

Construction Environmental Management Plan

13201 River Road, Richmond, B.C.



Image reference: Envirochem Site Visit, September 2016

Prepared for:



Prepared by:



10 2016

Construction Environmental Management Plan

13201 River Road, Richmond, B.C.

Prepared for:

Spire Construction Inc.
#400-8085 North Fraser Way,
Burnaby, B.C. V5J 5M8

Prepared by:

Envirochem Services Inc.
#206 - 267 Esplanade West
North Vancouver, BC V7M 1A5
www.envirochem.com

October 21, 2016

TABLE OF CONTENTS

Executive Summary.....i

1.0 Introduction 1

 1.1 Site Location 1

 1.2 Project Description 2

 1.3 Project Schedule..... 2

 1.4 Site Description 2

2.0 Contacts and Responsibilities 4

 2.1 Environmental monitor responsibilities..... 5

 2.2 Contractor responsibilities 5

3.0 Environmental Legislation 6

4.0 Project mitigation measures and environmental specifications 8

 4.1 General practices 8

 4.2 Site access mobilization and laydown areas 8

 4.3 Air quality 8

 4.4 Noise and Vibration..... 9

 4.4.1 Noise 9

 4.4.2 Vibration 10

 4.5 Machinery and Equipment..... 10

 4.6 Erosion and Sediment Control 10

 4.7 Contaminated Soil and Groundwater Management 11

 4.8 Vegetation and Wildlife Management..... 11

 4.9 Concrete Works and Grouting 11

 4.10 Marine Works..... 11

 4.11 Archaeological Resources 12

 4.12 Sensitive Habitat Features and Species 12

 4.13 Emergency Communication 13

 4.14 Environmental Emergency Plan 13

 4.15 Spill Response Plan..... 14

 4.16 Fuel Management Plan 16

4.16.1	Fuel management on open ground	16
4.16.2	Fuel management on paved ground.....	16
4.17	Waste Management.....	16
4.17.1	Hazardous wastes	16
4.17.2	Recycling	17
4.17.3	Compostable wastes.....	17
5.0	Closure	18
6.0	References	19
7.0	Limitations.....	20

LIST OF TABLES

Table 1: Anticipated Project Schedule	2
Table 2: Key Project Personnel	4
Table 3: Relevant Environmental Legislation.....	6
Table 4: Spill Response Plan.....	14
Table 5: Reportable Quantities	15

LIST OF FIGURES

Figure 1: Site Location	1
-------------------------------	---

LIST OF APPENDICES

Appendix A:	Proposed Development – Outline Site Plan
Appendix B:	VFPA Application Submission Requirements (PER 15-165)

1.0 INTRODUCTION

Spire Construction Inc. (the client) intends to develop a site at 13201 River Road, Richmond, BC (the site). This land is federally owned, and the development requires Project and Environmental Review (PER) through the Port of Vancouver (the Port, with legal name as the Vancouver Fraser Port Authority, VFPA).

One of the Port's stated requirements is a construction environmental management plan (CEMP), and the client has hired Envirochem Services Inc. (Envirochem) to provide this plan.

1.1 SITE LOCATION

The site is located at 13201 River Rd, Richmond, BC. The coordinates of the project's approximate centre are 49°11'57.2" north and 123°04'46.4" west. The site area is approximately 1.6 Hectares in area, and consists of two separate parcels (Reference: City of Richmond Interactive Map, download date 9th September 2016), one to the North of river road (Northern Lot) and one to the South (Southern Lot). The Northern lot is irregular in shape and is bounded by the Fraser River to the North and River Road to the south. The Southern lot is regular in shape and is bounded by River Road to the North, and adjoining industrial lots to the West, South and East. The subject site is shown in **Figure 1** below.



Figure 1: Site Location

(Baseplan Ref: Richmond Interactive Map, 8 August 2016). Development planned for southern lot only.

1.2 PROJECT DESCRIPTION

The proposed development includes a distribution warehouse facility with paved loading bay and parking area. The construction of the building will be concrete, tilt-up construction, craned into place. Excavation will be minimal, and relatively shallow (<2m deep) and grading is expected to be minimal.

A site plan has been supplied to Envirochem and is included as **Appendix A**.

The construction project will include the following main components, each of which will need to be managed to prevent adverse environmental impacts:

- Site preparation and earthworks
- Installation of services (e.g., electrical, water, drainage and sewer)
- Building foundation
- Construction of building (tilt-up)
- Paving and landscaping

No preloading is required.

1.3 PROJECT SCHEDULE

The project is currently at the permit application stage which is anticipated to take 4-6 months. Once requisite permits are obtained, the project will begin immediately. Construction will be completed in a further 3-6 months (see Table 1)

Table 1: Anticipated Project Schedule

Task	2016			2017								
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Project Permitting												
Site clearing and earthworks												
Installation of services												
Building foundation												
Construction of building												
Paving and landscaping												

1.4 SITE DESCRIPTION

The site is generally flat and level, and is composed of two lots, the northern lot and the southern lot. The southern lot is drained by a drainage ditch which runs along the south side of river road. The Fraser River runs along the north boundary of the northern lot.

The southern lot was filled and graded in anticipation of development after 2005, and there are no original (pre 2005) features remaining. The soil cover on the southern lot is understood to be entirely comprised of mineral fill, introduced in the last 10-11 years. The fill is understood to “generally consist of compact to dense silty sand and gravel mixture, till fill” [1]. Envirochem’s observations during the site visit were consistent with this description.

No prior assessments of the site were available to determine if any part of the site is listed as sensitive habitat. However, the northern lot is zoned by the City of Richmond as an Environmentally Sensitive Area (ESA) of two types, Intertidal and Shoreline [2].

2.0 CONTACTS AND RESPONSIBILITIES

Site contacts and their roles and responsibilities (as they relate to environmental management) are outlined in the sections below. Key project personnel

Key project personnel and stakeholders are outlined in **Table 2**. Where an individual has not yet been identified, the relevant corporate contact details are presented. Contact-specific information can be updated at a later stage.

