENDMENT

On December 11, 2013, the Vancouver Airport Fuel Facilities Corporation (the Holder) was issued an Environmental Assessment Certificate # E13-02 (Certificate) under the *Environmental Assessment Act* (Act) for the Vancouver Airport Fuel Delivery Project (the Project). The Project consists of the construction and operation of a new aviation fuel delivery system to serve the airlines at Vancouver International Airport (YVR). The Project includes a marine terminal and fuel receiving facility at existing industrial sites on the South Arm of the Fraser River and an underground fuel pipeline of approximately 14 kilometers in length with a nominal diameter of 300 millimeters (mm) (outside diameter 323.9 mm or NPS 12) that runs between the fuel receiving facility and YVR.

On April 15, 2016, the Holder submitted an amendment application to the Environmental Assessment Office (EAO). The application requested an amendment to increase the delivery pipeline diamater and to revise the location of the delivery pipeline as certified in the existing Certified Project Description (CPD), as detailed in Appendix A of Schedule A of the Certificate. The amendment requests are made as a result of the Holder's most recent design work, and consultation with stakeholders adjacent to the certified pipeline corridor (CPC).

*Change in Nominal Maximum Pipeline Diameter:*
The Holder proposed an increase in the maximum nominal pipeline diameter from 300 mm (outside diameter 323.9 mm), to 350 mm (outside diameter 355.6 mm or NPS 14). A pipeline with a nominal diameter of up to 350 mm would move the same volume of fuel but at a lower pressure. This would reduce the construction and maintenance costs, as well as reduce power consumption by 754,000 kWh, resulting in a 34% annual energy savings.

*Change in Pipeline Corridor Options in South Richmond:*
Design changes in the configuration and precise footprint of the fuel receiving facility and other neighbouring developments requires a change to the CPC in South Richmond. The CPD currently certifies the delivery pipeline as exiting the north side of the fuel receiving facility and crossing under the Canadian National Railway (CNR) property to reach the Francis Road corridor. The Holder now proposes that the delivery pipeline follow one of two options (Figure 2 of the amendment application); one of which would be selected by the Holder for final routing through the BC Oil and Gas Commission permitting process and requirements:

1. Exit the fuel receiving facility at the north side of the Port of Vancouver (PV) property to reach the Francis Road corridor (as currently certified in the CPD); or
2. Exit the fuel receiving facility at the south west corner of the PV property, continue west on the Holder's property and then north along the Savage Road corridor.

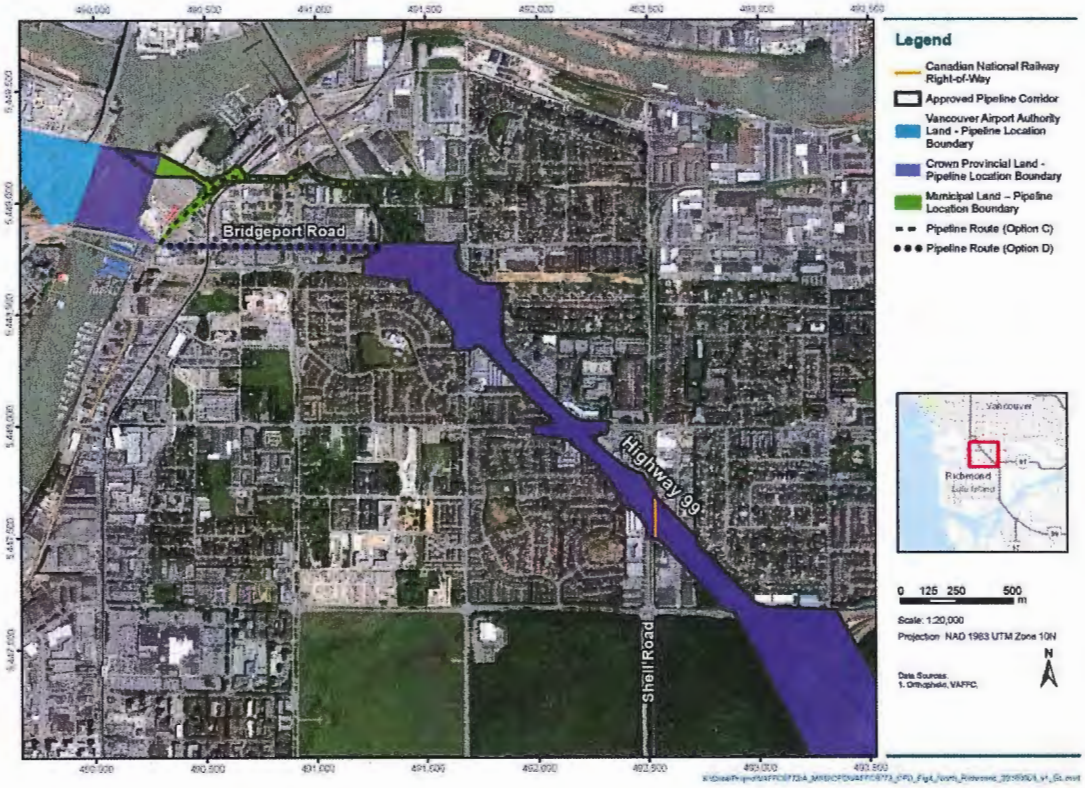
If the Savage Road corridor is selected, it is expected that the pipeline in this corridor would be installed through a directional drilling technique, thereby minimizing potential impacts.

*Change in Pipeline Corridor Options in North Richmond:*
Since the Certificate was issued, the City of Richmond has indicated a strong preference for the Holder to use the Bridgeport Road corridor instead of the CPC in the CPD. Support for the corridor option on

Bridgeport Road is provided by the Jingon International Development Group who have expressed concern about the west end of the CPC where the corridor initates the crossing of the Moray Channel.

The Holder proposes that the pipeline corridor leave the Highway 99 right-of-way, and follow one of three options as depicted in Figure 4 below. One of these options would be selected by the Holder for final routing through the BC Oil and Gas Commission permitting process and requirements.

**Figure 4 Pipeline Corridor in North Richmond.**




*Change of Pipeline Corridor on Vancouver Airport Authority Lands:*
Due to current and future developments, Vancouver Airport Authority (VAA) has requested that the pipeline corridor be located in the region north of Bridgeport Road, and south of Templeton Station Road prior to turning north toward the existing Fuel Storage Facility (Figure 5 of amendment application).

## 2.0 AMENDMENT REVIEW PROCESS

In January 2016, EAO initiated contact with key federal, provincial and municipal government agencies and Aboriginal groups to establish a Working Group to provide assistance with the review of the amendment application.

EAO accepted the amendment application for review on April 18, 2016, and determined the following approach to consultation:

- The proposed amendment did not require an in-depth consultation with the public due to the inclusion of these pipeline amendments in the application of the environmental assessment (EA) and engagement by the public on these route amendments during the EA. Accordingly, EAO required the Holder to host two public information sessions in the City of Richmond to share information (May 14 and May 25, 2016) and to seek public comment. In addition, the Holder was directed to consult all landowners and tenure holders overlapping or located directly adjacent to the amended pipeline corridor through information mailouts and to hold a 21 day public comment period from May 20th to June 4th, 2016; and
- EAO's preliminary view was that the proposed amendment was unlikely to change the potential effects on Aboriginal Interests (rights and title) identified in the EA and therefore the potential impact on Aboriginal Interests was viewed as low to moderate. As a result, the Holder was required to consult with the Aboriginal groups who wished to meet to identify concerns and potential impacts of the amendment to Aboriginal Interests and to identify measures to accommodate any such impacts.

