# ENVIRONMENTAL IMPACT ASSESSMENT AND MANAGEMENT PLAN FOR PROPERTY REDEVELOPMENT At 657 Westside Road, West Kelowna

**Report Prepared for:**
**Karen Lobello, owner**


**Prepared by:**

Lakestream
Environmental Services

**Brian Jantz, R.P.Bio, QEP**
**July 2020**

P.O. Box 1788, 12804 Haskins Ave.
Summerland, B.C. V0H 1Z0

Phone (250) 494-1765

Mobile (250) 488-9560
bajantz@shaw.ca

## Project Details

Date June 28, 2020

### I. Primary QEP Information

| | | | | |
|---|---|---|---|---|
| First Name | Brian | Middle Name A. | | |
| Last Name | Jantz | | | |
| Designation | R.P.Bio | Company Lakestream Environmental Services | | |
| Registration # | 1740 | Email bajantz@shaw.ca | | |
| Address | Box 1788 | | | |
| City | Summerland | Postal/Zip V0H 1Z0 | Phone # 250-494-1765 | |
| Prov/state | B.C. | Country Canada | | |

### II. Developer Information

| | | | |
|---|---|---|---|
| First Name | Karen | Middle Name | |
| Last Name | Lobello | | |
| Company | | | |
| Phone # | 403-250-2800 | Email: frank@lobello.ca | |
| Address | 3650 – 12th Street N.E. | | |
| City | Calgary | Postal/Zip: T2E 6N1 | |
| Prov/state | Alberta | Country Canada | |

### III. Development Information

| | | | |
|---|---|---|---|
| Development Type | Single family residential | | |
| Area of Development (ha) | 0.056 | Riparian Length (m) | 17.6 |
| Lot Area (ha) | 0.191 | Nature of Development | Renovation of home, repair of pool and bank stabilization |
| Proposed Start Date | Oct. 1, 2020 | Proposed End Date | November 2021 |

### IV. Location of Proposed Development

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Street Address (or nearest town) | 657 Westside Road S. | | | | | | |
| Local Government | City of West Kelowna | | | City West Kelowna | | | |
| Lake Name | Okanagan Lake | | | | | | |
| Legal Description (PID) | Lot A Plan KAP46732, DL.2924 PID:017-687-314 | | | Region Okanagan (8) | | | |
| Stream/River Type | Lake | | | DFO Area BC Interior | | | |
| Watershed Code | 310 | | | | | | |
| Latitude | 49 | 54 | 55.9 | Longitude | 119 | 32 | 02.33 |

## 1.0 Background

In April 2020 the undersigned of Lakestream Environmental Services was retained by Karen Lobello, owner of the property at 657 Westside Road S, West Kelowna, B.C. He has proposed a number of renovations and repairs on the property including:

- A replacement of the existing home;
- A repair and extension of the existing pool;
- A replacement of the wooden staircase from the pool deck to the lower dock level; and
- Addition of planting of native shrubs and trees on the lower bench and steep bank of the mid/lower setback zone.

Denis Apchin of Apchin Design has been retained to complete the design specifications for the property and supervise the new construction features. A legal survey was prepared by Ferguson Land Surveying on April 5, 2020.

## 2.0 Purpose

Based on our review of the project and the scope of the proposed development the objectives of this Environmental Impact Assessment are to:

- Review the physical and biological aspects of the project area;
- Identify environmental impacts which may occur as a result of the project activities;
- Provide recommendations for any impact mitigation requirements during home demolition and re-construction; and
- Determine the environmental setbacks based on the riparian bylaws established by the province of B.C. and City of West Kelowna;

Based on the current regulations as defined by the City of West Kelowna this project will require the following approvals:

1. An Environmental Impact Assessment showing the property features including location of existing retaining wall features, high water mark, natural boundary, repairs or replacement of features within the 15m setback; and replacement of the existing home and pool deck;
2. A description of ecosystem values associated with the property;
3. A legal survey denoting the location of the Okanagan Lake high water mark (HWM) as well as the Natural Boundary;
4. Preparation of a landscaping plan for new planting within the SPEA.

## 3.0 Physical and Climatic Attributes

### 3.1 Physical Resources

The unique ecosystems of the Okanagan Valley originate from the most northerly extent of the Dry Eco-domain extending from Mexico north into Canada. Within this southern interior eco-province, the most commonly recognized climates are arid desert and semi-arid steppe within the Great Basin. Here, in the central Okanagan, the Great Basin reaches its most northerly extent. The subject area is represented as a wide trench and foothills located between the Thompson Plateau and Okanagan Highlands greatly affected by historical glaciation. Due to a rain shadow and the southern connections, the area is dominated by arid "steppe" communities with riparian characteristics near Okanagan basin lakes transitioning to ponderosa pine and Douglas-fir stands near the upper - northerly extents.

### 3.2 Climate

The subject area lies within the central Okanagan Valley which contains some of the warmest and driest areas of the province and Canada. The Okanagan is characterized as a continental climate of long warm dry growing seasons, and cool winters with moderate snowfall. Air moving into the area generally loses most moisture on the west facing slopes of the coastal mountains, prior to reaching the Okanagan. There are occasional eruptions of hot dry air from the Great Basin extending from Mexico to Canada to the south, which in the summer, bring clear skies and very warm temperatures. In winter and early spring there are frequent outbreaks of cold, dense, arctic air.

Extreme rain events have increased in frequency over recent years as we enter an era of climatic extremes. July and September have seen daily rain events with >33 mm. The spring of 2017 was unusually wet with a late high elevation snow melt which caused significant flood levels in Okanagan Lake. Unusual amounts of spring rainfall combined with snowpack melt caused an inflow of water to Okanagan Lake which could not be released in sufficient amounts at the outlet dam to prevent widespread flooding.