Table 2: Key Project Personnel

Project role:	Name, Title, Company:	Phone number:	E-mail address:
Client Contact and Construction Manager	Russell Clark Senior Project Manager, Spire Construction Inc.	604-562-5587	Russell@spiredevelopment.ca
Additional Client Contact	Corey Adams Sales Coordinator, Spire Construction Inc.	604-365-3339	corey@spiredevelopment.ca
Environmental Monitor	Edward Haythornthwaite, Envirochem Services Inc.	604 986 0233	edward@envirochem.com
Port of Vancouver Contact	Sarah Crowley, Planner, Planning and Development	604-665-9558	Sarah.crowley@portvancouver.com
Department of Fisheries and Oceans (DFO)	For reporting of marine spills	1-800-889-8852	n/a – use phone number
BC Emergency Coordination Centre	For reporting of spills	1-800-663-3456	n/a – use phone number
City of Richmond	Main switchboard	604-276-4000	n/a – use phone number

2.1 ENVIRONMENTAL MONITOR RESPONSIBILITIES

The environmental monitor (EM) is responsible for checking that the project is completed in conformance with the provisions of the CEMP. The EM will either be a dedicated representative of the prime contractor, or will be a consultant who will stay in weekly contact with the site, will be available on an as-needed basis and will visit site at least three times over the course of the project, to monitor compliance with the CEMP. Where sampling is required, this will be completed by the EM.

In the event of an environmental emergency (e.g. fuel spill), the EM will be contacted immediately and will recommend management activities (up to and including stoppage of work where required).

The EM will have the authority to modify and/or halt any construction activity at any time, if the EM deems it necessary for the protection of the environment.

2.2 CONTRACTOR RESPONSIBILITIES

The main contractor will review the CEMP, and will be responsible for ensuring that all their staff and sub-contractors are aware of its content prior to commencing work on site.

The contractor will be responsible for complying with the Port Permit and all other applicable permits, legislation and regulations.

The contractor will work with the EM to ensure that the environment is protected. Where issues are identified that require remedial action (such as a modification of construction activities) the contractor will respond promptly (i.e. within 24 hours).

3.0 ENVIRONMENTAL LEGISLATION

A number of legal requirements have been identified as applicable to the project. These are listed in **Table 3**.

Table 3: Relevant Environmental Legislation

Act, Regulation or Bylaw:	Relevance:	Project Mitigation Measures and Environmental Specifications Affected:
Fisheries Act [1]	Depositing or permitting the deposit of a deleterious substance in water frequented by fish is prohibited.	<ul style="list-style-type: none"> • Erosion and sediment control; • Marine works; • Environmental Emergency Plan; • Spill Response Plan; & • Fuel Management plan.
Migratory Bird Convention Act [2]	Provides for periods during which nests may be damaged, destroyed, removed or disturbed.	<ul style="list-style-type: none"> • Vegetation and Wildlife Management
Species at Risk Act [3]	Provides for the protection of listed wildlife species and their critical habitats and residences.	<ul style="list-style-type: none"> • Vegetation and Wildlife Management
Spill Reporting Regulations (BC EMA) [4]	Provincial Regulation which requires immediate reporting where substances are spilled to the environment in certain quantities	<ul style="list-style-type: none"> • Environmental Emergency Plan; • Spill Response Plan; & • Fuel Management plan.
Contaminated Sites Regulation (BC EMA) [5]	Provincial Regulation which provides for the identification and management of contaminated sites, and the cleanup of low and moderate risk sites. This is relevant as any soil to be disposed off-site will likely need to meet Provincial requirements.	<ul style="list-style-type: none"> • Contaminated soil and groundwater management • Fuel management plan • Waste management
Hazardous Waste Regulation (BC EMA) [6]	Provincial Regulation which addresses the proper handling and disposal of hazardous wastes.	<ul style="list-style-type: none"> • Waste management
City of Richmond Noise Bylaw [7]	Influences the hours that noisy work is permitted in the City of	<ul style="list-style-type: none"> • Noise and Vibration

Act, Regulation or Bylaw:	Relevance:	Project Mitigation Measures and Environmental Specifications Affected:
	Richmond (Although not directly applicable, this bylaw will be observed as a courtesy).	
Riparian Areas Regulation	Provincial Regulation which protects riparian areas during development by conducting a science-based assessment of proposed activities (Although not directly applicable, the intent of this regulation will be observed).	<ul style="list-style-type: none"> • Vegetation Management
Federal Fire Code	Includes technical provisions which are relevant to the protection of the environment	<ul style="list-style-type: none"> • Machinery and Equipment • Environmental Emergency Plan • Fuel Management Plan

4.0 PROJECT MITIGATION MEASURES AND ENVIRONMENTAL SPECIFICATIONS

4.1 GENERAL PRACTICES

In general, the following practices will be followed:

- The general contractor and all sub-contractors will be made aware of the CEMP and applicable guidelines prior to starting work on site.
- All mitigation measures will be installed properly and will be subject to spot-check by the environmental monitor for the project.
- Work plans will take account of local conditions including weather and tidal influence.
- Should any mitigation measures fail to be effective, the issue will be reviewed immediately and the problem will be solved as soon as possible.

4.2 SITE ACCESS MOBILIZATION AND LAYDOWN AREAS

- Site access and deliveries will be managed in to prevent off-site queueing (congestion) where possible.
- Onsite storage and/or laydown areas will be a minimum of 30m away from waterbodies.
- A stabilized construction entrance (gravel pad) will be installed at the site entrance during site preparation and earthworks. The construction manager will be responsible for ensuring that it is maintained until the site is paved.

4.3 AIR QUALITY

Fugitive dust and air emissions will be prevented on site by using the following BMPs:

- Installation of a stabilized construction entrance (gravel pad) at the site entrance to minimize tracking dirt/mud off-site until the site is paved.
- Periodic inspection of access roads including River Road, to ensure that track-out of mud is being effectively prevented.
- Any fugitive road dust or mud will be cleaned as soon as possible with road sweeping equipment.
- A no-idling policy will be implemented and enforced on site. Generator sets will only be used where required, and mains electricity will be used wherever possible.
- Significant earthworks are not anticipated. If earthworks are required during periods of hot, dry weather, then mitigation measures (including spraying down of dust) will be implemented.