The amendment application was provided to the Working Group on April 18, 2016 for three weeks to review and comment. EAO organized an introductory Working Group teleconference meeting on April 20, 2016, in order to provide an overview of the amendment process and for the Holder to provide an overview of the amendment application and to respond to initial questions.

The Holder provided responses to all Working Group comments. The Working Group was invited to review these responses and contact EAO if they had any questions or concerns. The Working Group review and comment on the amendment application was completed in July 2016.

## 3.0 SUMMARY OF ISSUES AND EFFECTS

The Holder's amendment application provided an overview of the potential changes to the effects assessment resulting from the increase in pipeline diameter and route alternatives and assesses whether adverse effects have changed. No key issues related to the effects of the proposed amendment were raised by the public or Working Group. EAO concurs with the Holder's conclusion that potential residual adverse effects and cumulative effects would not change as a result of the increased pipeline diameter or pipeline route alternatives. Consequently, no significant adverse effects are identified for the amendment application.

## 4.0 ABORIGINAL CONSULTATION

In January 2016, EAO sent letters to potentially affected Aboriginal groups outlining the proposed amendment assessment process, associated timelines, and EAO's approach to consultation. The letters provided a summary of EAO's initial assessment of each Aboriginal group's strength of claim. The assessment of strength of claim was based on consultation conducted during the EA for the Project, the initial assessment of Aboriginal Interests in relation to the proposed George Massey Tunnel Replacement Project located in the same vicinity, and the potential impacts of the proposed amendment on asserted Aboriginal Interests.

EAO consulted with the following Aboriginal groups in the review of the proposed amendment application:

- Cowichan Tribes
- Halalt First Nation
- Kwantlen First Nation
- Lake Cowichan First Nation
- Lyackson First Nation
- Musqueam Indian Band
- Penelakut Tribe
- Semiahmoo First Nation
- Stz'uminus First Nation
- Tsawwassen First Nation
- Tsleil-Waututh Nation

EAO offered capacity funding and requested comments from these Aboriginal groups. In addition, EAO offered to meet to discuss the relevance and adequacy of mitigation measures and commitments of the Certificate as related to the amendment application. Capacity funding was accepted by Cowichan Tribes, Kwantlen First Nation, and Tsleil-Waututh Nation. Comments on the amendment application were received by Musqueam Indian Band and Tsleil-Waututh Nation.

During the amendment review, EAO also provided Hwiltsum First Nation, Katzie First Nation, Kwikwetlem First Nation, Qayqayt First Nation, Squamish Nation, and Tsawout First Nation with notification of the application, key milestones, and the EAO's initial assessment of each Aboriginal group's strength of claim.

The following table summarizes the key concerns raised by Aboriginal groups and the Holder's responses. The Holder has committed to continued engagement and consultation with participating Aboriginal groups who expressed an interest in doing so during the review process. The Holder also consulted on the Project and provided opportunities for Aboriginal groups to ask questions and provide feedback.

Table 1. Summary of Concerns and Responses

| Summary of Key Concerns | EAO's Summary of the Holder's Response |
|---|---|
| **Tsleil-Waututh Nation** | |
| Concern related to the footprint of the new system and rationale to change the pumping system, and GHG emissions resulting from the new diameter. | The original scope did not include the use of multi-stage pumps, however, detailed engineering design stage identified that a marginal increase in the nominal diameter of the delivery pipeline could avoid the need for costly, more noisy and power intensive pumps. The physical footprint of the pump system and pipeline would be unchanged.<br>A combination of factors contributed to this change in pipeline diameter, specifically operational efficiency, and the long-term benefits from using a pump system that will have less operational and maintenance costs and energy savings.<br>The Holder estimated there would be fewer GHG emissions because of less power consumption, although neither system would be a significant source of GHG emissions. There will be an overall decrease in regional GHG emissions because of the avoided emissions from the existing tanker truck deliveries and existing multi-stage delivery system. |
| **Musqueam Indian Band** | |
| Musqueam Indian Band expressed concerns related to protection of the Fraser fisheries. | Although the concern expressed was outside of the scope of the amendment application, the Holder explained that it responded to this concern during the original EA by undertaking additional study of the risks and then designing and testing specific spill prevention and response measures to mitigate those risks. The Holder also committed to notice protocols to advise Musqueam Indian Band and other interested Aboriginal groups of vessel deliveries. |

Based on the issues raised and the Holder's responses, EAO is satisfied that the issues were adequately addressed.

## 5.0 CONCLUSIONS

Based on:

- Information contained in the Holder's amendment application;
- The Holder's and EAO's consultation with the Aboriginal groups, federal, provincial and local government agencies, and the Holder's commitment to ongoing consultation;
- Comments on the amendment application by Aboriginal groups, federal, provincial agencies, as members of EAO's Working Group, and the Holder's and EAO's responses to these comments; and
- Issues raised by Aboriginal groups regarding potential impacts of the amendment application and the Holder's responses and actions to address these issues.

EAO is satisfied that:

- The review has adequately identified and assessed the potential changes to the conclusions about potential adverse environmental, economic, social, heritage and health effects of the Project resulting from the proposed amendment;
- Consultation with Aboriginal groups and the Working Group on the proposed amendment application has been adequately carried out by the Holder and will, as necessary, be ongoing;

- Issues identified by the Working Group, which were within the scope of the assessment of the proposed amendment application, were adequately and reasonably addressed by the Holder;
- Practical means have been identified to prevent or reduce any potential adverse environmental, social, economic, heritage or health effects of the proposed amendment such that no significant adverse effect is predicted or expected;
- The potential for adverse effects on Aboriginal Interests has been avoided, minimized or otherwise accommodated to an acceptable level; and
- The provincial Crown has fulfilled its obligations for consultation and accommodation to Aboriginal groups relating to the issuance of an amendment to EAC # E13-02.

**IN THE MATTER OF**
**THE *ENVIRONMENTAL ASSESSMENT ACT,* S.B.C. 2002, C. 43 (ACT)**

**AND**

**IN THE MATTER OF**
**ENVIRONMENTAL ASSESSMENT CERTIFICATE # E13-02 (CERTIFICATE)**
**ISSUED TO**
**VANCOUVER AIRPORT FUEL FACILITIES CORPORATION (HOLDER)**
**FOR THE**
**VANCOUVER AIRPORT FUEL DELIVERY PROJECT (PROJECT)**

# AMENDMENT #1 TO THE CERTIFICATE # E13-02

**WHEREAS:**

A. The Certificate was issued to the Holder on December 11, 2013;

B. The Holder is authorized to construct a delivery pipeline with a maximum length of 16 km and a maximum diameter of 300 mm (323.9 mm outside diameter or NPS 12) to deliver aviation fuel from the fuel receiving facility to facilities at Vancouver International Airport (YVR);

C. On April 15, 2016, the Holder applied to the Environmental Assessment Office (EAO), pursuant to section 19(1) of the Act to amend its Certificate to increase the delivery pipeline diameter and to revise the location of the delivery pipeline as certified in the existing Certified Pipeline Corridor;

D. Notice of the application to amend the Certificate (application) and an opportunity to provide comments was provided to the Working Group, consisting of representatives of federal, provincial and local governments, and the following Aboriginal groups: Cowichan Tribes, Halalt, Kwantlen Nation, Lake Cowichan, Lyackson, Musqueam Indian Band, Penelakut Tribe, Semiahmoo Nation, Stz'uminus, Tsawwassen Nation and Tsleil-Waututh Nation;

E. Notice of the application and key project milestones was sent to Hwlitsum Nation, Katzie Nation, Kwikwetlem Nation, Qayqayt Nation, Squamish Nation, and Tsawout Nation; and

F. The Executive Director has delegated his power under section 19(3) and (4) of the Act to the undersigned, and the undersigned has considered the application.