### 3.3 Aquatic – Fisheries Resources

The subject property, being located on the shores of Okanagan Lake, is within an ecosystem range which is heavily influenced by water. The vegetation on the property is characterized with riparian species largely a result of high water tables. Okanagan Lake is located in the southern interior of British Columbia near the 49$^{th}$ parallel positioned in a north south axis between the Monashee and the Cascade Mountain Ranges. The lake

is located entirely within the warm, dry southern interior and receives an average annual precipitation of 315 mm. The lake is approximately 135 km long, and 4-5 km wide with a surface area of about 35,112 hectares. It is situated at an average elevation of 342 meters. Maximum depth is 242 meters with a mean depth of 76 meters[1]. The lake is regulated via a dam at the outlet of the Okanagan River at Penticton, which is controlled, under normal conditions, at lake levels between 341 and 342.5 meters. The majority of Okanagan Lake is considered to be an oligotrophic (low nutrient) with the exception of the extreme north end of the lake, which is considered to be mesotrophic[2].

Okanagan Lake supports a wide variety of salmonid and non-salmonid species. The lake provides a sport fishery primarily based on native populations of kokanee and rainbow trout. Other sport fish include eastern brook trout, mountain whitefish, lake whitefish, burbot, lake trout and yellow perch. All resident species and their origins are listed below in table 1.[3] The Province of B.C. Habitat Wizard website lists 23 species present.[4]

There are no endangered or red listed fish species within the lake[5]. It is known that kokanee juveniles and other species utilize near shore habitats during the early spring months of April and May. Many other adult species will also move into shore areas to feed during overnight periods when they are hidden from predators. Kokanee and whitefish are known to spawn along traditional foreshore areas but there are no known spawning areas that are close to the subject property. Bear (Lambly) Creek, which enters Okanagan Lake approximately 1.7 km north of the subject property provides spawning habitat within its lower reach for kokanee and rainbow trout species. A search of the B.C. Ecosystems *Okanagan Region Large Lakes Foreshore Protocol, May 2017* website verified that this property is located in a *no color zone* indicating that this area has limited fish shore spawning or mussel values. The development proposal for the subject property does not present any negative consequence to any nearby streams. There are no records of terrestrial species at risk listed for this area.

[1] File 40.3502.02 Okanagan Region MOE Lake Files. Penticton, B.C.
[2] Andrusak and Sebastian. Okanagan Lake Action Plan 2000.
[3] Field key to the freshwater fishes of B.C. Resource Inventory Committee, Prov. Of B.C.
[4] B.C. Habitat Wizard Website 2013.
[5] Province of B.C. Conservation Data Centre website.

**Table 1. Fish Species**

| Common Name | Scientific Name | Native (N) or Exotic |
|---|---|---|
| Brown bullhead | *Ameiurus nebulosus* | E |
| Burbot | *Lota lota* | N |
| Carp | *Cyprinus carpio* | E |
| Chiselmouth | *Acrocheilus alutaceus* | N |
| Eastern brook trout | *Salvelinus fontinalis* | E |
| Goldfish | *Carassius auratus* | E |
| Kokanee | *Oncorhynchus nerka* | N |
| Lake Whitefish | *Coregonus clupeaformis* | N |
| Lake chub | *Couesius plumbeus* | N |
| Laketrout | *S. nameycush* | E |
| Largescale sucker | *Catastomus macrocheilus* | N |
| Leopard dace | *Rhinichthys falcatus* | N |
| Longnose dace | *R. cataractae* | N |
| Longnose sucker | *C. catostomus* | N |
| Mountain Whitefish | *Prosopium williamsoni* | N |
| Northern Pikeminnow | *Ptchocheilus oregonensis* | N |
| Peamouth chub | *Mylocheilus caurinus* | N |
| Pygmy whitefish | *P. coulteri* | N |
| Prickly Sculpin | *Cotttus asper* | N |
| Rainbow Trout | *Oncorhynchus mykiss* | N |
| Redside shiner | *Richardsonius balteatus* | E |
| Yellow Perch | *Perca flavenscens* | E |
| Slimy sculpin | *C. confusus* | N |

## 3.4 Littoral and Foreshore Zone Features

Substrate habitat along the shore of the lake within the project area consists of sand and a mix of small gravel substrate with limited cover and/or vegetation (emergent or overhanging) provided by mature trees. The littoral zone adjacent to the proposed development site has not been specified as spawning habitat either by DFO or the Ministry of Forests, Lands and Natural Resource Operations (MFLNRO). There is no known shore spawning use by salmonids in this particular area as reported by MFLNRO. The subject property has a direct eastern aspect at the waterfront which tends to limit any shade benefits to the foreshore area from trees on the property.

### 3.5 Species of Concern

As there are no plans within the scope of this project for any development below the HWM there should not be any concern for potential disturbance of foreshore features. A search of the MOE and COSEWIC websites confirms that there are no terrestrial species at risk listed for this immediate proposed development area. The riparian areas of less developed properties, to the north of this site (approximately 5km), consist of water birch, willow sp. (primarily sand bar willow), wild rose, black cottonwood, poplar, Saskatoon, Oregon grape and poison ivy.

A search of the Ministry of Environment BC Species at Risk Explorer and the Species at risk Conservation Data Centre Occurrence Report websites did not list any records of rare or threatened plants or species at risk in the immediate vicinity of the subject property.[6]

### 3.6 Riparian Zone Features

Much of the native ecosystem in the immediate area of this property has been altered from its original state and its current status is categorized as a Brownfield site. Most of the adjacent landscape has been developed as residential zone as this is a prime area for lakefront recreational property development. A survey of the waterfront, as prepared by Ferguson Land Surveying shows that a foreshore encroachment of fill has historically occurred at the lakefront location between the toe of slope at the frontage of the existing home and the waterfront. A concrete retaining wall has been placed at the 342.0m elevation and extends to a height of 342.8m. It is the opinion of the undersigned that this retaining wall establishes the HWM for this property as 342.5m.

The subject property is comprised of a 0.191 ha rectangular shaped lot with a 17.6m waterfront. Substrate habitat along the shore of the lake within the project area consists of sand and a mix of small gravel substrate. Vegetation above the HWM on the subject property has been maintained primarily with manicured lawn which includes an area of cedar hedging and trembling aspen trees.

A steep embankment extends from the lawn area at the frontage of the existing home down to a level area of lawn at the lakefront. This bank consists of loose soil materials and has proven to be a difficult area to maintain in terms of maintenance of plants and erosion. The top of bank is presently lined with a row of shrubs and a few juniper shrubs have survived along the rock frontage. Landscape management is difficult here because of the steep gradient and loose materials.