4.4 NOISE AND VIBRATION

This plan considers the environmental impacts from noise and vibration. Safety concerns associated with noise and vibration will be addressed through separate plans, and where there is a conflict between the CEMP and a safety plan, the safety plan will always take precedence.

The construction will not require pile driving. Accordingly, prospective noise and vibration disturbance is expected to be low given that the equipment inventory will be limited to excavators, front end loader and crane.

Noise and vibration will not be measured, and any impacts will be managed through compliance with Bylaws and effective communication with neighbors.

4.4.1 Noise

4.4.1.1 Working hours:

All noisy work (including off-site street sweeping as may be required) will only take place during the City of Richmond By-law hours:

- 7:00am to 8:00pm, Monday to Friday, where not a statutory holiday.
- 10:00am to 8:00pm on Saturday.

No work will take place on a statutory holiday.

Where work is to be undertaken outside of these hours, a 48-hour exemption can be obtained. This requires application directly to the City of Richmond, and the process is included in the Bylaw.

4.4.1.2 Signage and Communication

The City's signage requirements will be met – a sign measuring at least 2.97m² will be erected on River Road, containing information on the permitted hours, and who to contact in case of problems. The details of this are included in the City of Richmond's noise bylaw [7] (the Bylaw), section 4.1.2 and Schedule D.

Neighboring businesses will be notified by the construction manager where particularly noisy work is anticipated.

4.4.1.3 Measurement

As noted above, although noise measurements are not expected to be required, fence line measurements can be made in order to assess compliance with the Noise Bylaw limits. Measurement in response to complaints will be a last resort, and the site will aim to avoid noise

complaints in the first instance, by managing the hours during which noisy work is undertaken, and communicating effectively with neighbors. Neighboring properties are not considered to be noise sensitive.

4.4.1.4 Sound Pressure Levels in the Bylaw:

The site is located in an Activity Zone, which effectively limits noise from the site to **70dBA** or **80dBC**, measured at the site boundary. However, construction noise is treated differently, and is limited to **85dBA** when measured at a distance of 50 feet from the source of that noise.

4.4.2 Vibration

Vibration from site is not anticipated to cause complaints, and reasonable efforts will be made to manage construction in such a way as to avoid complaints. This will include reconnaissance with neighboring properties to determine if their works or stored items, utilities etc. might be at risk from vibration, as well as prior notification and/or rescheduling of work likely to cause complaints.

4.5 MACHINERY AND EQUIPMENT

- All machinery on site, including contractor and sub-contractor vehicles will be maintained and in good condition.
- Machinery and equipment will abide by the no-idling policy.
- Equipment will be inspected daily for leaks, and will be maintained free of noxious weeds.
- Equipment will be refueled in a designated area on the south site (e.g., at least 30m from the river). This area can be relocated during the project if required, but will always be located as far as possible from the nearest water body, should always have a spill containment kit immediately accessible, and should be on a paved surface where possible.
- Temporary fuel storage tanks will not be installed on site, and all refueling will be completed using mobile delivery trucks. Truck box tanks and/or mobile fuel services will comply with all relevant legislation, and will be subject to spot checks by the environmental monitor.

4.6 EROSION AND SEDIMENT CONTROL

Significant erosion and/or sediment generation is not anticipated. However, sediment from the site has the potential to cause significant environmental impacts, and controlling erosion and sediment is a high priority.

Sediment is considered a potential pollutant, and all erosion and sediment control measures will be implemented in conformance with the stormwater pollution prevention plan (SPPP, see separate report).

In summary, sediment will be controlled during the construction phase by proper management, silt fence and a gravel pad at the site entrance. The SPPP should be consulted for detailed proposals.

4.7 CONTAMINATED SOIL AND GROUNDWATER MANAGEMENT

No contaminated site issues have been identified during records review and client interviews, and there is no monitoring well on site. During earthworks and landscaping:

- Soil will be retained on site where possible.
- Soil will not be moved off-site without the approval of the environmental monitor, who may require testing to ensure that the site meets their legal responsibilities. In this case, questionable soil will be isolated, stockpiled, covered with polysheet and handled according to analytical results.

4.8 VEGETATION AND WILDLIFE MANAGEMENT

Vegetation will be managed in conformance with the Vegetation plan (see separate report).

No rare, listed or sensitive species have been identified in the Vegetation survey. Should a rare, listed or sensitive species be identified at the site at any time, the EM will be notified immediately for verification and further direction. PMV will be notified.

All vegetation removal will be conducted outside of the general bird breeding season (1st April to 31st July).

4.9 CONCRETE WORKS AND GROUTING

Concrete or grout will not be permitted to enter a water body. Most concrete work will take place as part of the building footprint (southern edge of the southern lot). Concrete work (that is required within 20m of the ditch (e.g. curbs, catch basin foundations) will be supervised by the environmental monitor or construction manager. All contractors and sub-contractors will be made aware of appropriate clean up and disposal procedures. Curbs will be cast in place.

4.10 MARINE WORKS

No marine (waterbody) work will be undertaken as part of the project. There will be no construction adjacent to the river – the north parcel of land will be protected by installation of protective measures (e.g. tree fencing and vehicular barriers).

4.11 ARCHAEOLOGICAL RESOURCES

According to the current development plan for the site, the land to be disturbed is in the southern lot only. This is predominantly fill material, deposited since 2005. However it is always possible that archaeological resources could be encountered during the work. In the event that any suspect archaeological resource is encountered:

- All activities with the potential to cause disturbance will stop immediately
- The site will be marked off
- The suspect artifacts will not be disturbed
- The Environmental Monitor and Port Metro Vancouver will be contacted immediately

Construction crews will be asked to watch for artifacts and to obey stop work orders until they are notified of work resumption.

4.12 SENSITIVE HABITAT FEATURES AND SPECIES

Sensitive habitat features and species are presented in the vegetation plan. The northern lot will not be used during construction for any purpose, including parking or storage of equipment. Therefore, sensitive Fraser River habitat will not be disturbed during construction (or operation) of the development.

