APPLICATION FOR DEVELOPMENT PERMITS FOR ENVIRONMENTALLY SENSITIVE AND WATERCOURSE DP AREAS

WILLOW BEACH
OSOYOOS, BC

Infinity Properties
Suite 205, 6360 – 202 Street
Langley, BC, V2Y 1N2

November 13, 2018
INTRODUCTION

Infinity Properties (the Applicant) owns two civic properties at the north end of Osoyoos Lake. A public road (Lakehead Campsite Road aka 202 Avenue) separates the two properties. The Applicant is proposing to develop the two civic properties and the public road (collectively, the Property). A new public roadway would be constructed to provide access to a separately-owned civic property located at the east end of Lakehead Campsite Road.

The proposed development is generally characterized by single-family residential lots surrounding a constructed lagoon that will be directly connected to Osoyoos Lake. A new public roadway will extend through the development while a strata road will access lots along the lake frontage. A significant portion of the property will be dedicated as conservation area.

SITE DESCRIPTION

General Site Description

The Property is located at the north end of Osoyoos Lake, approximately 6 kilometres from the Town of Osoyoos. The Property is bounded by Highway 97 to the southwest, Osoyoos Lake to the southeast, Quintal Oxbow channel and conservation lands to the north, a privately-owned property to the east (west of Quintal Oxbow), and fallow agricultural land to the northwest. Except for the highway, these lands are situated on the floodplain of the Okanagan River and generally within a few vertical metres of the lake. The lot located between the lake and Lakehead Campsite Road has historically been used as a campground and more recently as a residential trailer park. Horses have ranged on the lot to the north of Lakehead Campsite Road in recent years.

Legal Data

The proposed development involves two existing lots:

1. 9330 – 202 Avenue
   PID 002-036-738
   Lot 1, Plan KAP 22229, DL 2450S, Similkameen Division of Yale Land District, Portion L 677, FOR WILLOW BEACH MHP BAYS C/REF 70008.012 ET AL, 17714 WILLOW BEACH Manufactured Home Park
   Zoning: CT1s (lake frontage) and RM1

2. no civic address
   PID 002-036-967
   Lot 675, Plan KAP 2066, DL 2450S, Similkameen Division of Yale Land District, Except Plan 22229 43613 H9726
   Zoning: AG1
The total site area is approximately 28.1 ha (69.3 acres). A site survey plan (Figure 1) depicting the current lot boundaries and an aerial photograph of the Property (Figure 2) are included as Attachment A.

Topographic Data

The Property is flat and generally less than 1 vertical metre above the average level of the lake (approximately 278 metres geodetic). Fill has been placed on the lot nearest the lake to provide a nominal level of flood protection.

REGULATORY REQUIREMENTS

Local Government

Development as proposed is subject to rezoning and an amendment of the Official Community Plan (OCP). The Regional District of Okanagan-Similkameen (RDOS) has established OCPs for a number of areas located outside of its urban centres. The OCP for Electoral Area “A” Osoyoos Rural (Bylaw No. 2450, 2008) describes and identifies development permit areas.

Environmentally Sensitive Development Permit (ESDP) areas encompasses privately-owned lands considered to be of high and very high ecological sensitivity that are not located within the Agricultural Land Reserve (ALR). Other ecologically sensitive lands located on Crown land or privately-held land within the ALR are identified as Important Ecosystem Areas. Watercourse Development Permit (WDP) areas are those lands located within 30 metres of any stream (including ravines, lakes, wetlands and other drainage features). Maps of these DP areas are included as Schedules C and D of the OCP.

Any proposed development within either or both the ESDP or WDP areas requires the approval of the Regional Board.

Senior Agencies

Various aspects of the proposed development require the review and approval of senior government agencies. Proposed works affecting streams will be reviewed under Application File No. 8003342 for a Use Approval in accordance with the Water Sustainability Act (WSA). The application was submitted to the Ministry of Forests, Lands, Natural Resource Operations and Rural Development (FLNRORD). That agency has initiated a preliminary review of the proposal. Some aspects of the development proposal have changed since the initial application to FLNRORD; an updated submission is being prepared in conjunction with the development permit application. In addition to proposed impacts to streams and sensitive habitats within the Property, the application will also consider the direct connection of the lagoon to Osoyoos Lake and a water circulation system involving a deep-water intake from the lake.
The proposed development will also be reviewed by Fisheries and Oceans Canada with respect to potential impacts to fish habitat in accordance with the *Fisheries Act* and by Transport Canada with respect to potential effects on navigation in accordance with the *Navigation Protection Act*.