**NOW THEREFORE:**

I amend Schedule A of the Certificate # E13-02 to accommodate the following changes:

1. Section 4, No. 2 is rescinded and replaced with:

   A delivery pipeline with a maximum length of 16 kilometres and a maximum nominal diameter of 350 millimetres (355.6 mm outside diameter or NPS 14).

2. Section 4.1.2 Delivery Pipeline is rescinded and replaced with:

   4.1.2 Delivery Pipeline

   The delivery pipeline must be located within the corridor route described below and shown on Figures 2 to 7:

   - Marine Terminal and Fuel Receiving Facility Property Location and Pipeline Corridor in South Richmond (Figure 2):
     - Exiting the Vancouver Fraser Port Authority Federal land at the north side of the property and crossing under a Canadian National Railway right-of-way to reach the Francis Road corridor; or
     - Exiting the Vancouver Fraser Port Authority Federal land at the south west corner of the property, crossing under Williams Road to the Marine Terminal site, crossing a Canadian National Railway right-of-way and continuing west on VAFFC property to reach the Savage Road corridor, crossing under Williams Road to the Savage Road corridor, and continuing north to reach the Francis Road corridor;
   - West along the Francis Road right-of-way to Highway 99. The corridor width required for locating and constructing the pipeline is the Francis Road right-of-way.

   - Pipeline Corridor in Central Richmond (Figure 3):
     - North along Highway 99 to Bridgeport Road. The corridor width required for locating and constructing the pipeline is the Highway 99 right-of-way;

   - Pipeline Corridor in North Richmond (Figure 4):
     - Continuing north on Highway 99 right-of-way and then northwest along Bridgeport Trail to Van Horne Way, southwest along Van Horne Way to Charles Street, west along Charles Street to River Road, southwest along River Road and northwest along No.3 Road to the pipeline crossing under Moray Channel. The pipeline corridor width required for locating

and constructing the pipeline is the respective widths of trail and road right-of-way's which make up this segment; or

- Continuing north on Highway 99 right-of-way and then northwest along Bridgeport Trail to Van Horne Way, southwest along Van Horne Way to Charles Street, west along Charles Street to River Road, southwest along River Road to reach Bridgeport Road, under a disused railway line corridor owned by the City of Richmond and Crown provincial land, to reach the crossing of the Moray Channel. The pipeline corridor width required for locating and constructing the pipeline is the respective widths of trail and road right-of-ways which make up this segment; or
- Turning west along the Bridgeport Road corridor, under Crown provincial land, and a disused railway line corridor owned by the City of Richmond, to reach the crossing of the Moray Channel. The pipeline corridor width required for locating and constructing the pipeline is the Bridgeport Road right-of-way.

- Pipeline Corridor on Vancouver Airport Authority Land (Figure 5):
  - Crossing under the Moray Channel to Sea Island. The crossing under the Moray Channel will begin immediately north of the Bridgeport Road bridge.
  - West then north on Sea Island to the existing fuel storage and handling facilities. The pipeline corridor will be located in the area between the north of Bridgeport Road and south of Templeton Station Road. The corridor width required for locating and constructing the pipeline is the area defined and georeferenced with coordinates as described in Section 3.4 of the amendment application and shown in Figure 5:
    - The northern boundary of this area will cross Templeton Station Road, running along the eastern boundary of the YVR employee parking lot, before turning west on Grauer Road and north along the western side of Ferguson Road toward the fuel storage and handling facilities.
    - The southern boundary of this area will turn north to run through the Arthur Laing Bridge interchange area, and west, south of the Canada Line SkyTrain, before turning north and west toward the fuel storage and handling facilities.
  - The corridor required for locating and constructing the pipeline must be located within the boundaries of property owned by the Vancouver Airport Authority, as shown on Figure 5.
  - The pipeline will terminate on airport land leased by VAFFC.

A complete delivery pipeline route is shown in Figure 6.

3. Where two or more options for the Certified Pipeline Corridor are set out in Appendix A on Figures 2 and 4, the pipeline is constructed within one of the options, not all.

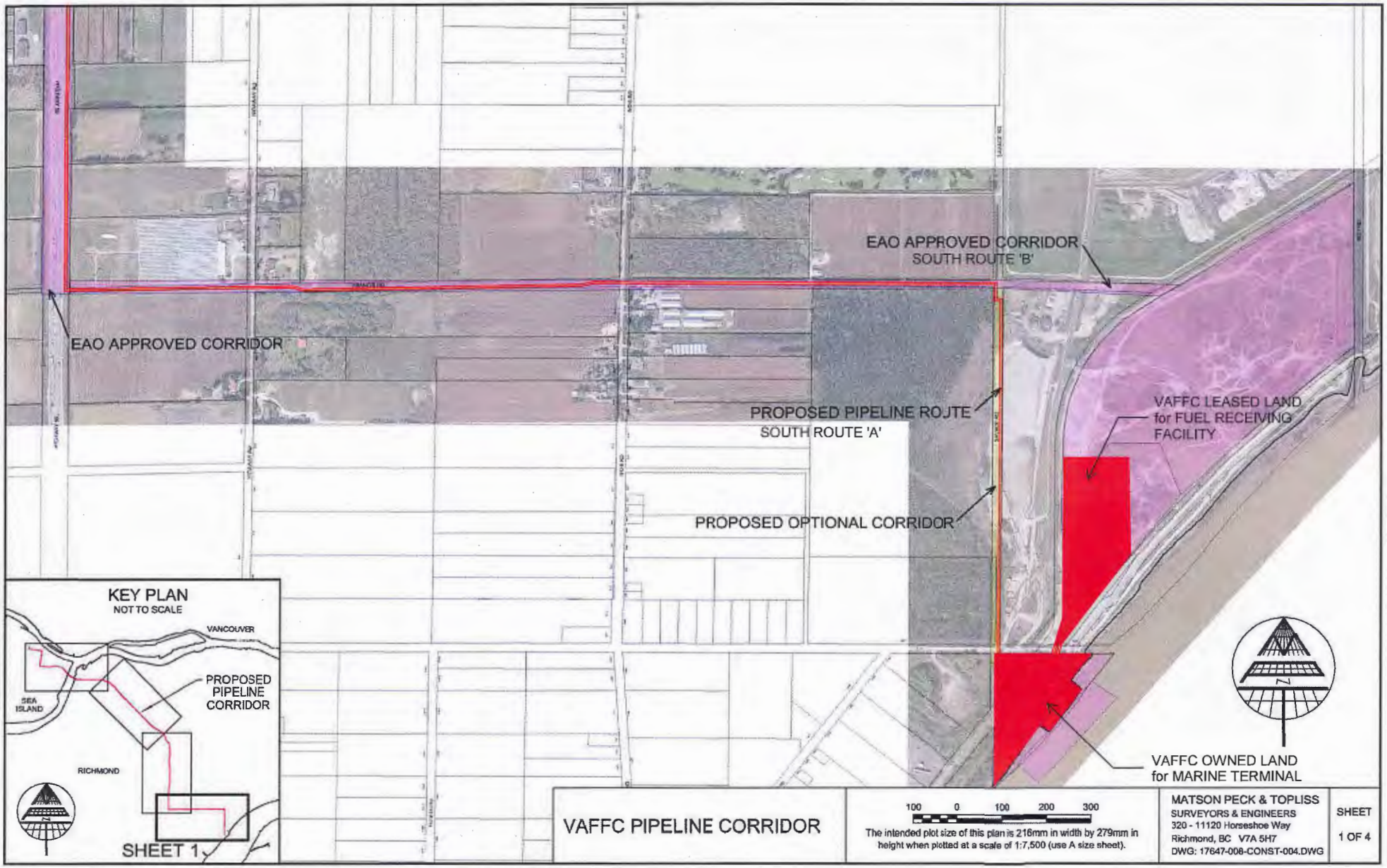
4. Figures 1 to 7 are rescinded and replaced with Figures 1 to 7 attached as Appendix A of this Order.