The trees will be protected by a chain-link fence as shown in the vegetation management plan), see separate report. Parking on the northern lot will not be permitted, and signs will be posted advising of this. Temporary concrete barriers will also be installed to ensure that construction vehicles do not park on the northern lot.

The ditch will be protected by enclosing the site with silt fence, and by installing a gravel pad at the site entrance. Any problems (tears in silt fence, improper storage of materials, etc.) will be rectified immediately.

4.13 EMERGENCY COMMUNICATION

In the event of an emergency, the site will follow the procedures outlined in the site's safety plan (prepared by others). This plan will take precedence over the CEMP.

4.14 ENVIRONMENTAL EMERGENCY PLAN

The CEMP aims to prevent the occurrence of environmental emergencies through proper management. Should any of these measures fail, there could be an environmental emergency. The following main environmental emergencies are believed to present the highest risk:

- Discharge of sediment laden water to the ditch, which connects via a pump house to the Fraser River
- Fuel or lubricant spill on site. Significance will be pending location (e.g., near drainage), surface condition (e.g., pervious soil or hard top) and volume lost (and recovered).

In the event of an environmental emergency, safety will take precedence.

In the event of discharge of sediment or a spill on site, the spill response plan (below) should be followed.

4.15 SPILL RESPONSE PLAN

Table 4: Spill Response Plan

PRIORITY AND TASK:		RESPONSE REQUIRED:
1	Safety	Control access to the area, notify safety coordinator, consult safety data sheets and wear appropriate Personal Protective Equipment (PPE)
2	Stop the source	Seal hole in a leaky fuel tank, stop applying water for dust control
3	Contain the spill	Use spill-socks or booms, cover catch basins, use sorbent to form a berm, divert flow to containment if containment in situ is not possible.
4	Clean up the Spill	<u>Where it is safe to do so:</u> Clean up spill in accordance with instructions contained in spill kit and recommendations contained in product MSDS.
5	Record the incident	For all incidents regardless of quantity , record the following: <ul style="list-style-type: none"> • Location and time of the spill • Type and quantity of substance spilled • Cause and effect of the spill • Details of action taken or to be taken • Description of spill location and surrounding area • Names of agencies/ responders on scene • Names of other persons or agencies advised or to be advised
6	Check notification requirements	Notification requirements depend to depend on the quantity and type of substance spilled. A list of materials and substances likely to be found on a construction site and reportable quantities (Table 5).
7	Notification as required	If notification is required, call the BC Emergency coordination center. The incident record should be on hand, as information may be required.

Table 5: Reportable Quantities

SUBSTANCE/ MATERIAL	REPORTABLE QUANTITY [4]
Flammable liquids	100L
Flammable solids	25kg
Toxic substances	5kg or 5L
Marine pollutants (including sediment laden water)	25kg or 25L
Waste oil	100L
Waste containing a pest control product	5 kg or 5L

4.16 FUEL MANAGEMENT PLAN

Fuel storage and refueling will comply with the relevant regulations. Fueling and spill response procedures will be posted at all locations where refueling will take place. Refueling of equipment on site will be undertaken in a location at least 30m away from the ditch. The refueling area may need to be relocated as the project progresses, and all fuel management procedures may vary according to construction staging.

4.16.1 Fuel management on open ground

Fuel storage on open ground will be prevented/ avoided where possible. If required before the site is paved, fueling will take place in a location that is over 30m away from the drainage ditch to the north. The area will be flat, and no fuels, oils or lubricants will be stored without a minimum of 110% secondary containment, regardless of quantity. Fuel storage be covered by a roof, or will be inspected at least daily to ensure that rainwater does reduce the containment capacity.

4.16.2 Fuel management on paved ground

Once the site is paved, fueling will take place in a paved location, 30m away from the drainage ditch to the north. Nearby catch basins will be covered during fueling or servicing, and no fuels, oils or lubricants will be stored without a minimum of 110% secondary containment, regardless of quantity. Fuel storage area will either be under a roof, or will be inspected at least daily to ensure that rainwater does reduce the containment capacity.

4.17 WASTE MANAGEMENT

Wastes will be managed in accordance with the “reduce, reuse, recycle” hierarchy. Waste will be reduced where possible. Wastes will be separated (e.g., labelled bins) to enable recycling and proper disposal. The EM will check periodically to ensure that wastes are being properly separated on site.

4.17.1 Hazardous wastes

Hazardous wastes are not expected to be generated on site. If any hazardous waste is generated, it is expected to be low volume.

Should any hazardous wastes be generated, the site will have a dedicated hazardous waste storage area which complies with all applicable regulations and best practices (e.g. a roofed area, with clearly labelled, segregated storage, and secondary containment). All personnel responsible for shipping hazardous wastes will have current Transportation of Dangerous Goods (TDG) training.

4.17.2 Recycling

All wastes related to construction (metals, lumber, etc.) will be segregated on site and removed by waste management contractors for re-use or recycling as appropriate.

4.17.3 Compostable wastes

All lunch room putrescible / compostable wastes (food, napkins, etc.) will be composted through municipal programs or private hauler.

5.0 CLOSURE

Sincerely,

Envirochem Services Inc.



Edward Haythornthwaite
M.Sc., D.I.C., P.Ag.
Environmental Scientist



Andrew MacKay
M.E.S., EP (EMSLA)
Senior Manager & Partner

6.0 REFERENCES

- [1] Geopacific Consultants Ltd., "Geotechnical Report, File 13731 Rev. 1," Geopacific Consultants Ltd., Vancouver, 2016.
- [2] City of Richmond, *2041 OCP Environmentally Sensitive Areas (ESA) Map*, 2014.
- [3] Minister of Justice, "Fisheries Act," 5 April 2016. [Online]. Available: <http://laws-lois.justice.gc.ca/PDF/F-14.pdf>.
- [4] Minister of Justice, "Migratory Birds Convention Act, 1994," 10 December 2010. [Online]. Available: <http://laws-lois.justice.gc.ca/PDF/M-7.01.pdf>.
- [5] Ministry of Justice, "Species at Risk Act, 2002," 15 May 2015. [Online]. Available: <http://laws-lois.justice.gc.ca/PDF/S-15.3.pdf>. [Accessed 13 October 2016].
- [6] *BC Environmental Management Act Spill Reporting Regulation*, 2008.
- [7] BC Environmental Management Act, *Contaminated Sites Regulation*, Victoria: Queen's Printer, Victoria, BC, 2016.
- [8] BC Environmental Management Act, *Hazardous Waste Regulation*, Queen's Printer, Victoria, BC, 2016.
- [9] City of Richmond, *Noise Regulation (Bylaw No. 8856)*, Richmond: City of Richmond, 2012.