**WATERCOURSE DP AREA**

**QEP Certification**

The Watercourse DP section of this report has been prepared by Ian Whyte, P.Ag. Mr. Whyte has 37 years of experience as an environmental consultant and has prepared approximately twenty reports in accordance with the detailed methodology of the Riparian Areas Regulation (RAR). Streamside Protection and Enhancement Areas (SPEAs) described herein are consistent with RAR. The SPEA adjacent to Osoyoos Lake was determined by Mr. David Cassidy of Valley Environment. The SPEA determination of Mr. Cassidy was confirmed by Mr. Whyte.

**Description and Map**

A map of WDP areas is provided in Schedule D of the OCP and has been replicated for the Property in Figure 3 (Attachment A). More detailed mapping of watercourse areas and SPEAs is provided in Envirowest Drawing No. 946-33-04 (Attachment B). The proposed development plan is shown in McElhanney Consulting Services Ltd. Sketch 14 (Attachment C). The development plan is also shown relative to the SPEAs on Envirowest Drawing 946-33-05 (Attachment B).

**Confirmation of RAA and SPEA Boundaries**

The Riparian Assessment Area (RAA) for all streams on the Property is defined as 30 metres from the high water mark (HWM). The RAAs are depicted by Envirowest Drawing No. 946-33-04 (Attachment B). SPEA widths are summarized below for the streams on the Property.

<table>
<thead>
<tr>
<th>Stream</th>
<th>RAA width</th>
<th>SPEA width</th>
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</thead>
<tbody>
<tr>
<td>Osoyoos Lake</td>
<td>30 m</td>
<td>15 m</td>
</tr>
<tr>
<td>Foreshore Pond</td>
<td>30 m</td>
<td>15 m</td>
</tr>
<tr>
<td>Quintal Oxbow</td>
<td>30 m</td>
<td>15 m (30 m due south)</td>
</tr>
<tr>
<td>Oxbow Lake</td>
<td>30 m</td>
<td>15 m (30 m due south)</td>
</tr>
<tr>
<td>Pond 1</td>
<td>30 m</td>
<td>15 m (30 m due south)</td>
</tr>
<tr>
<td>Pond 2</td>
<td>30 m</td>
<td>15 m (30 m due south)</td>
</tr>
<tr>
<td>Constructed Channel</td>
<td>30 m</td>
<td>30 m</td>
</tr>
<tr>
<td>Historical Channel</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>
Description of Streams

Various watercourse features on and adjacent to the Property are described below.

Osoyoos Lake

The lake straddles the Canada-USA border at the south end of the Okanagan River Basin in Canada. The lake is approximately 23.2 km² in area, of which about 64 percent occurs in Canada. The lake supports a variety of native salmonid and non-salmonid species, and additionally supports a number of non-native species. Shoreline habitats are predominated by sands and gravels with minimal in-water vegetation. Riparian habitat is highly manicured and includes weeping willow, Siberian elm and black cottonwood. A relic section of channel adjacent to the lake has evolved to become a seasonally isolated pond (the Foreshore Pond) on the private property east of the Property. While located on an adjacent lot, the HWM for this stream feature was identified as continuous with the lake’s HWM by David Cassidy, RPBio. The SPEA for the lake and the Foreshore Pond are both 15 metres from HWM.

Quintal Oxbow

The Quintal Oxbow is a historic channel of the Okanagan River. It was isolated from its main flow when the river was channelized in the 1950s. Restoration efforts in recent years have “rewatered” the oxbow channel by diverting flow from the Okanagan River. The channel is in the order of 20 metres in width and the riparian zone is predominated by water birch and red osier dogwood. A gravel roadway has been constructed along the south bank of the channel along the northeast boundary of the Property. The SPEA for the Quintal Obox is 30 metres from HWM.

Oxbow Lake

An isolated oxbow lake that would have been historically contiguous with the natural channel of the Okanagan River occurs in the north-central portion of the Property. Its riparian zone is fairly natural to the east and north (water birch - red osier dogwood predominated) and open/disturbed by grazing to the south and west. As an isolated section of channel it is treated as a pond/lake in accordance with RAR. The SPEA is 15 metres from HWM, widened to 30 metres due south.

Pond 1

This pond was also a historic oxbow of the Okanagan River. It has been heavily disturbed by grazing and access road construction on its south and east sides. A wooden retaining structure forms a portion of its east bank. Its riparian zone is fairly natural to the west and north (water birch - red osier dogwood predominated). While historically a channel it is treated as a
pond/lake in accordance with RAR. The SPEA is 15 metres from HWM, widened to 30 metres due south. Most of the SPEA to the south of Pond 1 overlaps Pond 2.