[6] http://www.env.gov.bc.ca/atrisk/ims.htm

This property is reasonably protected from high flood waters with protection afforded by a concrete retaining wall which traverses the lake frontage of the property. Lake levels of 2017, however, did exceed the top of the retainer and flooded the lawn area between the base of frontage slope and the retainer. A dock extends off of the lakefront retaining wall which will not require any alterations.

### 3.7 Determination of High Water Mark

The Okanagan Lake High Water Mark on this property is heavily influenced by the location of the existing retaining wall. The HWM in this case follows the location of the existing lakeshore retaining wall then adjusts inland to follow the base of a previous boat ramp which has earlier been removed. Figure 3 shows the legal survey as prepared by Ferguson Land Surveying and the resulting HWM location. It is evident that there has been an encroachment of fill beyond the historic Natural Boundary location of elevation 343.0m which extends across the property above the retaining wall. The Okanagan Lake full pool, according to Environment Canada, is normally determined at the 342.5 level. The lakefront retaining wall ranges from a base elevation of 342.0m to a top level of 342.8m which therefore sets the HWM within this range. The 15m protection setback for development has therefore been measured from the front retaining wall. This line traverses the property below the existing footprint of the home which sets the footprint of the home outside of the SPEA. This line then jogs inland and crosses through the existing pool located to the north boundary of the property. Zones of sensitivity are shown in Figure 4.

### 3.8 Riparian Areas Regulation

The City of West Kelowna participates in the provincial Riparian Area Regulation process in the rationale that they will meet the provincial RAPR regulations but do not necessarily request approval from the province. The City of West Kelowna Official Community Plan has adopted this setback methodology that is closely aligned with provincial habitat protection guidelines.

A detailed assessment methodology was used to provide a site specific evaluation of this property based on these guidelines. This detailed assessment is based on three riparian functions, or Zones of Sensitivity, as follows:

- Litter fall and insect drop which are normally designed at 15m
- Inputs of large woody debris, and
- Shading which can influence water temperature

This reporting follows those criteria in determining the Streamside Protection and Enhancement Area (SPEA) setbacks for development. In this case the setback has

been determined at 15m from the HWM which crosses the property outside of the current home development. Because of the location of the historic boat ramp the SPEA now crosses through the existing pool location on the north side of the home.

## 4.0 Development Proposal and Management plan

The EIA and Management Plan provides the results of the Ferguson Land survey showing the location of the determined zones of sensitivity. As noted in Section 3.7 we have determined the present HWM as the lower retaining wall along the lakefront. The resulting 15m setback crosses the property at the top of bank just to the front of the existing home footprint. A jog in the lakefront retaining wall deflects the 15m setback through the pool area on the east side of the property.

The pool deck is a QEP determined grandfathered concrete structure located along the southern edge of the existing home. The 15m setback as determined by a jog in the lower retaining wall extends through this deck area and crosses the centre area of the pool. The pool deck therefore is a grandfathered feature which extends partly into the SPEA. This pool is in need of repairs as described later in this section. A wooden staircase also extends from the upper pool area to the lower level of the property frontage. This staircase is in need of repairs which are also discussed later in this section.

Figure 6 provides detail of the proposed new home redevelopment. The project designer has proposed a rebuild of the existing home which will remain outside of the present 15m setback. Home design features are provided in Figures 6 and 8 with more detailed development features shown in the Aquatic Development Permit application. All home development will take place from the driveway located above the existing home and machinery will not need to encroach into the setback.

It is proposed that the pool which currently extends into the 15m setback as a grandfathered feature will be redesigned and replaced. The existing pool base is cracked and leaking and the pump system, which is currently located at a higher elevation than the top of pool does not function properly. The developer has proposed a rebuild of the pool with concrete and a slight realignment of its location. A portion of the pool will be extended towards the rear of the property within the existing deck to an area outside of the SPEA. Details are shown in Figure 6. As part of this realignment it is proposed that a gabion retaining wall be located along the southern boundary of the property which will help support the pool deck area. This pool replacement is not expected to have any negative impact to the existing pool deck area or SPEA. The

outer footprint coverage of the pool deck will not change as a result of this redevelopment.

It is proposed that the wooden stairway, located between the pool upper deck and the lower property lakefront level be replaced. This stairway provides access to the lower lawn area and dock, is a grandfathered feature and is in need of repair. The designer has proposed a replacement step system consisting of pre-cast concrete slabs which will be set into the bank at a location slightly offset from the existing staircase. This new alignment will provide an improved, safer, and more permanent route to the dock area. The area of removal for the existing wooden steps will be planted with native shrubs along with the bank area leading towards the lake from the pool deck. The landing of the new step system will consist of permeable landscape tiles which will allow drainage, prevent pooling of water and allow for easy maintenance.

### 4.1 Landscape Plan

The property currently has a steep bank located between the upper and lower lawn areas located approximately midway within the SPEA setback. This bank is difficult to maintain because of its steep slope which consists of loose erodible materials. It is proposed that the slope and the lower lawn area located between the steep bank and the lower lakeshore retaining wall be planted with shrubs and trees. This treatment will also be extended to the lawn area located on the bank between the pool deck and the lakeshore retaining wall. This landscape plan will provide an area of 170 sq.m. of native planting beyond what currently exists and will provide a total of 105 additional trees and shrubs.

We have provided a landscape plan for guidance and will work with a local professional landscape company in determining the final mix of plant species and location. Figure 7 provides a detailed inventory of species and numbers of plants. Ecosystem and fish habitat values for this property will be improved substantially with the removal of lawn, stabilization of the bank and replacement with shrubs and trees.

### 4.4 Protection and Monitoring of Works

Redevelopment of this property will require environmental monitoring to insure that Best Management Practices are observed when working near water. These works will require the following protection measures:

1. A spill containment kit will be on hand in case of equipment failure and all machinery will be fueled and serviced at least 30m away from the high water mark.

2. A silt fence will be required between the lake edge and the construction area to prevent any movement of materials to the lake.
3. Protection of existing trees will be insured while machinery is in operation at the site.
4. Storage of building materials will take place at the top of the property near the driveway access road.
5. Monitoring of the development works will be the responsibility of the undersigned and will be delivered on an as required basis. A meeting with contractors will take place at the site prior to commencement of construction to insure that contractors are aware of and observe BMP's.

