

REPORT

District of Summerland Sustainability (Eco) Village Environmental Impact Assessment



NOVEMBER 2021

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EXECUTIVE SUMMARY

The District of Summerland is proposing the development of a Sustainability (Eco) Village on district owned land located at 12591 Morrow Avenue. Independently or in partnership, the District is planning to develop a leading-edge and highly sustainable residential development around and complementing the solar project. This report is the results of the environmental study, with recommendations on how to adhere to environmental sustainability in the proposed project area. To this end, in the early planning stages for the Eco Village, key environmental values were determined for the properties where proposed (the "Property"). This helped to direct the initial concepts and location for the Eco Village through identification of environmentally significant areas that are associated with federal and provincial wildlife Species at Risk, Critical Habitat and native vegetation communities.

In general, the Property is relatively pristine except for larger trails and presence of invasive plant species in the low-lying areas. The Property was mapped based on environmentally significant area ranking, with large portions of the Property being level 1 (ESA-1), or high sensitivity, and the level areas and previous gravel pit disturbance as ESA-2 (moderate sensitivity) and 3 (low sensitivity). The ESA-1 portions of the Property will be retained. At this stage, the proposed residential development is within the level and disturbed areas, or ESA-2, and the solar array is proposed within ESA-3 and 4 (not sensitive).

While species specific surveys have not been completed, the observed habitat characteristics on the Property support the potential for rare vegetation and wildlife species to use the area. The Property is within mapped Critical Habitat polygons three Species at Risk including Western Rattlesnake, Great Basin Gopher Snake, and Blotched Tiger Salamander-Southern Mountain Populations, and features required for these species were identified on the Property. Mitigation measures are to retain important features and establish ways to reduce potential for impact to these and other wildlife during residential development and occupancy. Mapped Critical Habitat for Lewis's woodpecker is directly west and adjacent to the Property; habitat features that meet Critical Habitat requirements for Lewis's woodpecker exist outside of the proposed development footprint, on the slopes to the east in ESA-1 on the Property.

The Property has a series of trails that are extensively used by hikers, mountain bikers and equestrians. It is also the location of the Test of Humanity race. While recreational use has potential to impact the pristine natural habitat, it is also considered a benefit to a socially sustainable development. For the environmental impact assessment, we considered recreational use to be a potential negative effect to be managed.

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1 INTRODUCTION

Associated Environmental Consultants Inc. (Associated) is pleased to provide this environmental impact assessment (EIA) for the proposed Sustainability (ECO) Village development in the District of Summerland, BC (the "District"). The planned development is at 12591 Morrow Avenue, on the south toe of Cartwright Mountain (the "Property"¹; Figure 1-1). The Property is situated in an Environmental Assessment Area in the District's Official Community Plan (OCP Schedule P) and Wildfire Hazard Area (OCP Schedule N), which triggers an Environmental Sensitive Development Permit (ESDP). This EIA is to meet the District's ESDP information requirements, and to inform project design so that key environmental values of the Property are protected and/or improved.

The Property is approximately 19 ha (46 acres), located north of Prairie Valley Road between Morrow Street to the west and Cartwright Ave to the east. The Property is owned by the District. The Property includes Cartwright Mountain Park, an area popular with hikers and cyclists but not currently managed by the District. Outside of existing disturbance from recreational use of the trails, the Property is a relatively pristine grassland and open forest ecosystem complex.

The project will consist of three phases: design, construction and occupancy. The EIA provides input to the design phase, which will be a detailed development concept plan for the Sustainability (Eco) Village. The EIA also includes recommendations specific to construction and occupancy to align with the District's intent for a leading-edge, high-sustainability focus. A development focussed on active living. Approximately 2.2 ha (5.5 acres) of the Property is planned for solar development, a project in the tendering phase. While not part of this EIA for the Eco Village, the solar development footprint and surrounding area is considered as part of the project's potential cumulative effects and overall property conditions.