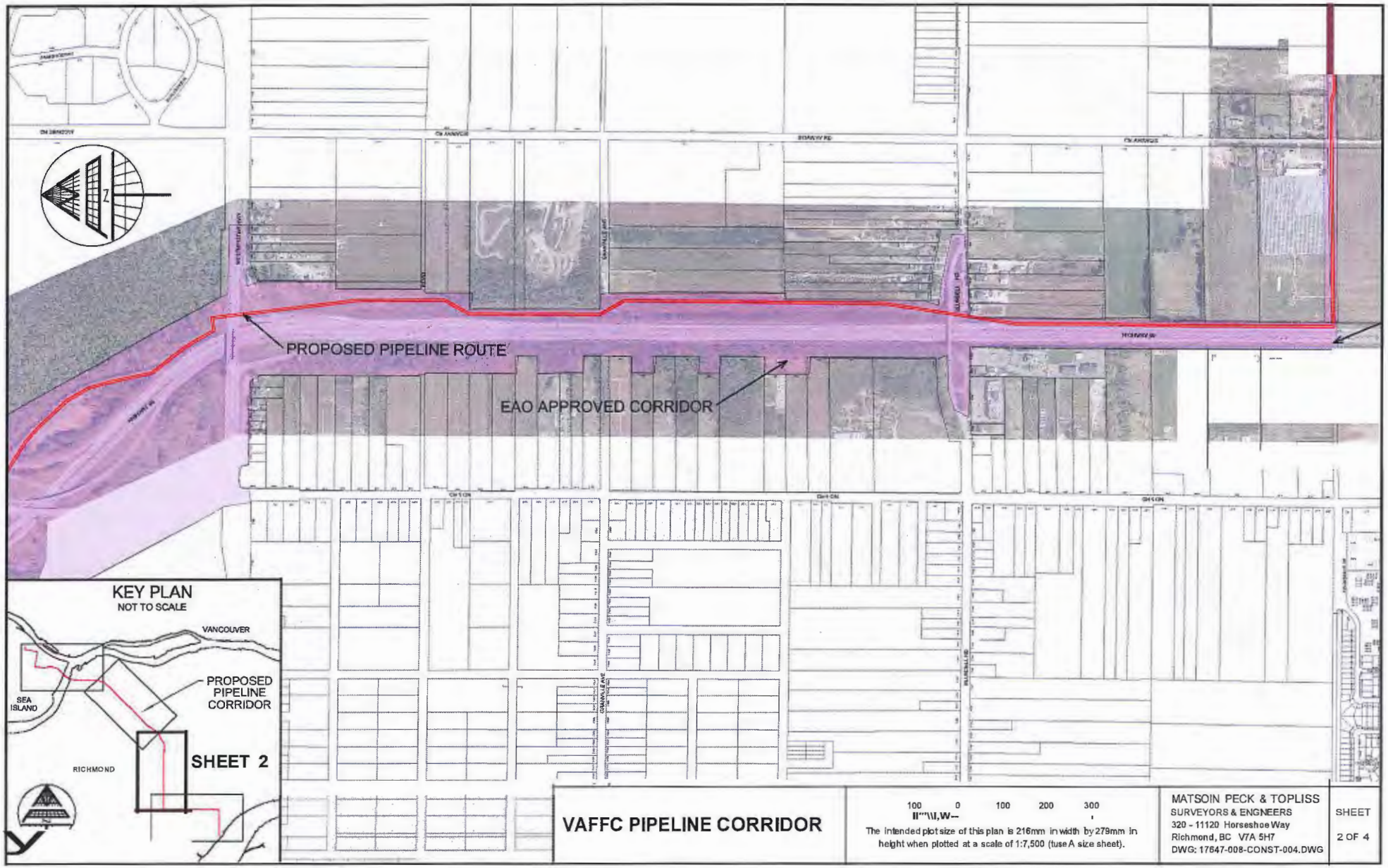
_____

Michelle Carr, Assistant Deputy Minister
Environmental Assessment Office

Issued this ____ day of _____, 2016

**APPENDIX A**
[Route Mapsheets]


EAO APPROVED CORRIDOR
SOUTH ROUTE 'B'
EAO APPROVED CORRIDOR
PROPOSED PIPELINE ROJTE
SOUTH ROUTE 'A'
PROPOSED OPTIONAL CORRIDOR
VAFFC LEASED LAND
for FUEL RECEIVING
FACILITY
VAFFC OWNED LAND
for MARINE TERMINAL
KEY PLAN
NOT TO SCALE
VANCOUVER
PROPOSED
PIPELINE
CORRIDOR
SEA
ISLAND
RICHMOND
SHEET 1
VAFFC PIPELINE CORRIDOR
100 0 100 200 300
The intended plot size of this plan is 216mm in width by 279mm in height when plotted at a scale of 1:7,500 (use A size sheet).
MATSON PECK & TOPLISS
SURVEYORS & ENGINEERS
320 - 11120 Horseshoe Way
Richmond, BC V7A 5H7
DWG: 17647-008-CONST-004.DWG
SHEET
1 OF 4