Construction methods near and within the 15m SPEA zone will be adhered to following the guidelines of:

- Ministry of Environment Develop With Care
- Standards and Best Practices for In-stream works
- Fisheries and Oceans Canada Working Near Water, and
- A Users Guide to Working In and Around Water.

### 4.5 Reporting

As part of this proposal it is noted that a final report will be prepared by the undersigned following completion of the project development. This report will be filed with the City of West Kelowna.

### 5.0 Timing

The site construction can take place anytime once approvals have been received from the City. Because there are no works planned beyond the lakefront retaining wall a work window will not be necessary.

## 6.0 Riparian Assessment Area, Site Plan and Development Plan

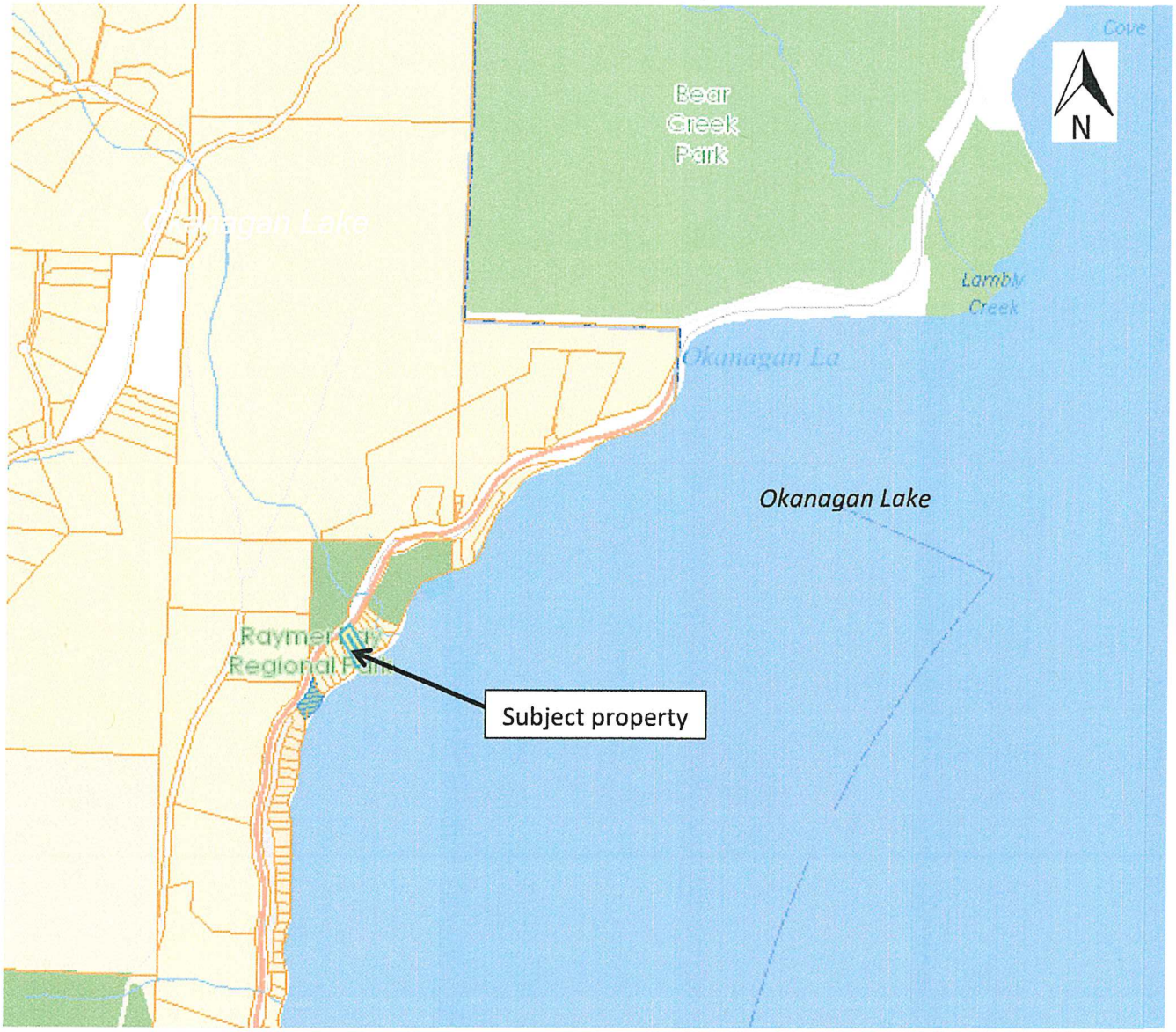



Figure 1. Location overview of Subject Property. Image source City of West Kelowna mapping website.


Figure 2. Subject property ortho location close-up. Image source City of West Kelowna mapping website.