¹ PID 012-646-601, Block B, District Lot 2543, Osoyoos Division of Yale Land District, Plan 18 and PID 012-646-709, Lot 19, District Lot 2543, Osoyoos Division of Yale Land District, Plan 182



Project site

97

Summerland

Naramata

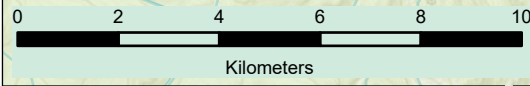
97

PENTICTON 1

Penticton

Penticton

Sources: NRCan, Esri Canada, and Canadian Community Maps contributors., Esri Canada, Esri Canada, Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, EPA, USDA, NRCan, Parks Canada



summerland.aprx / 2021-11-26 / 10:37 AM



PROJECT NO.: 2021-2345
 DATE: November 2021
 DRAWN BY: BdJ

FIGURE 1-1: PROPERTY LOCATION

District of Summerland
 Summerland (Eco) Village EIA

2 METHODS

To characterise the biophysical condition of the Property and to recommend best management practices for the proposed development, Associated completed a background information review and a field assessment.

2.1 Background Information

Associated's team reviewed available datasets, mapping, legislation, and information that was prepared for the District specifically for the Property. Prior to the current planning stage, two environmental overview studies were completed on the Property for the District, to help direct initial planning. These were key to initial review of information helped to determine the scope, timing, and objective of the field assessment. Data sources reviewed prior to the field assessment include the following:

Mapping and Data

- BC Species and Ecosystems Explorer (CDC 2021);
- Google Earth® online imagery;
- iMap BC Conservation Data Centre CDC (Data BC 2021);
- South Okanagan 1:20,000 scale Terrestrial Ecosystem Mapping (TEM);
- Wildlife habitat suitability models, Sensitive Ecosystems Inventory (SEI) classifications, and Conservation Rankings associated with the TEM (Columbia 2021);
- Environmentally Significant Area mapping by Makonis Consulting Ltd. (2019).

Legislation, Policy and Best Management Practices

- Environmental Mitigation Policy (BC MOE 2014);
- *Migratory Birds Convention Act* (SC 1994, c. 22);
- *Species at Risk Act* (SARA) Registry (Government of Canada 2021);
- Okanagan Timing Windows (BC MOE 2021).

Best Management Practices

- British Columbia Best Management Practices (BC MOE 2019);
- Develop with Care 2014: Environmental Guidelines for Urban and Rural Land Development in British Columbia (BC MOE 2014);

Community Specific

- District of Summerland Official Community Plan Bylaw No. 2220 (OCP, 2014);
- District of Summerland. A Guide to Development in Sensitive Areas (District of Summerland, 2017).
- District of Summerland Terms of Reference Professional Reports and Technical Studies (TOR, 2018);
- Columbia Environmental Consulting Ltd. 2021. Desktop Review of Available Bio-Physical Information and Environmental Sensitivity Lot 19 and Block B, District Lot 2543, Summerland, BC (Columbia, 2021);
- Summerland Solar & Storage Project Environmental Inventory Phase. 2019. Makonis Consulting Ltd.

2.2 Field Assessment

Associated met with the District’s staff (Planning and Operations), the Penticton Indian Band and the Test of Humanity trail stewards on October 27, 2021 to discuss the conceptual plan and possible mitigation approaches to the project.

After the onsite meeting, Melanie Piorecky, P.Ag., and Gisele Rehe, P.Ag., R.P.Bio. of Associated conducted a field assessment, traversing the property, documenting features and habitat boundaries. Information reviewed during the background review was verified during the field assessment, and the condition, connectivity, and quality of habitats within and adjacent to the Property was assessed. Specifically, the following information was collected:

- the type and spatial extent of vegetation communities;
- general ecosystem condition, including:
 - existing disturbance;
 - invasive plants present and their extent of infestation;
- identification of significant natural features and buffers, including the wetland and riparian zone;
- wildlife habitat sign, species specific habitat suitability, and habitat connectivity.