7.0 LIMITATIONS

This Report is intended for the use of Spire Construction Inc. and the Port of Vancouver to support a development permit with the Port of Vancouver. This report is not for the benefit of any third party and may not be distributed to, disclosed in any form to, used by, or relied upon by, any third party without the prior written consent of Envirochem Services Inc. (Envirochem). Any other third party recipient of this report or user of any content contained herein uses this report and its contents at its sole risk, and by acceptance or use releases Envirochem, its affiliates, officers, employees and subcontractors from any liability for direct, indirect, incidental, consequential or special loss or damage or other liability of any nature arising from its use of the report or reliance upon any of its content.

This is a technical report and is not a legal representation or interpretation of environmental laws, rules, regulations, or policies of government agencies. With respect to regulatory compliance issues, please note that regulatory statutes and the interpretation of regulatory statutes are subject to change over time.

In evaluating the subject property and proposed project, Envirochem has relied in good faith on information provided by individuals and third parties noted in this report. Envirochem accepts no responsibility for any deficiency, misstatements or inaccuracy contained in this report as a result of omissions, misstatements or fraudulent acts of persons interviewed. If new information is discovered during studies or activities in the future, or if additional work is conducted by others, Envirochem should be requested to re-evaluate the conclusions of this report, and to provide amendments as required prior to any reliance upon the information presented herein.

Appendix A

Proposed Development – Outline Site Plan
(Reference: Christopher Bozyk Architects Ltd.)



River Road - Industrial

1 Storey Light Industrial

PROJECT STATS

Building Character
PROJECT ADDRESS: 13201 River Road, Richmond, BC
LEGAL DESCRIPTION: LOT 8 SECTION 17, 20 BLOCK 5 NRG 5W NWD PLAN 24177 EXCEPT: PART ON PLAN 47297 DL 5917 GROUP 1
ZONING: IL - Light Industrial

SITE STATS

PARCEL AREA (sq.ft.)
DEDICATIONS (sq.ft.)
NET PARCEL AREA (sq.ft.)

SITE COVERAGE

Permitted	60%	81.181
Provided	50.6%	68,416
<i>Difference</i>	<i>9.4%</i>	<i>12,765</i>

PROPERTY LINE SETBACKS (ft.)

Front	9.84
Rear	0.00
Exterior Side	9.84
Interior Side	0.00

FSR

Permitted	1.00
Provided	0.51
<i>Difference</i>	<i>0.49</i>

BUILDING AREA SUMMARY

TOTAL GROSS BLDG AREA (sq.ft.)

Permitted	135.302
Provided	65,846
Provided	7,140
Total:	72,986
<i>Difference</i>	<i>62,316</i>

Industrial Office

BUILDING HEIGHT SUMMARY

BUILDING HEIGHT (ft.)

Permitted	39.4
Provided	37.7
<i>Difference</i>	<i>1.7</i>

PARKING/LOADING SUMMARY

PARKING STALLS

Required Warehouse	1 Stalls / 1076sq.ft. of Floor Area	62 (61.2)
Provided Warehouse		62
<i>Difference</i>		<i>0</i>

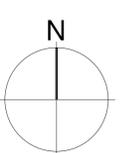
Required Office	3 Stalls / 1076sq.ft. of Floor Area	20 (19.9)
Provided Office		21
<i>Difference</i>		<i>1</i>

Total Required	82
Total Provided	83
<i>Difference</i>	<i>1</i>

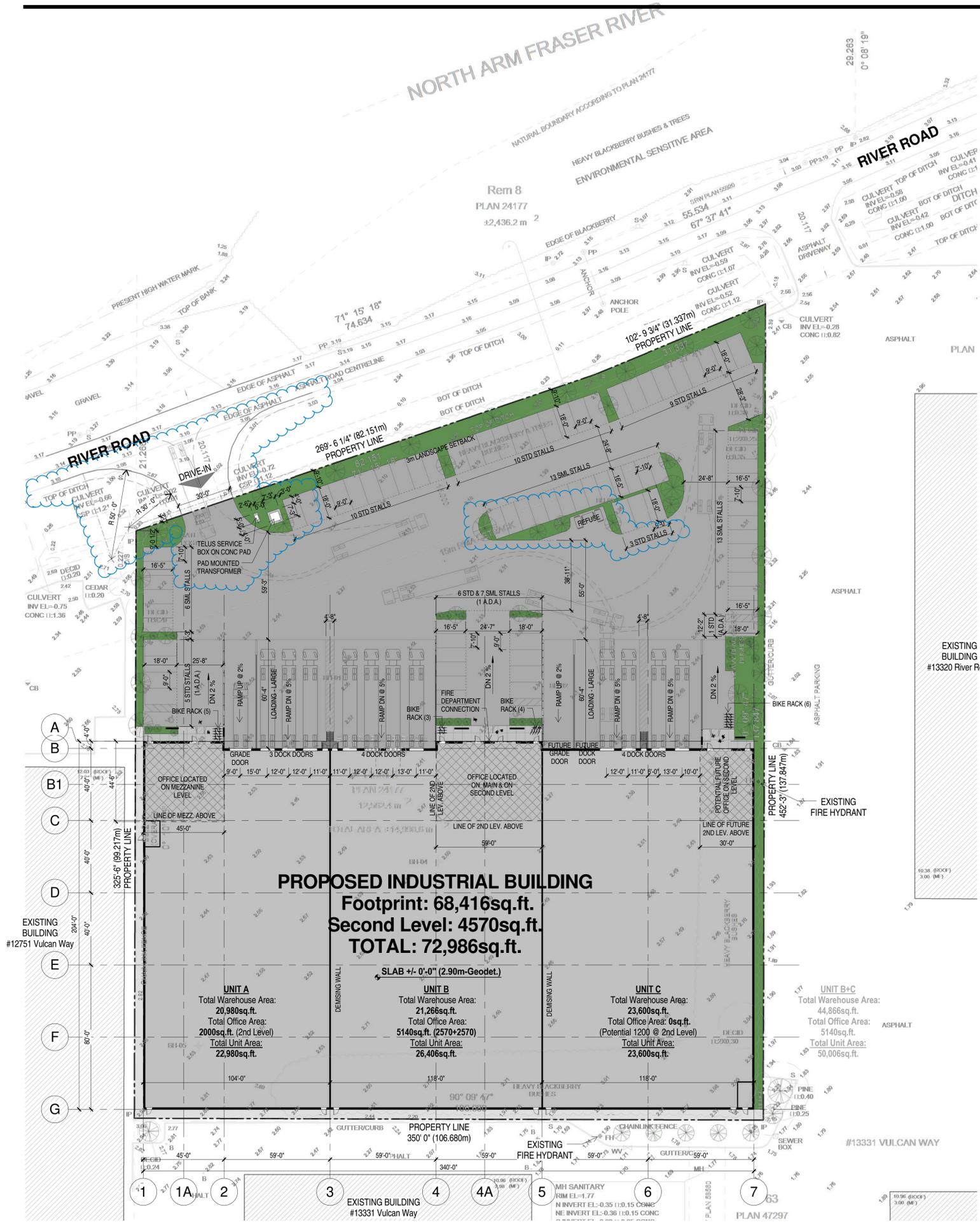
Required Large	2
Provided Large	14
<i>Difference</i>	<i>12</i>