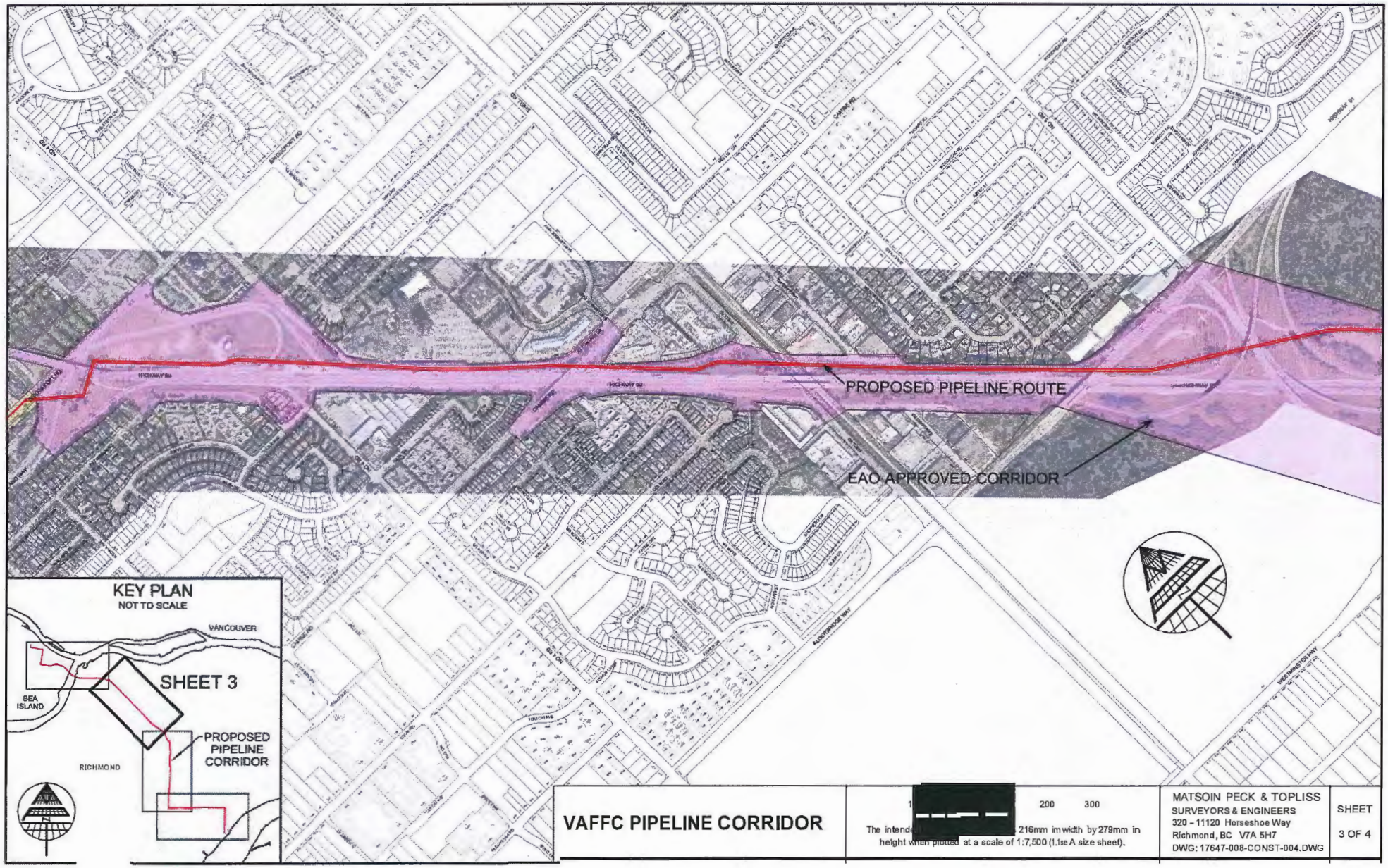

**VAFFC PIPELINE CORRIDOR**

100 0 100 200 300

The intended plot size of this plan is 216mm in width by 279mm in height when plotted at a scale of 1:7,500 (use A size sheet).

MATSOIN PECK & TOPLISS
SURVEYORS & ENGINEERS
320 - 11120 Horseshoe Way
Richmond, BC V7A 5H7
DWG: 17647-008-CONST-004.DWG

SHEET 2 OF 4


PROPOSED PIPELINE ROUTE
EAO APPROVED CORRIDOR
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216mm in width by 279mm in height when plotted at a scale of 1:7,500 (11x8A size sheet).
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Richmond, BC V7A 5H7
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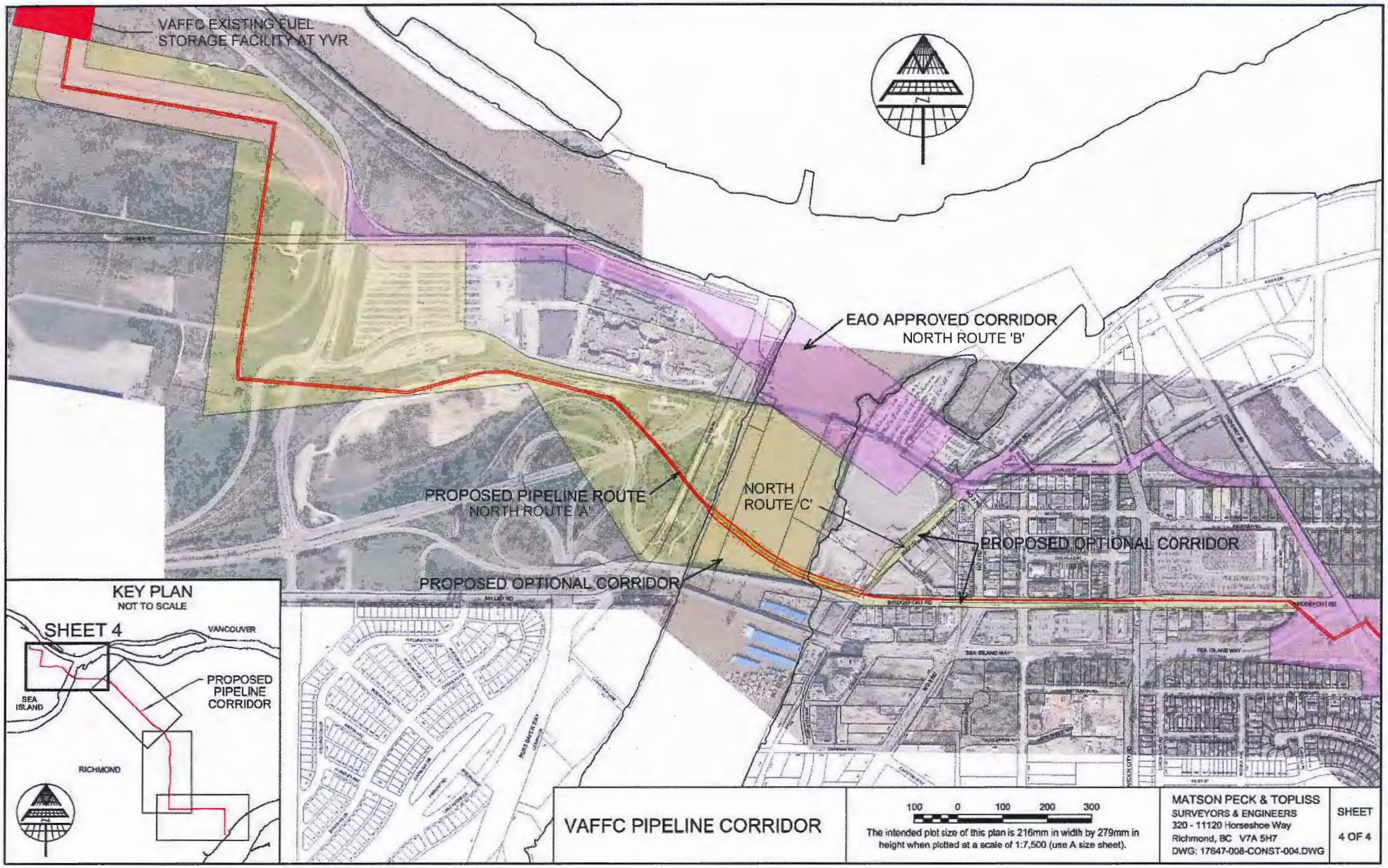
3 OF 4