2.3 Environmental Sensitive Area Stratification

Environmentally Sensitive Areas (ESAs) were delineated following the site visit in accordance with vegetation and habitats present and degree of existing disturbance. ESA ratings followed criteria outlined in the District’s Terms of Reference (Table 2-1; TOR, 2018).

Table 2-1
ESAs as defined by District of Peachland

Environmentally Sensitive Area Rating	Description
ESA 1 – High	<ul style="list-style-type: none"> • Contain locally and provincially significant ecosystems (vegetation and wildlife) representing a diverse range of sensitive habitat, extremely rare and/or areas of critical importance to rare wildlife species. • Features contribute significantly to the overall connectivity of the habitat and ecosystems. • Primary objective for ESA 1 should be avoidance and conservation. • If development should occur within these areas, compensation to promote no net loss of equivalent functioning habitat may be required only after it proves impossible or impractical to maintain the same level of ecological function.
ESA 2 – Moderate	<ul style="list-style-type: none"> • Contain ecosystems local and provincially of moderate significance, uncommon and important to rare wildlife species that contribute toward the overall diversity and contiguous nature of the surrounding natural features. • Primary objective for ESA 2 areas should be avoidance, but development may be pursued in portions of this area where strong rationale is provided documenting why this is necessary. • If development is pursued in these areas, portions of the habitat should be retained and integrated to maintain the contiguous nature of the landscape. • Some loss to these ESAs can be offset by habitat improvements to the remaining natural areas found on the property.
ESA 3 – Low	<ul style="list-style-type: none"> • Areas are typically polygons delineated as low to moderate conservation values because they are important to wildlife.

Environmentally Sensitive Area Rating	Description
	<ul style="list-style-type: none">• These areas contribute to the diversity of the landscape, although it is based on the condition and adjacency of each habitat to significant function within the landscape is limited.• The primary objective for ESA 3 is mitigation of development impacts.• If development is pursued in these areas, the impacts should be offset by habitat improvements in more sensitive natural areas found on the property.
ESA 4 – Not Sensitive	<ul style="list-style-type: none">• Contribute little or no value or importance as wildlife habitat.• Development is encouraged to be focused to these sites before consideration developing higher rated sites of the area.• These areas shall not be considered as areas for restoration and enhancement or as recruitment as higher value ESA in offsetting development in other areas.

3 ENVIRONMENTAL CONDITIONS

This section describes the results of the desktop assessment of the local environment, beginning with applicable regulations.

3.1 Regulatory Framework

In addition to the District’s regulatory review process, the project is subject to provincial and federal environmental legislation. Before work can proceed, permits or approvals may be required, depending on the activity (Table 3-1). This early regulatory identification is an effort to direct planning and prevent delays to the project construction schedule. Specific mitigation measures to avoid, reduce, or compensate for potential effects and to comply with regulations are provided in Section 4.3.

