

MEMORANDUM

To: The City of Prince George (Planning and Development Department) c/o Gary Jardine – Western Star Ventures Ltd.

FROM: Triton Environmental Consultants Ltd.

DATE: 11/10/2022

FILE #/NAME: 11343/P5367

RE: 6172 Otway Road Riparian Assessment

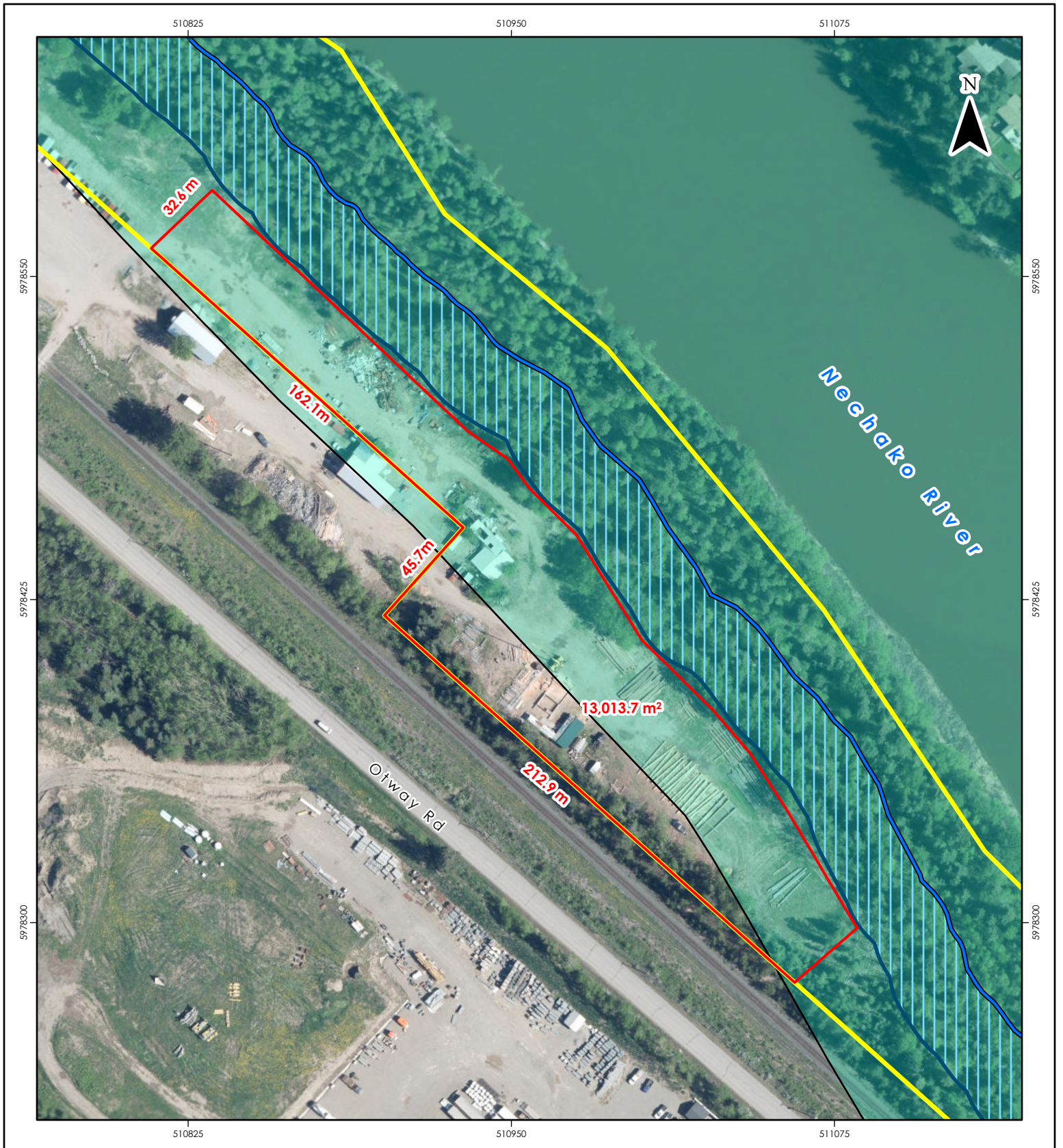
Triton Environmental Consultants Ltd. (Triton) was retained by Gary Jardine of Western Star Ventures Ltd. (the Client) on behalf of the property owner to conduct a riparian assessment in support of the City of Prince George Riparian Protection Development Permit (RPDP) application process. The property is located at 6172 Otway Road and is adjacent to the Nechako River (Figure 1). The majority of the property is located within a designated RPDP area, and the Client is proposing to build up to 10 storage buildings approximately 36 m by 10 m along an old log laydown yard. To facilitate this development, the Client is looking to clear a polygon that is approximately 5 m by 200 m of vegetation along the river side of the property.