VAFFC EXISTING FUEL STORAGE FACILITY AT YVR
EAO APPROVED CORRIDOR
NORTH ROUTE 'B'
PROPOSED PIPELINE ROUTE
NORTH ROUTE 'A'
NORTH
ROUTE 'C'
PROPOSED OPTIONAL CORRIDOR
PROPOSED OPTIONAL CORRIDOR
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The intended plot size of this plan is 216mm in width by 279mm in height when plotted at a scale of 1:7,500 (use A size sheet).
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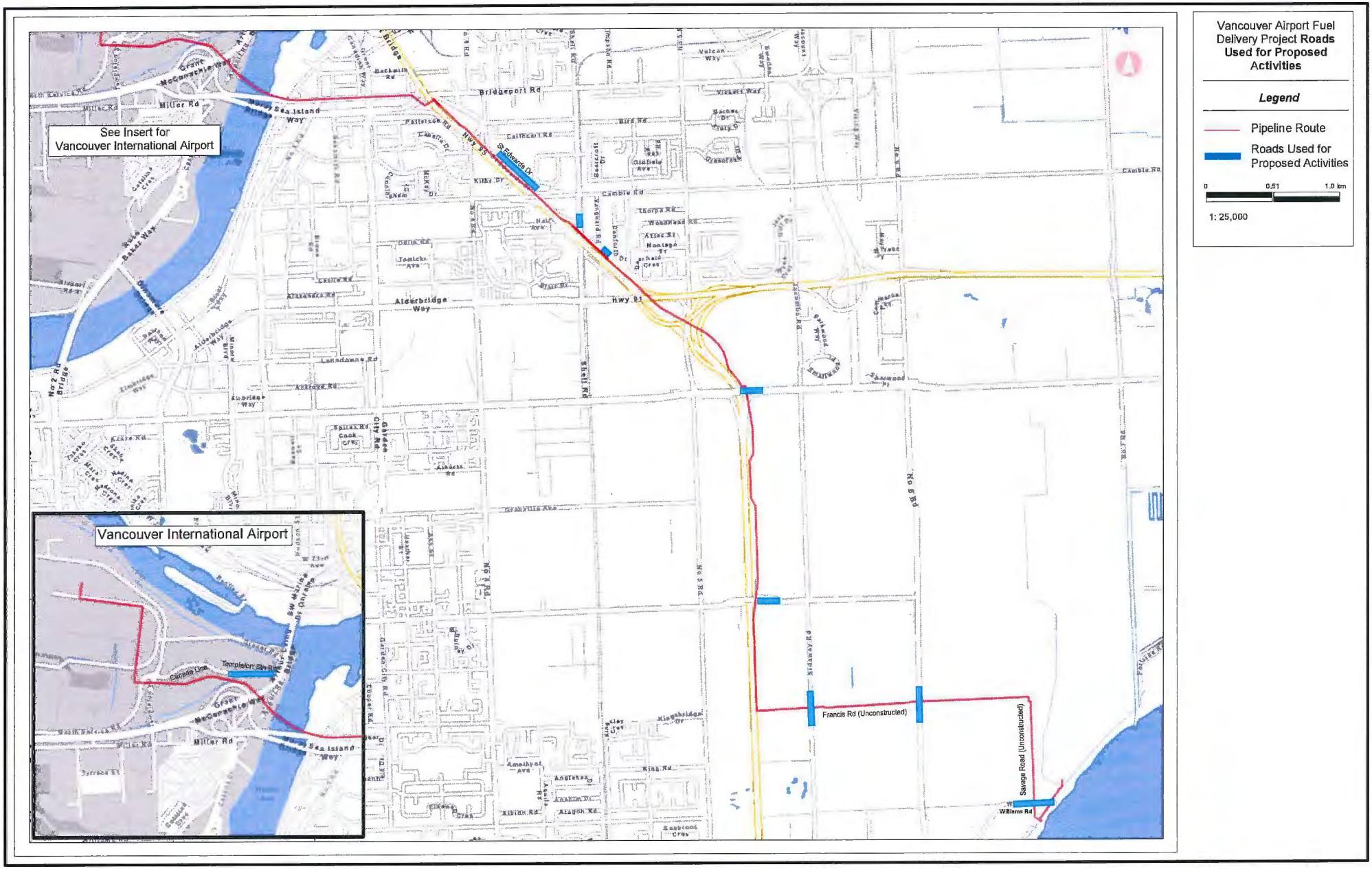
4 OF 4


See Insert for Vancouver International Airport
Vancouver International Airport
Francis Rd (Unconstructed)
Savage Road (Unconstructed)
Williams Rd
Bridgeport Rd
Alderbridge Way
Hwy 91
Sea Island Way
Miller Rd
No 5 Rd
Vancouver Airport Fuel Delivery Project Roads Used for Proposed Activities
Legend
Pipeline Route
Roads Used for Proposed Activities
0
0.51
1.0 km
1: 25,000

Vancouver Airport
Fuel Facilities Corporation
AN PSM GROUP MANAGED CORPORATION

# Vancouver Airport Fuel Delivery Project

## ABOUT THE PROJECT

Vancouver Airport Fuel Facilities Corporation (VAFFC) is constructing a new aviation fuel delivery system to serve the airlines at Vancouver International Airport (YVR). It includes a Marine Terminal and Fuel Receiving Facility at existing industrial sites on the South Arm of the Fraser River and an underground pipeline connecting the facility with YVR.

In December 2013, following more than a decade of comprehensive planning, research, review and consultation by VAFFC, the project completed a comprehensive harmonized federal/provincial environmental assessment process, with the BC Environmental Assessment Office (EAO) coordinating the review requirements of both the Canadian Environmental Assessment Act and BC Environmental Assessment Act.

The assessment included Environment Canada, Transport Canada, Health Canada, Department of Fisheries and Oceans, Canadian Coast Guard, Canadian Wildlife Service, Natural Resources Canada, Canadian Transportation Agency, Port Metro Vancouver, 12 First Nations, Metro Vancouver, City of Richmond, Corporation of Delta, BC Oil & Gas Commission, BC Utilities Commission, BC Ministry of Environment, Ministry of Community, Sport & Culture and Vancouver Airport Authority.

On a stand-alone basis, the risks of this project are few and will be managed to insignificant levels with well understood and proven risk management methods, best practices and technology. On a comparative basis, the risks of this project are far less than the current fuel delivery methods and infrastructure.

## PROJECT COMPONENTS

### Marine Terminal

The new Marine Terminal will be located on the north shore of the south arm of the Fraser River, at one of the widest and deepest sections of the river. An upgrade of an existing wharf, in an area that is already zoned for heavy industrial use, will be based on best practice designs and incorporate state-of-the-art mooring and offloading technologies.

The marine terminal will be designed to handle small barge shipments and large overseas shipments. These will be short in duration and only a few times a month, based on projected YVR fuel demand. A barge could be expected to deliver fuel once every two weeks with an unloading time around 12 hours, while a Panamax class vessel could be expected once a month with an unloading time of between 24 to 36 hours.

Marine Terminal and Fuel Receiving Facility

**Vessels:**

- All vessels will be double-hulled for optimal safety
- All vessel movements will be guided by tugboats and government-certified marine pilots on the river and at the Marine Terminal
- All vessels calling on the terminal will be pre-screened and vetted through a tanker acceptance program
- All vessels will have a Shipboard Oil Pollution Emergency Plan, and required to carry pollution liability insurance

**Operations:**

- Fuel will be transferred from vessels to shore using hydraulically-operated articulated unloading arms
- The unloading arms will be designed with flexibility for tides and ship movement during offloading
- If the movement of the vessel exceeds the safe range, the fuel transfer process will be automatically stopped and the arms will be disconnected using leak-free emergency release couplings
- The terminal will be equipped with pre-deployed permanent booming complete with a pile deflection/ protection system and skimmers to collect any fuel spilled

**Emergency Preparedness and Response:**

- Spill response vessels will be deployed upon arrival of a vessel in the river, and will accompany the vessel to the terminal
- Before a vessel is offloaded, booms and skimmers will be positioned around the vessel to contain a spill in the unlikely event of an accidental release of product onto water, and to recover the product as quickly as possible
- The response boats would be on standby to deploy containment and absorbent booms in the water if required

The Marine Terminal site will be protected by perimeter fencing and landscape barriers along the dyke trail. The dyke trail will connect users in the Waterstone Pier area with existing and future trail systems further upstream.