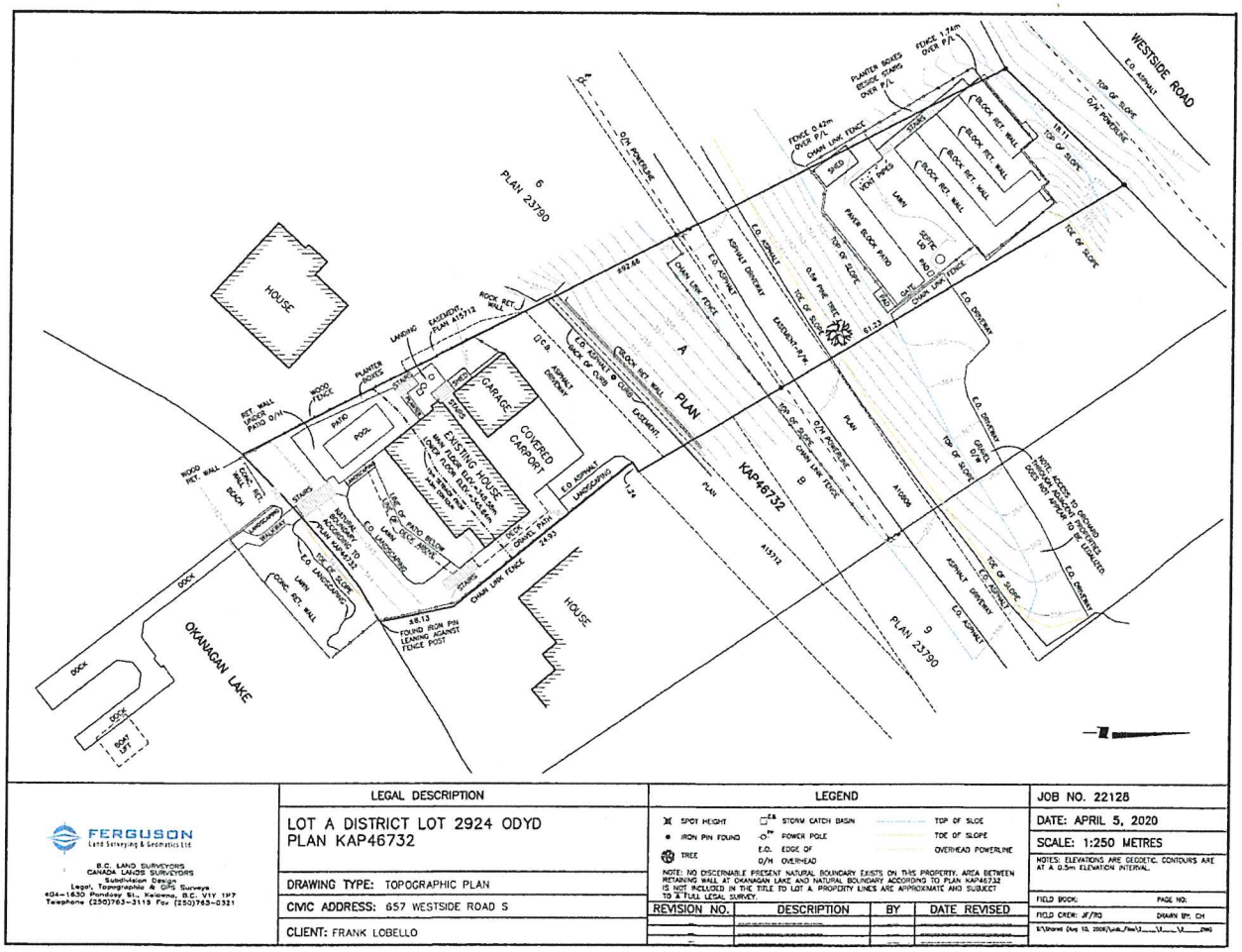



Figure 3. Site survey of existing development as prepared by Ferguson Land Surveying & Geomatics Ltd.

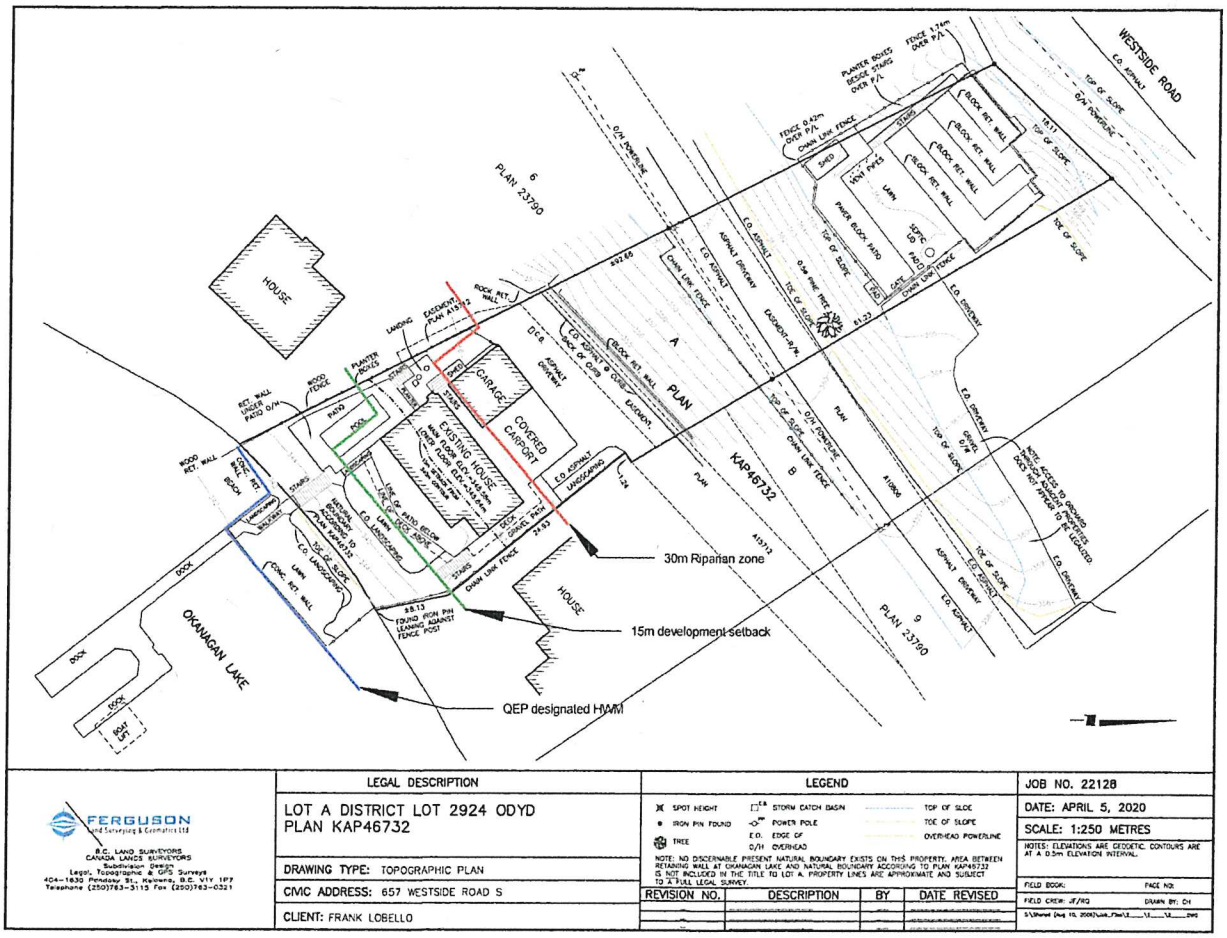



Figure 4. Zones of sensitivity and location of high water mark as determined by QEP.