Pond 2

Pond 2 is manmade. As can be seen (upon close examination) of Figure 4 (Attachment A), which compares aerial photographs from 1949 and 2007, Pond 2 did not exist in 1949. It was likely excavated as a livestock watering source. It currently has virtually no riparian habitat and is encircled by unvegetated/disturbed ground (vehicle travel surface and grazing). Notwithstanding its non-natural origin, the SPEA is 15 metres from HWM, widened to 30 metres due south. This pond is proposed to be eliminated, therefore, the SPEA for this pond is not shown on Drawing Nos. 946-33-04 and -05.

Constructed Channel

A channel was excavated from the northwest corner of the Property to about its centre. The channel has a width of 12 to 15 metres and is surrounded by seasonally-flooded meadow and marsh. The SPEA for this drainage feature is 30 metres.

Historical Channel

Figure 3 (Attachment A) identifies a watercourse that flows eastward across the south-central portion of the Property, discharging to Osoyoos Lake. The 1949 aerial photograph (see Figure 4; Attachment A) depicts a portion of a channel on the approximate alignment of the channel shown in Figure 4. However, this channel does not exist in the 2007 aerial photograph and has not been re-established. No SPEA applies to this non-existent feature.

SPEA Recommendations

All proposed development will be located entirely outside of SPEAS of the Quintal Oxbow, the Oxbow Pond, Pond 1 and the Constructed Channel. A permanently-fenced boundary will encompass these SPEAs and additional lands to be dedicated as conservation area. The only proposed activity within these SPEAs is habitat creation and restoration (described below).

As the Historical Channel does not exist a SPEA does not apply.

While no development is proposed within the SPEA of Osoyoos Lake, existing uses (primarily recreational) will continue.
A small portion of the SPEA to the northwest of the Foreshore Pond overlaps the proposed public roadway. As the public roadway is not residential, commercial or industrial in nature RAR SPEAs do not apply. The small overlap area is therefore exempt from RAR.

Pond 2 is proposed to be infilled. The portion of Pond 2 that is situated within 30 metres of the HWM of Pond 1 will be landscaped with appropriate native vegetation. The remainder will be included within the proposed development area. The elimination of Pond 2 will be accompanied by compensation habitat that will involve construction of a replacement pond of similar size (approximately 2,500 m²) of greater functional value for target species such as painted turtle. The elimination and replacement of Pond 2 will require a Change Approval in accordance with the Water Sustainability Act and may also require an Authorization in accordance with the Fisheries Act. The replacement pond would be situated such that it would be compliant with RAR.

**Conservation, Restoration and Impact Mitigation Measures**

The SPEA of the Osoyoos Lake foreshore will remain unprotected and accessible to recreational users (general public within the proposed park at the southernmost portion of the Property, and adjacent private/strata lot owners over the remainder of the lake frontage). A proposed channel connecting the lake to a proposed lagoon will be subject to senior agency review and approval.

The Foreshore Pond will be protected from development associated impacts by a fence constructed along the boundaries of the Property, generally respecting or exceeding the 15 metre SPEA. The proposed public roadway will occur slightly within the SPEA. A portion of the SPEA located southwest of the Foreshore Pond occurs on the Property and will be left undisturbed to naturally recolonize with vegetation.

During construction, temporary (high visibility construction) fencing will be installed along SPEA (or conservation area) boundaries. These will be replaced with permanent fences as soon as construction scheduling permits.

The SPEAs of the Quintal Oxbow, the Oxbow Lake, Pond 1 and the Constructed Channel all occur inside the boundary of the proposed conservation area (described furtherbelow). Only the SPEA of Pond 1 (aligned through the present location of Pond 2) delineates a portion of the development boundary.

A “hard boundary” will be constructed along the interface between the northern edge of the development area and SPEA/conservation area boundary. This boundary will include a minor retaining wall (less than 1 metre height) in combination with permanent chain-link fencing.

Portions of SPEAs that are disturbed will be restored by removing invasive and/or non-native vegetation and re-landscaping with appropriate native species. The existing access roadway that extends along the south side of the Quintal Oxbow is proposed to be retained to be used for land management purposes.
Additional and significant restoration/enhancement measures are proposed with the portion of the site to be dedicated as conservation area, some of which overlaps SPEAs. Further details on these enhancement works are described below in the context of the Environmentally Sensitive Development Permit (ESDP).

**Opinion Regarding HADD**

In the context of RAR, Harmful Alteration, Disruption or Destruction (HADD) of fish habitat reflects the definition provided in the *Fisheries Act* prior to November 2013. The Act was amended at that time and no longer defines HADD, having replaced the term with “serious harm to fish”. Further, the term “fish” was redefined and presently includes only species that support a commercial, recreational or Aboriginal fishery. Except for Osoyoos Lake, the *Fisheries Act* may have limited applicability to the Property.