Rendering of Fuel Receiving Facility – view looking north

## Fuel Receiving Facility

The Fuel Receiving Facility will include six above-ground vertical carbon steel single wall tanks, each approximately 33.5 metres in diameter and 14.6 metres high, with an overall height of 21 metres above sea level. The tanks will provide a combined total capacity of approximately 80 million litres.

**Operations:**

- The Fuel Receiving Facility will operate quietly with little noticeable activity
- Fuel will be moved through contained systems from pipes to tanks with pumps that will be housed to reduce operating noise levels
- Tank systems will be equipped to reduce vapour emissions during fuel transfers and will be only locally noticeable
- Lighting and security of the facility will use state-of-the-art LED and motion detection to reduce the ambient level of light during night-time operation
- Noise, air quality and traffic will be mitigated through our comprehensive Operations Environmental Management Plan which will include a telephone information line

The tanks will have impermeably lined secondary containment areas

**Emergency Preparedness and Response:**

The Fuel Receiving Facility will be constructed to the National Building Code and the B.C. Building Code.

The facility will feature state-of-the-art fire detection and suppression systems including:

- Early detection systems inside tanks and in the piping/process area
- Automatic fire valves on tanks in the process area
- Foam suppression system inside each fuel storage tank
- Foam/water monitors and tank cooling system
- Fire hydrants at strategic and perimeter locations for access and operation by Richmond Fire Rescue
- Auxiliary and portable fire-fighting equipment

Environmental protection measures will include:

- Secondary containment and under-tank leak detection
- Redundant high level control to prevent tank overfill
- SCADA process monitoring system
- Emergency shut-down devices and emergency shut-down valves
- Process equipment located on concrete pads, with all drainage connected to an oil/water separator
- Drainage detection system to prevent a product release to ditches
- 24/7 monitoring by operations staff, with on-site spill response equipment, including portable spill response kits, spill response trailer and a vacuum truck

## Pipeline

Modern pipeline systems have the benefit of precise locating technologies, new materials and coatings, and high-tech installation techniques to reduce disturbances during construction.

The pipeline will be about 14 kilometres long, 355.6 millimetres in diameter and buried for its entire length approximately 2.5 metres underground.

The pipeline will consist of specialty steel pipe and will be installed to meet a minimum Canadian Standards Association (CSA) Standard Z245.1 Grade 359 for Oil and Gas Pipeline Systems. The pipeline installation and operation will be regulated by the BC Oil and Gas Commission.

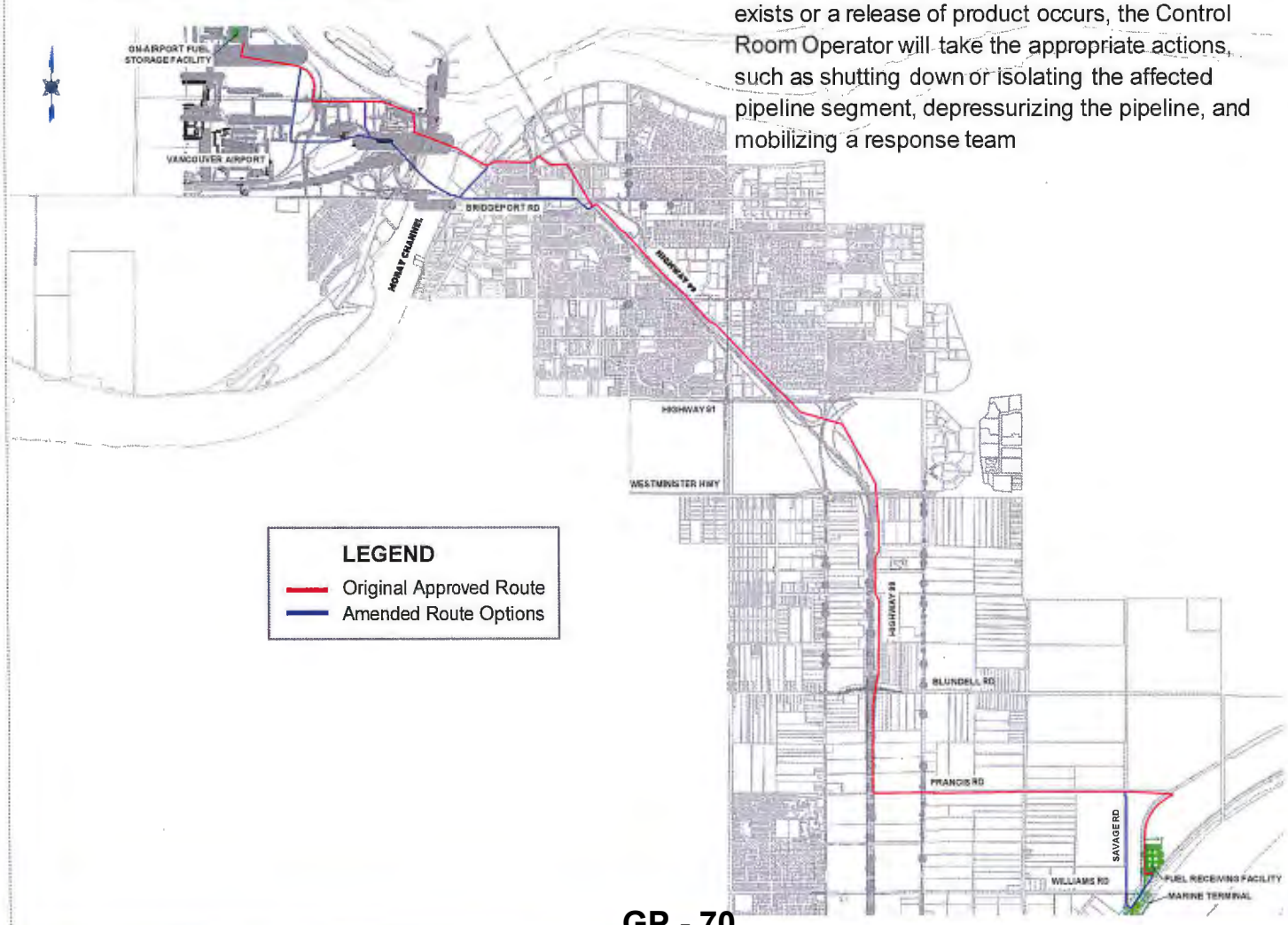
Prior to commissioning, the pipeline will be thoroughly tested and cleaned in accordance with construction and operational requirements, and clearly marked along its entire length. Similar to all other utility installation, location information will be provided to the City of Richmond and locator services.

**Operations:**

- The pipeline will be controlled and monitored by operations personnel during all fuel transfer activities
- It will be pressurized only during fuel transfer operations between the Fuel Receiving Facility and YVR (it will not operate 24/7)

**Emergency Preparedness and Response:**

- Prior to construction, an emergency response plan will be developed in conjunction with other municipal and regional emergency response plans
- The pipeline will include state-of-the-art corrosion protection and leak detection technologies
- The pipeline will be equipped automatic emergency shutdown devices, and pressure and flow monitors that will transmit data to a Control Centre
- Any abnormalities in pressure or flow will trigger an alarm or shutdown
- If the unlikely event that an abnormal condition exists or a release of product occurs, the Control Room Operator will take the appropriate actions, such as shutting down or isolating the affected pipeline segment, depressurizing the pipeline, and mobilizing a response team



## CONSTRUCTION

### Marine Terminal

The Marine Terminal construction is expected to start in late 2016, beginning with modifications to the existing dock. To meet the seismic performance requirements of the facility, significant rehabilitation of the shoreline will be undertaken to allow construction of off-shore mooring structures. Shoreline and underwater habitat will be restored as part of the development. Significant barge activity will occur during the fall and winter seasons, however no significant pile driving is anticipated until 2017.