Table 3-1
Applicable Legislation

Legislation	How it applies
<i>Species at Risk Act</i>	<p>The federal <i>Species at Risk Act</i> (SARA) provides legal protection of wildlife and their habitats designated under Schedule 1 of SARA (S.C. 2002, c. 29).</p> <p>American badger, Columbia Plateau pocket mouse, and fringed myotis are listed on Schedule 1 of SARA, and their habitat and behaviour may be affected by the project.</p>
<i>Migratory Birds Convention Act</i>	<p>The federal <i>Migratory Birds Convention Act</i> protects migratory birds and nests from indiscriminate harvesting and destruction (S.C. 1994, c. 22).</p>
<i>Wildlife Act</i> and <i>Wildlife Amendment Act</i>	<p>The provincial <i>Wildlife Act</i> protects vertebrate animals from direct harm except as allowed by regulation (e.g., hunting) (RSBC 1996, c. 488). The <i>Wildlife Amendment Act</i> makes it an offense to kill, harm, harass or capture an animal identified as at risk (Bill M 234 – 2017).</p> <p>Deer, black bear or various small mammals and birds or their habitats may be disturbed by the project.</p>
<i>Weed Control Act</i>	<p>The provincial <i>Weed Control Act</i> designates provincially and regionally noxious weeds (listed on Schedule A of the Act) and the associated regulations governing those plants (RSBC 1996, c. 487). The Act provides guidelines for noxious weed prevention and management, stating that it is the responsibility of the landowner to manage and prevent spread of noxious weeds.</p> <p>The project may result in the introduction or spread of invasive plants.</p>
Environmental Code of Practice for Aboveground Storage Tank Systems Containing Petroleum Products	<p>This Code of Practice provides guidance for owners of aboveground storage tank systems, the petroleum marketing and distribution industry, and provincial and territorial departments that have the authority to regulate storage tanks containing petroleum products.</p> <p>The Code is a model set of technical requirements designed to protect the environment from leaking aboveground storage tank systems. (Recommended by the BC Ministry of Environment and Climate Change, but not required.)</p>

3.2 Land Use, Biogeoclimatic Zone, and Soils

Land Use

The Property is classified as a park and includes the Morrow Ave right-of-way and a portion of an old gravel pit to the south; the gravel pit is the area planned for the solar development. The Property was used as the main feature of an annual race and fundraiser, Test of Humanity. The park is not actively managed by the District but based on the lack of trail braiding and garbage, recreational users are responsible and respectful of the environment. Neighbouring land use includes residential, natural grassland and open forest similar to the Property. Further south, agricultural land and crops are common on the landscape.

Biogeoclimatic Zone and Climate

The Property is within the Okanagan Very Dry Hot Ponderosa Pine (PPxh1) subzone variant and ranges in elevation from 580 to 620 m elevation. Summers are typically hot and dry while winters are relatively mild with little precipitation. The average daily maximum temperature for July and August is 28°C, while the average temperature in December and January is between 1-2°C. The average annual precipitation is 337 mm with most of the precipitation falling in spring.

Topography and Soils

The topography of the Property consists of a narrow, steep-sided valley that runs north - south between the residential developments on Cartwright Ave (east), Prairie Valley (south) and Deer Ridge (west). Based on ortho-image interpretation, areas outside of the northern Property boundary show depressions with riparian and wetland potential, surrounded by steep cliffs to the west and steep, sparsely-treed talus slopes and grassy slopes to the east.

During the site visit, Associated identified friable soils that are sandy and shallow in places, with exposed bedrock outcrops. The southern area of the Property (planned for the solar array) used to be occupied by the District's Works Department as a storage area and gravel pit. The exposed soils in this location are silty-sand.

3.3 Ecosystems and Vegetation

The Property consists of both open forest of Douglas-fir (*Pseudotsuga menziesii*) and ponderosa pine (*Pinus ponderosa*) forest, a bunchgrass community and a wetland area. Extensive wildfire management has resulted in reduced ladder fuel on trees, and removal of some downed coarse woody debris. The result, in the forested areas, is relatively open sight lines with isolated pockets where understory shrubs occur. Sensitive Ecosystem Inventory (SEI) was developed for the local area, which delineates coniferous woodland, grassland and "not sensitive" areas that are within the Property. The SEI mapping aligns with the site conditions. Based on field observations and in alignment with the overview assessment (Columbia 2021), there are three dry coniferous woodland ecosystems present within the Property, four grassland ecosystems, and the riparian wetland area. The following ecosystems are present, which are described based on site observations in the subsections below:

Coniferous woodland

- Ponderosa pine - Bluebunch wheatgrass (*Pseudoroegneria spicata*) – Idaho fescue (*Festuca idahoensis*) (FB)
- Ponderosa pine – bluebunch wheatgrass (PW)
- Ponderosa pine – red three-awn (*Aristida purpurea*) (PT)