Notwithstanding the foregoing, the proposed development includes several elements that will be subject to review by Fisheries and Oceans Canada (DFO). In regards to SPEAs, the elimination and replacement of Pond 2 may be deemed to affect fish habitat. A Request for Review will be submitted to DFO for this, the proposed construction of a connecting channel through the Osoyoos Lake SPEA, and some other proposed works. These works are also subject to review and approval in accordance with the *Water Sustainability Act*. All proposed adverse impacts to streams and/or fish habitat will be appropriately mitigated.

**Environmental Monitoring and Security**

The following summarizes costs associated with SPEA protection measures, enhancements and mitigation works. Monitoring will include supervision of enhancement/restoration works, construction period monitoring, and long-term monitoring and reporting of habitat works to ensure success

- SPEA delineation $2,000
- Temporary fencing $10,000
- Permanent fencing $75,000
- Restoration/enhancement works within SPEAS $60,000
- Reconstruction/enhancement of Pond 2 $145,000
- Supervision/management $10,000
- Construction period monitoring $20,000
- Long term monitoring $25,000

**TOTAL:** $337,000
ENVIRONMENTALLY SENSITIVE DP AREA

QEP Certification

The Environmentally Sensitive DP section of this report has been prepared by Ian Whyte, P.Ag. on the basis of assessment and reporting by Ecoscape Environmental Consulting Ltd. The principal authors of the Ecoscape report are Ms. Mary Ann Olson-Russello, R.P.Bio. and Mr. Kyle Hawes, R.P.Bio. The Ecoscape report will be submitted separately/concurrently with this report.

Ecological Assessment

Ecoscape conducted field assessments in 2017 and 2018. During both years the Property was flooded through much of the spring and summer periods as a result of high water levels in Osoyoos Lake and/or high groundwater levels. The flood conditions imposed some limitations on the assessments.

A map of Environmentally Sensitive Development Permit (ESDP) areas is provided in Schedule C of the OCP and has been replicated for the Property in Figure 5 (Attachment C). The OCP map identifies all of the northern lot (Lot 675) as ESDP and the remainder of the Property is not classified. The OCP map also identifies the Quintal Oxbow as Important Ecosystem.

Ecoscape stratified the Property into ten ecosystem types that were applied to twenty-six (26) polygons on the property. These polygons are depicted on Figure 2 in the Ecoscape report. Five of the ten ecosystem types are anthropogenic and or non-vegetated. Three of the natural ecosystem types are Provincially ranked. Water birch – red osier dogwood swamp and Ponderosa pine – Nootka rose – poison ivy ecosystems are Provincially red-coded, while cattail marsh is Provincially blue-coded. Ecoscape also noted that sections of the Osoyoos Lake foreshore are designated a Red Zone for freshwater mussels. Sections of the lake foreshore are also designated Black Zone and Yellow Zone for potential foreshore plants.

Ecoscape provided habitat overviews for a number of species-at-risk found or expected on the property. Species included:

- yellow-breasted chat
- great basin spadefoot toad
- western painted turtle
- great blue heron
- barn swallow
- California gull
- red-necked phalarope
- red-rooted cyperus
- peach-leaf willow
Ecoscape identifies the Urban and Rural ecosystem types as being of least risk for development. They also identified two adjacent polygons (16 and 17) as areas that could support development subject to suitable habitat compensation/enhancement being provided.

Impact Assessment and Mitigation

Proposed Development

The proposed development is generally characterized as a single-family residential development with both fee-simple and strata lots. A public roadway will extend around the north boundary to provide connectivity to an independent private lot to the east. A private strata road will provide access to strata lots along the lake foreshore. Lots and roads are proposed around a central lagoon providing boat access to the lake. A plan of the proposed development is shown in Attachment C.

The Property is approximately 28.06 ha (69.3 acres) in size. Approximately 19.3 ha (47.7 acres), or approximately 69 percent of the property is proposed to dedicated for conservation purposes. Habitat compensation and enhancements will be undertaken in the conservation area. Following the post-construction monitoring period management of the conservation lands is proposed to be handed over to a conservation organization.

Direct Impacts to Habitats

The proposed development occurs primarily within the Urban and Rural ecosystem types delineated by Ecoscape, thereby avoiding the most sensitive habitats. A proposed connection between the proposed lagoon and Osoyoos Lake will affect the Beach ecosystem. The northern boundary of the development proposes nominal additional encroachment into three other ecosystems:

- approximately 1,113 m² into cattail marsh;
- approximately 426 m² into water birch swamp; and
- approximately 3,847 m² into Pond 2 (which is surrounded by Rural ecosystem).