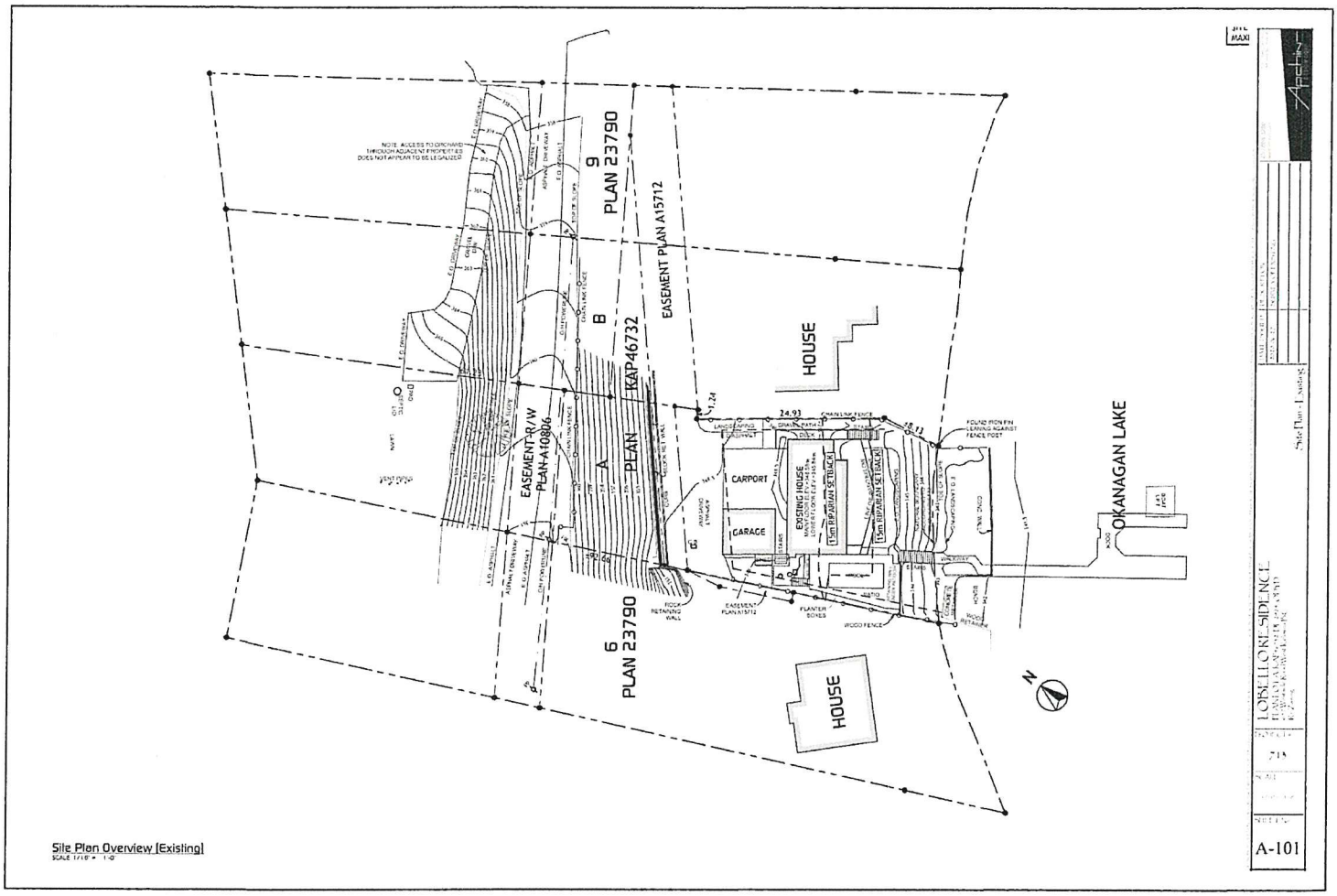



Figure 5. Site plan overview of existing features as prepared by Apchin Design.