Required Medium	3
Provided Medium	0
<i>Difference</i>	<i>3</i>

LOADING



1 Site Plan
1" = 30'-0"



Parking Provided	
Description	Count
Parking Space - ADA: HC 3700 x 5500	3
Parking Space: 7-10x16-5 (2400x5000)	39
Parking Space: 9x18 (2650x5500)	41
	83

REVISION	DATE	DESCRIPTION
	OCT 21, 16	ISSUED FOR BUILDING PERMIT
	OCT 21, 16	ISSUED FOR PROJECT PERMIT
	SEP 07, 16	ISSUE FOR COORDINATION

COPYRIGHT NOTICE:
All rights reserved. All ideas, designs, drawings and reproductions either in print or electronic format, are the property of Christopher Bozyk Architects Ltd., and are an instrument of service that may not be used, forwarded to others, transmitted, downloaded or reproduced either in print or electronic format, without the express written permission of the copyright owner.
Written dimensions shall have precedence over scaled dimensions. Contractors shall verify and be responsible for all dimensions and conditions on the job; shall request clarification of errors, discrepancies, or doubtful information contained in contract drawings and documents. Failure to obtain such clarification renders the Contractor responsible for any resulting improper work and the cost of rectification.

Spire Industrial Building

13201 River Road, Richmond, BC

Site Plan Project Stats

SCALE: As indicated DATE: Issue Date DRAWN: NK
PROJECT NUMBER: 216016

A0.10

Appendix B

VFPA Application Submission Requirements (PER 15-165)

Project & Environmental Review Application Submission Requirements

100 The Pointe, 999 Canada Place
Vancouver, British Columbia V6C 3T4

Project & Environmental Review - Application Submission Requirements

PER No:	15-165
Project:	Construction of Distribution Warehouse Facility
Project Location:	13201 River Road, Richmond
Land Use Designation:	Industrial
Category of Review:	C

The following Project Permit Application Submission Requirements are based on a preliminary review of the information provided by the Applicant during the preliminary review phase. Should changes be made by the Applicant to the project scope or proposed design, or new policies or legislation come into effect after receipt of this checklist, additional information may be required by Port Metro Vancouver. Upon submission and review of a complete application, Port Metro Vancouver may also request additional information and studies as necessary to support the review process.

Brief description of Preliminary Project Inquiry (Project):

- Spire Development proposes to construct a 73,268 sq. ft building for the purpose of a distribution warehouse facility with 81 parking stalls, 14 loading bays and associated landscaping.
- Prospective tenant has been identified as UNO Foods Inc- a distribution company which imports Asian food products for the Canadian market (company bio available on project lead library).

Section 1: General Submission Requirements

Required

Application Form	A signed and completed <input type="checkbox"/> Category A/B application form <input checked="" type="checkbox"/> Category C/D application form	
Application Fee	<input type="checkbox"/> Category B (if no consultation)* : \$525 includes GST <input type="checkbox"/> Category B (if consultation required): \$2,625 includes GST <input checked="" type="checkbox"/> Category C & D: \$2,625 includes GST <small>* For Projects that were previously subject only to an Environmental Assessment Procedure Review (EAP), this fee will be January 1, 2016.</small>	
Documentation Deposit	<ul style="list-style-type: none"> • Deposit must be submitted at time of submission and is calculated based on 1% of construction value, or the portion of works within Port Metro Vancouver' jurisdiction (\$1,500 minimum to \$10,000 maximum). 	<input checked="" type="checkbox"/>
Building Permit	<ul style="list-style-type: none"> • A Port Metro Vancouver Building Permit is required prior to construction of the proposed works and must be submitted before construction. • Information regarding PMV's Building Permit process is available at: http://www.portmetrovancouver.com/development-and-permits/building-permits/ 	<input checked="" type="checkbox"/>
Contact List	<ul style="list-style-type: none"> • Provide one central contact list for all project team members, including name, 	<input checked="" type="checkbox"/>