All of these displaced habitats will be reconstructed on the Property, to the north of the proposed development boundary. Details of proposed compensation habitats have not been produced at this time. Consultation with senior environmental agencies will be undertaken before detailed design work commences.
Edge Effects

The development area will require filling to provide flood-proof elevations for lots and roads. Where required, a low vertical retaining structure will be used to create a “hard boundary” separating developed and natural areas. Fencing appropriate to the setting will be aligned along the top of the retaining structure. Fencing will in most instances be chain-link as that form of fence is durable and is effective in keeping domestic pets from accessing the natural areas. A hedge should also be installed on the development side of the fence (on residential lots) to visually buffer the conservation area. Unless specifically requested by the Regional District, public access to the conservation area is not proposed. Following completion of the development, access should be restricted to authorized conservation groups and public officials.

Compensation and Mitigation Works

Significant portions of the proposed conservation area are currently degraded by horses that have had access to the area for many years. Relocation of the horses will occur with the development and contribute to the recovery of areas affected by grazing/trampling.

Lands in the vicinity of the proposed conservation area are currently inhabited by a number on non-native vegetation species that limited the natural productivity of the area. A program of invasive plant eradication is proposed.

A water management plan should be produced for the conservation area. The plan should address mitigation of any effects of the proposed development (this work is currently underway) such as site filling and lagoon construction on water levels in the conservation area. There may be added value in assessing whether or not the current (predevelopment) water level regime in the conservation area warrants control/modification.

Erosion and sediment control (ESC) plans will need to be developed for various aspects/phases of the project.

Timing windows for activities such as instream works and land-clearing need to be respected to protect fish and other aquatic lifeforms and nesting birds.

Ecoscape identified beach grooming as an activity limiting the functional value of the beach area to sustain species-at-risk, most notably plants. A beach management plan may be warranted.

A number of species-specific mitigation works are recommended. These include:

- increase habitat for yellow-breasted chat by planting thickets of shrubs such as rose;
- improve the existing highway crossings that were constructed for migrating great basin spadefoot toads. Fencing and additional cover should be used to provide better cover and
protection against predation. Provision of isolated pond habitat that is inaccessible to predatory fish should be considered; and

increased and/or improved habitat for western painted turtles can be developed by providing basking sites and elevated nesting sites

Short- and Long-Term Impacts

The anticipated short-term impacts of the proposed development can be mitigated by scheduling works to avoid critical life history requirements (most notable breeding/reproductive) of species-at-risk. Once the development boundary is established most aspect of site construction can be undertaken in isolation of habitat areas. Enhancement and habitat compensation works can be scheduled around key periods.

In the long-term the proposed development and conservation works are expected to have a net positive effect that is expected to be supported by long-term monitoring.

Cumulative and Residual Effects

The Property is one of the largest and last remaining sites at the north end of Osoyoos Lake subject to potential development. As such, development of the Property will not initiate further development in the area. The only other local property considered to have development potential is the private lot to the east along the lake foreshore. Much of that lot will be encompassed by SPEAs.

Once complete, all residual impacts are expected to have been sufficiently mitigated and/or compensated for such that all species-at-risk are either unaffected or have benefited from the works.

Environmental Monitoring and Security

The following summarizes costs associated with non-SPEA protection measures, enhancements and mitigation works. Monitoring will include supervision of enhancement/restoration works, construction period monitoring, and long-term monitoring and reporting of habitat works to ensure success. Contingency budget has been added to address potential deficiencies that may become apparent during long-term monitoring. Note that fencing of conservation area boundaries was addressed by the cost estimate for WDP areas, provided above.

Initial invasive plant eradication $50,000
5 year follow up – invasive plants $50,000
Compensation habitats (swamp/marsh affected by proposed boundary) $30,000
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<th>Category</th>
<th>Cost</th>
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<tr>
<td>Habitat – yellow-breasted chat</td>
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<tr>
<td>Habitat – spadefoot toad</td>
<td>$150,000</td>
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<td>Habitat – painted turtle</td>
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<td>Supervision/management</td>
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<td>Construction period monitoring</td>
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<td>Long term monitoring</td>
<td>$100,000</td>
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<tr>
<td>Contingency on habitat costs</td>
<td>$30,000</td>
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**TOTAL:** $760,000
ATTACHMENT A

FIGURES
ATTACHMENT B

ENVIROWEST DRAWINGS
ATTACHMENT C

DEVELOPMENT PLAN
(McElhanney Consultants)