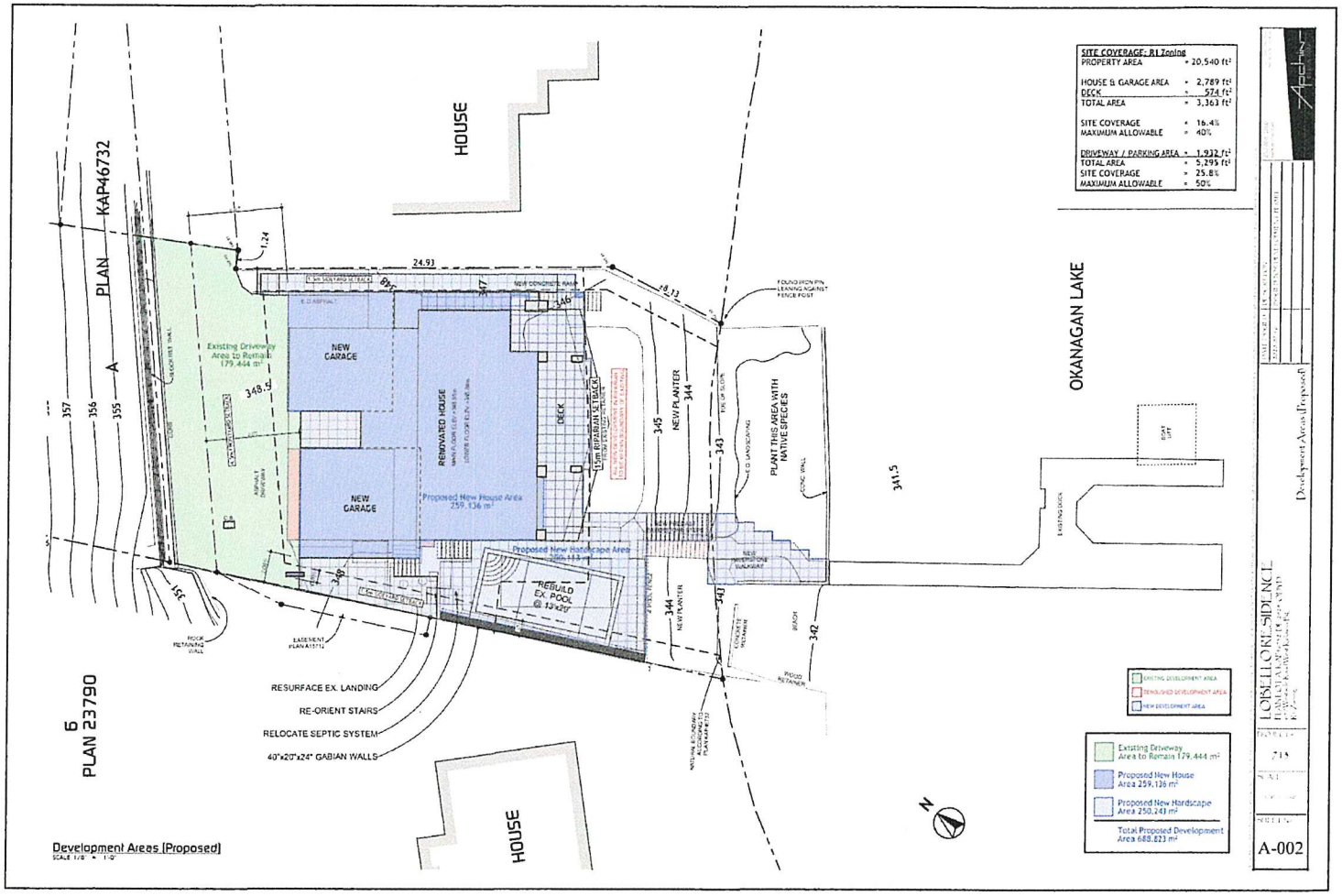



Figure 6. Site plan detailed overview of development including home replacement, pool rebuild and stairway replacement.

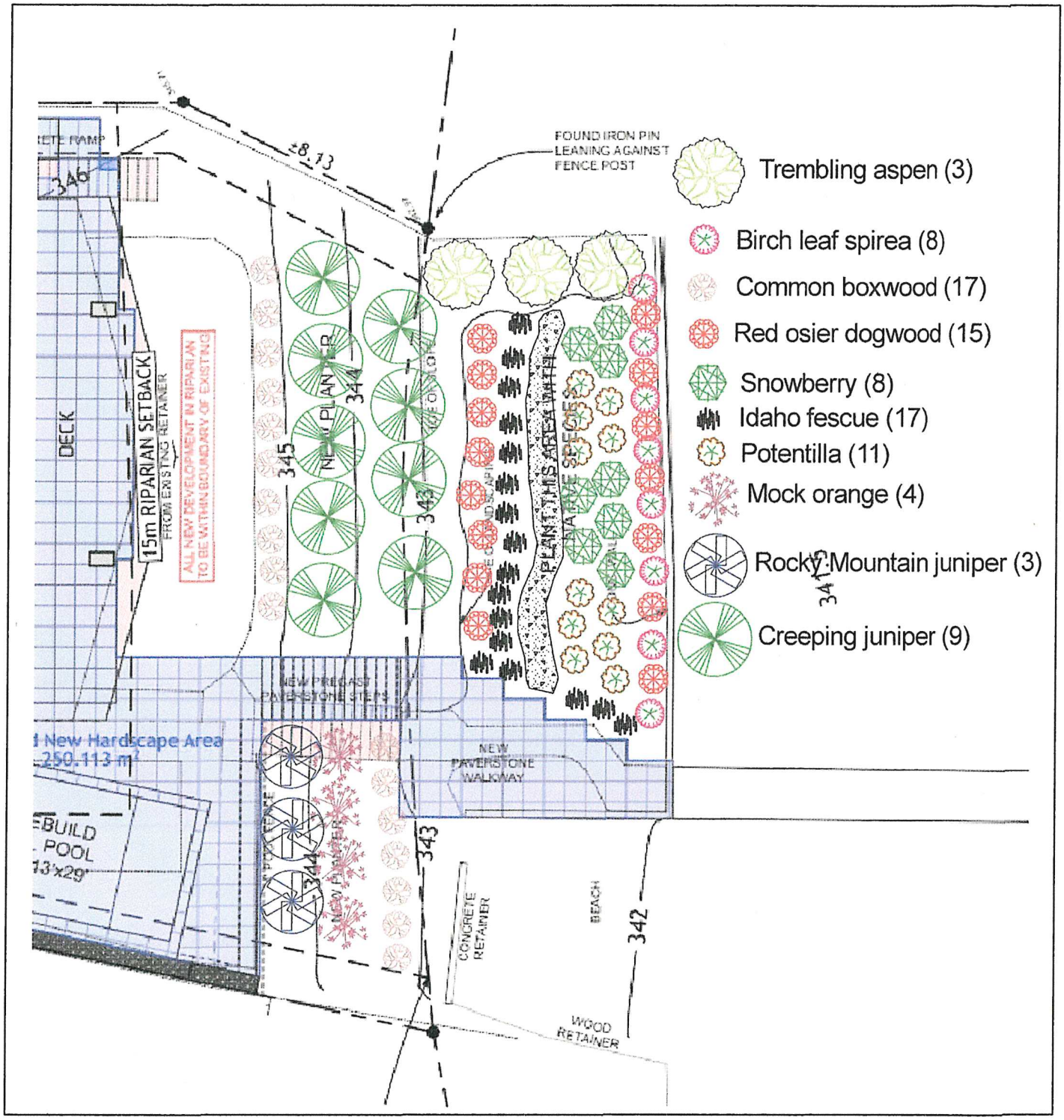



Figure 7. Site landscape plan prescription as prepared by Lakestream Environmental showing selection and location of native planting.