As outlined in the City of Prince George's Official Community Plan (City of Prince George 2012), lands shown on Schedule D-2 are designated as riparian protection development permit areas. In the riparian protection guidelines (City of Prince George Zoning Bylaw No. 7850, 2007 CONSOLIDATED), it is stipulated that: *"A 30 m leave strip from the top of bank (TOB) to any construction be in place along the Nechako River, and a 50 m leave strip is required where the area is devoid of trees and there is evidence of active bank erosion (section 8.9.2 c). Lesser leave strips may be accepted based on an assessment provided by a qualified professional (section 8.9.2 e)".*

The objective of this report is to provide an assessment of the riparian area within the mapped RPDP area and describe potential impacts, if any, to the surrounding environment, including the Nechako River.

1.0 Environmental Setting

The Project area is located within the dry warm Sub-Boreal Spruce Biogeoclimatic Ecosystem Classification (BEC) zone (SBSdw3), primarily based on elevation (460 to 725 m; Delong 2003). Lodgepole pine (*Pinus contorta*) dominated stands mixed with hybrid white spruce (*Picea glauca x engelmannii*) and Douglas-fir (*Pseudotsuga menziesii*) and subalpine-fir (*Abies lasiocarpa*) understory were widespread on upland sites with deeper



6172 Otway Road

Sources and Disclaimer

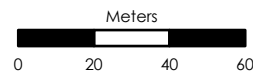
1. Base map Source: Esri Base Maps
 2. Disclaimer: This map is a visual aid only to be used together with the accompanying report, including and incorporating any disclaimer contained therein. This map has been prepared to illustrate the results of Triton Environmental Consultants Ltd. work, and is not intended to be used for navigational purposes. Information displayed on this map is based, in whole or in part, on geographic information that may have been provided by third parties, including government data. Triton Environmental Consultants Ltd. disclaims (without limiting the generality of the foregoing) all responsibility for the accuracy of any such third party information, regardless of the source.

Legend

-  Top of Bank
-  Riparian Buffer 30m
-  Riparian Protection Development Permit
-  Subject Site
-  Build Area

Figure 1.
Project Overview

Project No: 11343
Date: Oct 07, 2022
Scale: 1:2,000
Projection: UTM Zone 10 (NAD 1983)



Prepared By: GF **Reviewed By:** JB

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soils while hybrid white spruce and subalpine-fir dominated stands were generally restricted on lower to toe slopes and along riparian features. On compact or lacustrine soils with shallow rooting depth black spruce (*Picea mariana*) dominated the understory of lodgepole pine dominated stands. Black spruce was also common in the localized wetlands that dot the landscape and occasionally richer wetlands are dominated by tamarack (*Larix laricina*). Douglas-fir dominated forests were common on dry ridges and coarser-textured soils on warm aspects. The understory is characterized by an abundance of shrubs, primarily bunchberry (*Cornus canadensis*), prickly rose (*Rosa acicularis*), and birch-leaved spirea (*Spiraea betulifolia*; DeLong 2003).