Project & Environmental Review Application Submission Requirements

100 The Pointe, 999 Canada Place
Vancouver, British Columbia V6C 3T4

	title, address, and contact numbers.		
Section 2: Project Description Requirements		Req.	Comments
Include with Application Form or attach additional pages as required			
General Scope	<ul style="list-style-type: none"> Brief background of the applicant's company and business operations in the Vancouver Gateway. Description of the Project, including the purpose, use, and project 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. List all studies that have been completed in support of the application. 	<input checked="" type="checkbox"/>	
Operations	<ul style="list-style-type: none"> 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 of operation of the terminal, both current and proposed, and any changes to employment expected. Description of the proposed increase in capacity of the terminal in tonnes per week, month, or year. Description of any potential environmental and community impacts and proposed mitigation strategies. 	<input checked="" type="checkbox"/>	
Construction and/or Demolition	<ul style="list-style-type: none"> Proposed construction period (start and finish), hours, and method of construction 	<input checked="" type="checkbox"/>	
Section 3: Drawing Requirements		Req.	Comments
Please provide one digital set of the following drawings in metric unless otherwise noted. The drawings shall be prepared by qualified professionals and delivered in PDF and AutoCAD format.			
Location Plan	<ul style="list-style-type: none"> Plan showing the relationship of the proposed Project to surrounding area at a 1:5000 scale 	<input checked="" type="checkbox"/>	
Site Plan	<ul style="list-style-type: none"> Lease and property boundaries, easements and right-of-ways. 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. Area of demolition or construction staging/laydown area. 	<input checked="" type="checkbox"/>	
Buildings, Structures & Equipment	<ul style="list-style-type: none"> Elevations of front, rear, and two sides with dimensions. Floor levels and height above and below finished grades. Building floor plans of all storeys including door, window and skylight locations. Roof plans with dimensions and elevations of roof parapet, 	<input checked="" type="checkbox"/>	

Project & Environmental Review Application Submission Requirements

100 The Pointe, 999 Canada Place
Vancouver, British Columbia V6C 3T4

	<p>mechanical and elevator/stair housing.</p> <ul style="list-style-type: none"> • Finishing details and materials. • Excavation depths anticipated (receiving pits, foundations, trenches for utilities, etc.), including depth of excavation required to construct any below-ground infrastructure. • Signage (location, dimensions and lighting details). • Information on site loading for foundation design criteria and any other anticipated loads. 		
Lot Grading and Utilities	<ul style="list-style-type: none"> • Separate plans showing existing and proposed utilities. • Lot grading plan showing existing/proposed paving and drainage. Separate to two plans if required for clarity. • Note that oil/grit/water separators are required to be included as part of site storm water collection. • 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. • 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. • The Applicant is responsible for location of all existing utilities. There is no known utility information on the site. The Applicant must confirm the location of buried utilities, if any. 	<input checked="" type="checkbox"/>	No existing PMV utilities service the site. Any connections made to the site will be done so through surrounding BC Hydro, FortisBC (if applicable) and/or City of Richmond utility networks. Applicant should work directly with the surrounding jurisdiction and obtain all necessary permits and servicing agreements to bring utilities to the site.
Lighting Plan	<ul style="list-style-type: none"> • Lighting shown on the site plan for all proposed exterior lighting including the location, type of bulbs, orientation, and level of illuminance. • For further information, please review Port Metro Vancouver's Lighting Guideline, available at: http://www.portmetrovancover.com/development-and-permits/project-and-environmental-reviews/technical-guidelines/ 	<input checked="" type="checkbox"/>	
Parking & Access	<ul style="list-style-type: none"> • 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. • Typical cross sections and proposed grades of all streets, and details of curbs, gutters, sidewalks, and other improvements. • Fire access routes or lanes to be shown on a site plan. 	<input checked="" type="checkbox"/>	
Vegetation Plan	<ul style="list-style-type: none"> • Existing trees and vegetation types (including listed plant species, biodiversity/species richness, invasive species types and relative abundance) landscaping, fencing, and location, 	<input checked="" type="checkbox"/>	Please note that there are documented

Project & Environmental Review Application Submission Requirements

100 The Pointe, 999 Canada Place
Vancouver, British Columbia V6C 3T4

	<p>quantity, and type of proposed vegetation removal (including number of trees to be removed, if applicable).</p> <ul style="list-style-type: none"> Proposed vegetation mitigation plan, including a plan showing the location of replanting, the species of plants proposed (native species are strongly preferred, and may be required), fencing, invasive species monitoring and management areas and other landscape elements. 		occurrences of purple loosestrife and Japanese knotweed on site.
Section 4: Required Studies and Reports		Req.	Comments
Must be prepared by qualified professionals in their respective fields			
Geotechnical Report	<ul style="list-style-type: none"> 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. 	<input checked="" type="checkbox"/>	
Stormwater Pollution Prevention Plan	<ul style="list-style-type: none"> Description of daily operations as they relate to storm water management, given the local climate and water capture and treatment systems. For further information, please review Port Metro Vancouver's Stormwater Pollution Prevention Plan Guideline, available at: http://www.portmetrovancover.com/development-and-permits/project-and-environmental-reviews/technical-guidelines/ 	<input checked="" type="checkbox"/>	
Traffic Impact Study	<ul style="list-style-type: none"> An assessment of current site traffic as well as truck and/ rail traffic volumes anticipated, on site circulation, traffic distribution throughout the day and impacts to adjacent and nearby roads, access/egress and storage analysis for vehicles and/rail cars accessing site as well as parking requirements. Include proposed hours of operation and staffing number and dimensioned site plan, showing circulation, buildings, new line painting, proposed rail tracks and any other proposed features. 	<input checked="" type="checkbox"/>	
Energy Efficiency Study	<ul style="list-style-type: none"> An assessment of how the proposed development (buildings, motorized equipment, and lights) will affect electrical energy consumption levels. Include energy modeling, demonstrate selection of BATNEC (Best Availability Technology Not Entailing Excessive Cost) energy efficient equipment. 	<input checked="" type="checkbox"/>	
Mitigation Summary	<ul style="list-style-type: none"> A document outlining all potential impacts from the proposed project on the environment, public, stakeholders and Aboriginal groups during construction, operations, decommissioning and reclamation, and proposed mitigation strategies (avoidance, minimization of impacts, on-site restoration, offset). 	<input type="checkbox"/>	This may be required to be submitted at a later date, at the discretion of PMV
Archaeological Potential - Preliminary	<ul style="list-style-type: none"> 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. 	<input checked="" type="checkbox"/>	