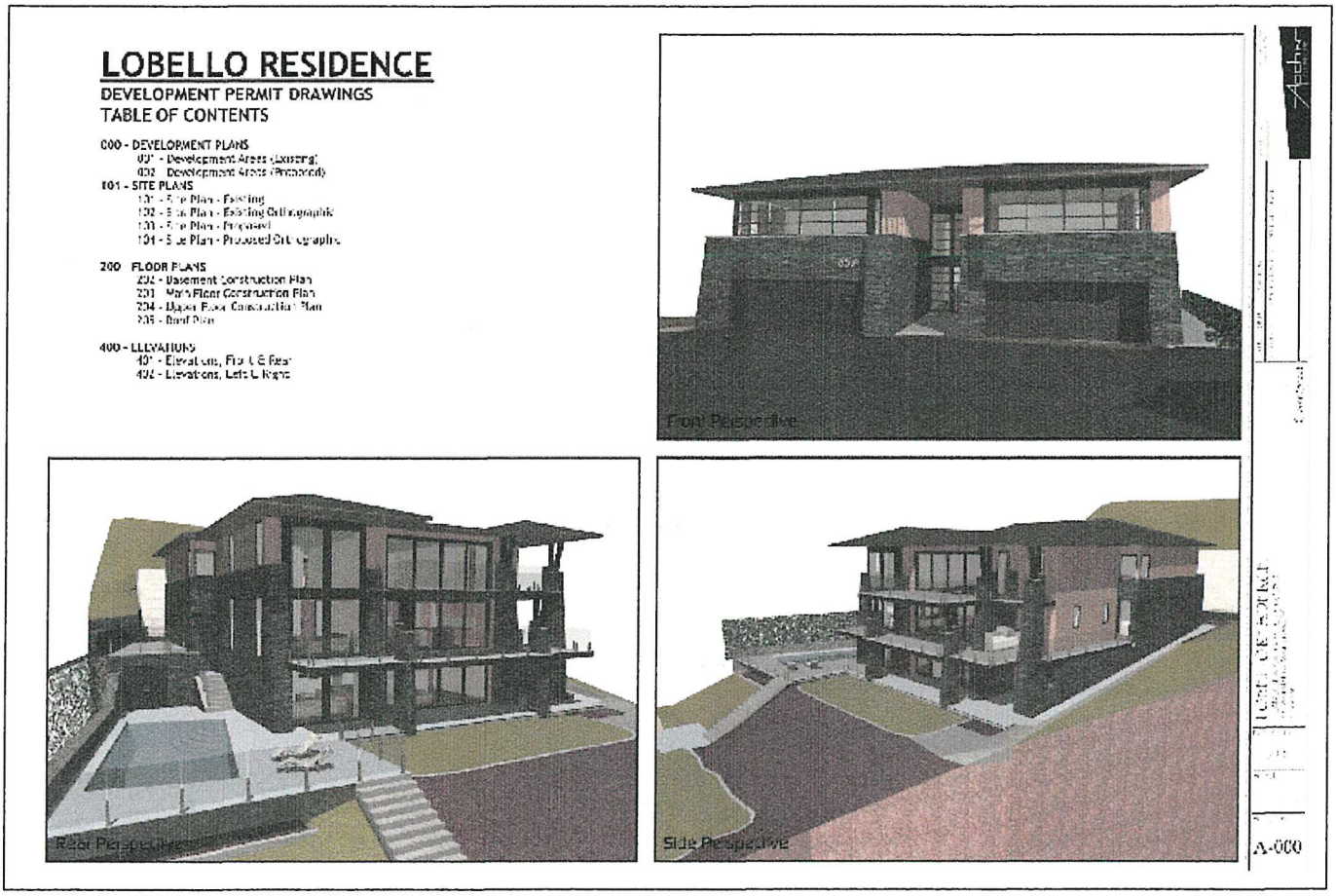



Figure 8. A concept view of the new development plans.

## Section 7.0. Photos

Photo 1. A view of the lower grass level next to the lakefront retaining wall. It is proposed that this lawn area be removed and planted with native trees and shrubs.

Photo 2. A view of the front bank which extends from the home level down to the lower grass level. It is proposed that this bank and adject lower lawn be planted with native shrubs.

Photos 3 and 4. A view from the top of bank towards the lakeshore.

Photo 5. A view of the area below the pool on the south side of the stairs. It is proposed that this grass bank will also be planted with native shrubs.

Photo 6. The owners have proposed an expansion of the pool which will extend away from the 15m setback towards the far end of the photo. The pool will be realigned with the house and formed with new concrete.

Photo 7. A view of the pool deck showing the current design. The proposal is to realign the pool with the property edge on the right and extend the pool area to the forefront. The wooden retainer along the right of the photo will be replaced with a rock gabion structure which will support the edge of the new pool.

Photo 8. A view of the wooden staircase which connects the upper pool deck to the lower dock level. The proposal calls for a redesign of the wooden staircase which will be replaced with concrete slab steps placed into the bank and shifted slightly to the left of the existing steps in the photo. The tile connecting the pool will also be replaced with a new tile design. The grass area to the right of the railing will be replanted with native vegetation consisting of shrubs.

## 8.0 Professional Opinion

**Assessment Report Professional Opinion on the Development Proposal's riparian area.**

July 20, 2020

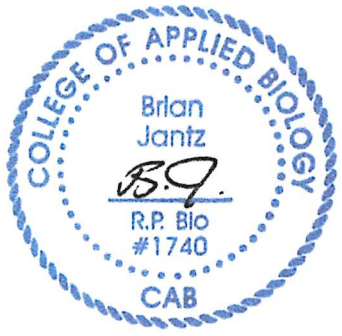
1. I Brian Jantz hereby certify that

I am a qualified environmental professional(s), as defined in the Riparian Areas Regulation made under the *Fish Protection Act*;

a) I am qualified to carry out the assessment of the proposal made by the developer Frank Lobello, which proposal is described in section 4 of this Assessment Report (the "development proposal"),
b) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and
c) In carrying out my assessment of the development proposal, I have followed the assessment methods set out within the bylaws of the City of West Kelowna; AND

2. As a qualified environmental professional, I hereby provide my professional opinion that:
   a) if the development is implemented as proposed by the development proposal there will be no harmful alteration, disruption or destruction of natural features, functions and conditions that support fish life processes in the riparian assessment area in which the development is proposed.

Respectfully submitted,




Brian Jantz, R.P.Bio
Lakestream Environmental Services
P.O. Box 1788, Summerland, B.C. V0H 1Z0
Phone 250-494-1765 Cell 250-488-9560
bajantz@shaw.ca