The majority of the Project area is located within the RPDP zone. Historic clearing and development has been conducted within the property boundaries extending approximately 60 m from the southern property border towards the Nechako River (Photo 1). The existing vegetated area and riverbank is primarily a mix of young and mature mixed forest including black cottonwood (*Populus trichocarpa*), trembling aspen (*Populus tremuloides*), paper birch (*Betula papyrifera*), hybrid white spruce, lodgepole pine, and Douglas-fir with a well-established understory including alder (*Alnus* sp), willow (*Salix* sp), prickly rose, red-osier dogwood (*Cornus stolonifera*), red-stemmed feathermoss (*Pleurozium schreberi*), devil's club (*Oplopanax horridus*), lady fern (*Athyrium filix-femina*), grasses (*Poaceae* Spp.), horsetail (*Equisetum* sp.) and cattails (*Typha latifolia*) (Photo 2 and 3).

The Nechako River is located along the northern border of the Project area. Existing fisheries information for the Nechako River in the vicinity of the Project, available in the provincial online database (BC MOECCS 2022), indicates the presence of sport and non-sport fish within the system including:

- Brassy Minnow (*Hybognathus hankinsoni*)
- Bull Trout (*Salvelinus confluentus*)
- Burbot (*Lota lota*)
- Chinook Salmon (*Oncorhynchus tshawytscha*)
- Pink Salmon (*Oncorhynchus gorbuscha*)
- Lake Chub (*Couesius plumbeus*)
- Largescale Sucker (*Catostomus macrocheilus*)
- Longnose Dace (*Rhinichthys cataractae*)
- Longnose Sucker (*Catostomus catostomus*)
- Mountain Whitefish (*Prosopium williamsoni*)
- Northern Pikeminnow (*Ptychocheilus oregonensis*)
- Peamouth Chub (*Mylocheilus caurinus*)
- Rainbow Trout (*Oncorhynchus mykiss*)
- Redside Shiner (*Richardsonius balteatus*)

- Slimy Sculpin (*Cottus cognatus*)
- Sockeye Salmon (*Oncorhynchus nerka*)
- White Sturgeon (*Acipenser transmontanus*)

In addition to the Nechako River fish species which benefit from healthy and stable vegetated riparian areas, several birds and mammals frequently inhabit or utilize riparian zones as travel corridors such as:

- Moose (*Alces alces*)
- Mule Deer (*Odocoileus hemionus*)
- Black Bear (*Ursus americanus*)
- River Otter (*Lontra Canadensis*)
- Beaver (*Castor canadensis*)
- Cavity nesting birds and migratory birds
- Bald Eagle (*Haliaeetus leucocephalus*)
- Osprey (*Pandion haliaetus*)

2.0 Site Assessment

An assessment of the Project area was conducted on June 3, 2022, by a Qualified Environmental Professional (QEP). The primary focus of this assessment was to determine the top of bank (TOB) from the Nechako River, note any signs of active erosion along the bank, assess the current riparian function, and record the vegetation present.

River morphology adjacent to the Project is large channel and relatively straight. Cover for fish utilizing the river margin is primarily from overhanging vegetation, and interstitial spaces amongst the large cobble and boulder substrates. Functional large woody debris (LWD) was not observed along the shoreline, which is likely due to frequent river level fluctuations and high seasonal flows. The riverbank is vegetated with a mix of mature and immature mixed forest and dense shrubby understory (Photo 4).

The overall topography of the riparian area along the riverbank below the Project area is comprised of three very distinct benches from the water surface up to the industrial work area. The first bench above the flood plain is between 15 and 23 m wide with the slope above the bench having a gradient of 12 to 18%. Mature vegetation, and no sign of erosion was observed along this section of slope. The second bench is between 15 and 27 m wide with the slope above the bench having a gradient of 19 to 22%. Mature vegetation, and no sign of erosion was also observed along this section. The third bench is where the Canada Recycle Depot yard is situated.

As per the City's definition, "the top of bank (TOB) is the points closest to the boundary of the active floodplain of a watercourse or water body where a break in the slope of the land occurs such that the grade beyond the break is flatter than 3 (horizontal) to 1

(vertical) at any point for a minimum distance of 15.0 meters measured perpendicularly from the break" (City of Prince George 2007).