Project & Environmental Review Application Submission Requirements

100 The Pointe, 999 Canada Place
Vancouver, British Columbia V6C 3T4

<p>Assessment</p>	<ul style="list-style-type: none"> Identify if the proposed project is within 100m of potable water (historically present or currently present). Location of proposed project in relation to the original shoreline or river/stream bank. Determine if the proposed project is situated on relatively level ground. 		
<p>Construction Environmental Management Plan</p>	<ul style="list-style-type: none"> Description of how the site will be managed during construction that does not result in adverse impacts to the environment, heritage resources, public (municipal, stakeholders, community), Aboriginal groups and including potential effects from limiting noise, vibration, light, dust emissions, and odour. For further information, please review Port Metro Vancouver's Construction Environmental Management Plan Guideline, available online at: http://www.portmetrovancover.com/development-and-permits/project-and-environmental-reviews/technical-guidelines/ 	<input checked="" type="checkbox"/>	
<p>Vegetation Plan</p>	<ul style="list-style-type: none"> Description of topography, hydrology, soil cover and quality. Description of current vegetation types, characteristics and relative abundance, including native, listed and invasive species. Description of riparian vegetation removal and details as to proposed location, species and ratio of replacement planting and include an adaptive vegetation management, monitoring and control plan. Locations and ratios will be confirmed by Port Metro Vancouver upon review of a complete application. 	<input checked="" type="checkbox"/>	<p>Please note if there are any nesting birds on site.</p>
<p>Nesting Bird Survey</p>	<ul style="list-style-type: none"> An assessment of nesting birds using non-intrusive methods (i.e. determine the presence of birds in habitat through observation of singing birds, alarm calls, distraction displays, nest). Include a description of existing conditions, potential impacts, and proposed mitigation strategies. 	<input type="checkbox"/>	<p>This will be required only if construction is proposed during bird nesting season, as it applies to tree removal and may be included as part of the mitigations outlined in the CEMP.</p> <p>Not required for application, but will be required prior to construction (as a condition of approval). Applicant may want to consider including this information in vegetation assessment at time</p>

Project & Environmental Review Application Submission Requirements

100 The Pointe, 999 Canada Place
Vancouver, British Columbia V6C 3T4

			of application submission.
Fire Safety Plan	<ul style="list-style-type: none"> Describe as required – this is more of an operational plan however, a draft Plan may be useful during the review process 	<input checked="" type="checkbox"/>	
Flood Protection	<ul style="list-style-type: none"> 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. 	<input checked="" type="checkbox"/>	
Section 5: Consultation Requirements		Req.	Comments
Aboriginal Groups	<ul style="list-style-type: none"> The proposed Project will be assessed to determine whether any part of the proposed work has the potential to impact Aboriginal rights. Confirmation of the requirement for Aboriginal consultation will be provided upon acceptance and review of your completed Project Application. Provide all records of previous information sharing activities, agreements, or other interactions with Aboriginal groups with respect to the proposed Project. Provide information on any known Aboriginal interests in the Project area. For further information, please review Port Metro Vancouver's Aboriginal Consultation – Information for Applicants, available online at: http://www.portmetrovancover.com/development-and-permits/project-and-environmental-reviews/technical-guidelines/ 	<input checked="" type="checkbox"/>	
Stakeholders	<ul style="list-style-type: none"> The proposed Project may have an impact on stakeholder interests. The following stakeholder notification and/ consultation will be led by Port Metro Vancouver during application review phase with the involvement of the Applicant at the request of PMV (responding to stakeholders, attending meetings etc.). <ul style="list-style-type: none"> City of Richmond PMV may revise the list of stakeholders upon acceptance and review of a complete Project Application. For further information, please review Port Metro Vancouver's Stakeholder Consultation Guideline, available online at: http://www.portmetrovancover.com/development-and-permits/project-and-environmental-reviews/technical-guidelines/ 	<input checked="" type="checkbox"/>	

Project & Environmental Review Application Submission Requirements

100 The Pointe, 999 Canada Place
Vancouver, British Columbia V6C 3T4

<p>Community</p>	<ul style="list-style-type: none"> The proposed Project may have an impact on adjacent community interests. The type of consultation activities that are required to be led by the Applicant for this project includes: <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Notification of adjacent property owners. Area of notification to be confirmed upon review of complete application. <input type="checkbox"/> Public Consultation <input type="checkbox"/> Final Comment Period Port Metro Vancouver may require additional consultation activities with the community during the application review phase as required. For a checklist of items required to be submitted as part of required consultation activities, please review Port Metro Vancouver's Public Consultation Guideline, available online at: http://www.portmetrovancover.com/development-and-permits/project-and-environmental-reviews/technical-guidelines/ 	<p><input checked="" type="checkbox"/></p>	<p>Submit a draft notification letter for review. Should include a brief description of the project, construction activities, potential impacts and contact info.</p>
<p>Draft Construction Communications Plan</p>	<ul style="list-style-type: none"> The proposed Project may have an impact on the adjacent community during the construction period, and therefore the applicant is required to notify area residents and the municipality prior to construction. Brief description of the proposed Project, background, construction considerations and challenges, engagement objectives, key audiences and stakeholders, key messages, contact information and notification activities prior to construction and/or demolition. Submission of a final plan will be required at a later date determined by PMV. For further information, please review Port Metro Vancouver's Public Consultation Guideline, available online at: http://www.portmetrovancover.com/development-and-permits/project-and-environmental-reviews/technical-guidelines/ 	<p><input checked="" type="checkbox"/></p>	<p>Construction notification may be required depending on potential impacts from construction activities. To be determined upon review of complete application.</p>
<p>Section 6: Other Requirements/ Considerations</p>			
<p>Preloading of the site</p>	<ul style="list-style-type: none"> Will be subject to a separate project permit – likely Category A review 		