Most noticeable activity in 2016 and early 2017 will be associated with the removal of unsuitable fill materials and components of the existing dock structure. These materials will be transported off-site. New structures will begin being installed in mid to late 2017.

### Fuel Receiving Facility

The project recently received a Project Permit from the Vancouver Fraser Port Authority to commence construction of the Fuel Receiving Facility to be located on Port Authority owned land. This permit was awarded following a technical review and public consultation held in August/September 2015.

The Fuel Receiving Facility construction will begin in spring 2016 and consist of the following two key phases:

**First phase**

- The first phase will involve site preparation and ground improvement to provide the stability for the tanks to withstand a major seismic event
- This will involve heavy machinery movements and some localized ground vibrations. Some activity at the marine terminal is expected for delivery of bulk materials

**Second phase**

- In 2016, construction will start on the utilities, foundations and structural steel components of the fuel receiving facility
- Locally supplied materials such as concrete, rebar, mechanical and electrical components will arrive by road, while large-scale tank steel components, pipe, and other bulk materials are expected to arrive through the Marine Terminal
- Tank and foundation construction will take approximately one year and consist mostly of crane work and welding
- The final stage of construction will include perimeter road works, paving, fencing and landscaping, including screening vegetation

### Pipeline

The pipeline will be constructed with resilient materials to current seismic design standards. Construction will include extensive use of directional drilling (particularly for water body crossings and intersections) to mitigate potential environmental impacts and avoid disruption of vehicle and marine vessel traffic.

Construction activities will include surveying and staking, preparing the right-of-way, digging the trench in which the pipeline will be placed, preparing the pipeline for installation (fitting it to the terrain) and applying a protective coat, installing the pipeline and associated valves and fittings, covering the pipeline and testing.

Pipeline construction is expected to begin in late 2016 or early 2017.

## WHY THE PROJECT IS NEEDED

- The project is needed because the existing fuel delivery system it will replace is unsustainable. It relies on only two sources of fuel – the Chevron Refinery in Burnaby and the BP Cherry Point Refinery in Washington State. If one of these refineries shut down for an extended period, airport and airline operations would be jeopardized.
- Chevron supplies 40% of the airport's needs through the 40-km Kinder Morgan pipeline that originates near Burrard Inlet and crosses Burnaby and north Richmond.
- The pipeline was built at a time when four local refineries were operating. Chevron is the only one still in operation.
- Cherry Point supplies the remaining 60%, of which 40% is shipped via barges to the Westridge Marine Terminal, from where it is offloaded and shipped to the airport through the Kinder Morgan pipeline, and the remaining 20% is via tanker truck deliveries, which can total up to 40 a day.
- The Kinder Morgan pipeline, which is only 150 mm (6 in) diameter, is at capacity and since the late 1990s the tanker truck deliveries have been required to meet YVR's fuel demand.
- Any growth in fuel demand at YVR depends on more cross-border fuel truck shipments. For example, adding just one daily flight to Asia would require an additional 800 trucks a year.

## PROJECT BENEFITS

- The project's spill prevention and response strategies for the Fraser River are robust and go well beyond industry standards and best practices, and is described by Environment Canada as the current state-of-the-art for spill modelling and potential incident preparation.
- The project will enhance the response capability on the Fraser River that will benefit all other users on the river.
- The project will have a smaller environmental footprint than the existing fuel delivery system, and will remove all the tanker trucks that carry fuel to YVR (over 1,200 each month) from Washington State through Surrey, Delta and Richmond.
- The project will help ensure that YVR remains a critical part of British Columbia's role as Canada's Pacific Gateway.
- The project will also help is needed to ensure YVR continues to have the fuel capacity to add the new flights.
- The project represents a $110 million investment and construction jobs in the Lower Mainland.

## VANCOUVER AIRPORT FUEL FACILITIES CORPORATION

Vancouver Airport Fuel Facilities Corporation (VAFFC) is a not-for-profit company owned by a consortium of commercial airlines representing most of the domestic and international carriers serving Vancouver International Airport (YVR).

VAFFC owns and operates fuel storage and distribution facilities at YVR. These facilities are shared among the airlines, allowing them to avoid duplication and minimize costs. Similar fuel facility corporations operate at all of the major international airports across Canada and throughout the world.

The company has more than 20 years of experience in aviation fuel handling activities at YVR.

VAFFC contracts the management, construction and operation of its facilities to qualified organizations, and draws expertise from a network of experienced engineering and environmental consultants specializing in aviation fuel infrastructure.

## FOR MORE INFORMATION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Vancouver Airport
Fuel Facilities Corporation

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## Pipeline Construction

The pipeline will consist of specialty steel pipe manufactured in accordance with the American Society for Testing and Materials (ASTM) Standard A53 (Grade B) and will installed to the standards established by the Canadian Standards Association (CSA) Standard Z662-03 for Oil and Gas Pipeline Systems. The pipeline installation and operation will be regulated by the BC Oil and Gas Commission.

Pipeline construction will follow these phases:

Surveying and staking
Crews survey and mark the right-of-way and temporary workspace. Not only will the right-of-way contain the pipeline, it is also where all construction activities occur.

Preparing the right-of-way
The clearly marked right-of-way is cleared of trees and brush and the top soil is removed and stockpiled for future reclamation. The right-of-way is then leveled and graded to provide access for construction equipment.

Digging the trench
Once the right-of-way is prepared, a trench is dug and the centre line of the trench is surveyed and re-staked. The equipment used to dig the trench varies depending on the type of ground conditions. (Fig. 1)

(Fig. 1)

Stringing the pipe
Individual lengths of pipe are brought in from stockpile sites and laid out end-to-end along the right-of-way.

Bending and joining the pipe
Individual joints of pipe are bent to fit the terrain using a hydraulic bending machine. Welders join the pipes together using either manual or automated welding technologies. Welding shacks are placed over the joint to prevent the wind from affecting the weld. The welds are then inspected and certified by X-ray or ultrasonic methods.

Coating the pipeline
Coating both inside and outside the pipeline are necessary to prevent it from corroding either from ground water or the product carried in the pipeline. The pipes arrive at the construction site pre-coated, however the welded joints must be coated at the site.

Positioning the pipeline
The welded pipeline is lowered into the trench using equipment with special cranes called sidebooms. (Fig. 2)

Backfilling the trench
Once the pipeline is in place in the trench, the topsoil is replaced in the sequence in which it was removed and the land is re-contoured and re-seeded for restoration. Sections that are along roadways will be repaved.

Pressure Testing
The pipeline is pressure tested before it begins operations.

Final clean-up
The final step is to reclaim the pipeline right-of-way and remove any temporary facilities.

Construction information courtesy of the Canadian Energy Pipeline Association

(Fig. 2)

## Directional Drilling

Construction will include extensive use of directional drilling (particularly for water body crossings and intersections) to mitigate potential environmental impacts and avoid disruption of vehicle and marine vessel traffic.

Directional drilling allows for extended sections of pipeline to be installed below congested or sensitive ground surfaces with very small surface disturbance. For example, the proposed section under the Moray Channel will be almost 800m long, almost 50 meters deep under the river bed, and enter and exit more than 100 meters from the water's edge.