To satisfy City Bylaw No. 7850 Section 8.9.2 (c), a QEP from Triton has assessed the riverbank and determined that the first and second bench of the Nechako River are consistent with the above definition and that there are no signs of erosion along any sections of the bank. The top of the third bench is a total of 65 m from the ordinary highwater mark (OHWM) of the Nechako River. The footprint of the proposed tree clearing polygon is 5 m from the top of the bank on the third bench for a total of 70 m from the river. The vegetation along the upper bench is not contributing to critical riparian function like the lower portion is (rooted bank stability, shade, cover, thermal regulation, etc.).

3.0 Potential Impacts and Mitigation

The recommended mitigation measures are largely related to erosion and sediment control and timing of development activities.

Riparian Area

Prior to construction activities, delineate the riparian boundary to the grade break between the first and second bench which conforms with City Bylaw No. 7850 section 8.9.2 (b). The distance from the grade break/proposed TOB to the toe of the third bench is 25 m. The addition of a 5 m buffer from the TOB on the third bench to the clearing limits would result in a 30 m buffer from the functional riparian management zone.

A 50 m riparian leave strip from the TOB would prevent any further development within the property as shown in Figure 1, it encompasses the majority of the property. The CN Rail tracks on the southern boundary of 6172 Ottway Road is located approximately 75 m from the top of bank. Further, the riverbank throughout the Project area is well vegetated and showed no signs of active erosion; therefore, as per the riparian protection guidelines, a 30 m leave strip from the proposed TOB would be applicable for the proposed development.

Creating a 30 m no clearing zone from the TOB would be sufficient to encompass the developer's construction footprint. A Surveyor can delineate the 30 m offset for the clearing boundaries. The 30 m riparian set back will retain a 5 m leave strip at the top of the third bench that will help filter any sediment laden surface flows coming from the yard; the remaining vegetated riverbank will ensure no sediment laden surface flows from the yard will end up in the Nechako River.

Wildlife

Urban development can encroach on wildlife routes and create habitat fragmentation. Given the length of undisturbed vegetated buffer between the river and the proposed development, it is anticipated that there will be minimal negative impacts to the surrounding wildlife that may utilize parts or all the area for one or more of its life-stages. It is recommended this area remains free of development (i.e., fences) which will allow for wildlife movement as needed such as access to food and water.

The federal *Migratory Bird Convention Act* and the provincial *Wildlife Act* provide timing windows for breeding birds and should be noted that any clearing activities should not occur between April 19 and August 24 (Rousseu and Drolet 2015) to avoid the bird nesting window. However, if this is not feasible, a nesting bird survey should be completed by a qualified environmental professional (QEP) within five days prior to clearing, as per best management practices.

Water Quality

Maintaining a minimum 30 m vegetated buffer between the development site and the TOB of the Nechako River will provide natural infiltration and absorption should any runoff occur during construction. Employing adequate mitigation measures and maintaining the existing vegetation within the 30 m riparian leave strip will ensure there is low likelihood of sediment mobilization towards the Nechako River. These include the following best management practices:

- Grade the Project areas so that runoff does not flow towards the river.
- Do not disturb existing embankments or embankment protection.
- During construction, install and regularly inspect temporary measures to prevent erosion and migration of sediment, and other debris off-site towards the river.
- Promptly implementing corrective measures as necessary.
- Seed disturbed areas with a weed free grass seed mixture as soon as possible, where applicable.

4.0 Conclusion

Triton has prepared this document to provide recommendations and mitigation measures for consideration during the development of 6172 Otway Road. Revisions or updates to this document may be required as construction progresses. Triton will assist the developer during construction to ensure environmental conditions are adhered to. Should you require any further information, or have any questions or comments, please do not hesitate to contact the undersigned.

Triton Environmental Consultants Ltd.



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Environmental Professional

Reviewed by: Trisha Merriman, R.P.Bio, CPESC, PMP

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Site Photographs



Photo 1. View of previously cleared area within the property boundaries



Photo 2. View of representative vegetation within the RPDP area



Photo 3. View of representative vegetation within the RPDP area along the first bench



Photo 4. View towards the Nechako River from the first bench and representative vegetation along the river bank