Grassland

- Bluebunch wheatgrass - arrow-leaved balsamroot (*Balsamorhiza sagittata*) (WA)
- Bluebunch wheatgrass - Idaho fescue (WF)
- Bluebunch wheatgrass - selaginella (WS)

Wetland area (with riparian buffer)

- Paper birch – common snowberry (BS)

3.3.1 Coniferous Forest

Located on gentle slopes and cool aspects, the FB community dominates (Photo 1, Appendix A). On moderate slopes, the PW community dominates forests, both community types on medium textured soils. Understories are dominated by a mix of bluebunch wheatgrass and Idaho fescue. On steep, warm aspects on the western side of the property the PT community dominates as an open ponderosa pine forest. The PT and PW are provincially blue-listed ecological communities, meaning they are of Special Concern due to habitat loss and degradation throughout the region (CDC 2021). The forested areas show evidence of tree thinning for fire suppression, with strategic retention of wildlife trees and limited coarse woody debris.

Both mature and young forests are found on the Property. Mature forest occur along the toe and upper slope of Cartwright Mountain, along the west side of the Property. Mature forest on the Property is comprised of ponderosa pine, Douglas-fir, saskatoon, bluebunch wheatgrass, Idaho fescue, arrowleaf balsamroot, yarrow (*Achillea millefolium*) and spreading dogbane (*Apocynum cannabinum*). There is only a trace of infestation of weeds and invasive species, and observations during the fall site visit are limited to cheatgrass (*Bromus tectorum*) and white sweet clover (*Melilotus albus*). Mature forest borders the riparian and wetland habitat and the grassland areas.

The young forest occurs in the level, low-gradient areas where the trees are smaller and not as widely spaced as in the mature forest; fewer wildlife trees occur in this area as a result of the forests age class. Young forest on the Property is comprised of Douglas-fir and ponderosa pine tree cover, with a shrub understorey of saskatoon (*Amelanchier alnifolia*), common snowberry (*Symphoricarpos albus*), tall Oregon grape (*Mahonia repens*), rose species (*Rosa* spp.) and creeping juniper (*Juniperus horizontalis*). Past disturbance is evident in the level, young forest area, represented by wider trails, a low to moderate infestation of cheatgrass, and a low level of infestation of the noxious knapweed (*Centaurea* spp.), and Canadian thistle (*Cirsium arvense*).

3.3.2 Grassland

Grasslands on the Property are represented by areas with less than a 10% tree cover and are located on the upper ridge and eastern slopes of the Property. They are dominated by bluebunch wheatgrass, Idaho fescue, arrow-leaved balsamroot and small pockets of selaginella (Photo 2, Appendix A). Ground cover also includes juniper, snow buckwheat (*Eriogonum niveum*), pasture sage (*Artemisia frigida*), and rabbit-brush (*Ericameria nauseosa*). Widely spaced bedrock outcrops occur along the ridge and slopes and are generally unvegetated with only lichen cover. The condition of the bunchgrass communities is relatively pristine with single track trails through the area, and trace amounts of cheatgrass and spotted knapweed.

3.3.3 Riparian and Wetland Habitat

The wetland riparian area in the northwest is dominated by tall and short shrubs, with limited tree cover (Photo 3, Appendix A). The shrub communities consist of water birch (*Betula occidentalis*), saskatoon, common snowberry, tall

Oregon grape, red-osier dogwood (*Cornus canadensis*), Nootka rose (*Rosa nutkana*), giant wildrye (*Leymus cinereus*) and milkweed (*Asclepia syriaca*). Within this area is the Bebb's willow – Bluejoint reedgrass ecosystem that is provincially Blue-listed. Giant wildrye was found within the transitional wetland and as a dominant species, which is a provincially Red-listed community. With the tree, shrub and grass species composition there is structural diversity, and the vegetation composition with a low level of infestation of cheatgrass and knapweed makes it a functioning ecosystem in good condition.

Private property occurs northwest of the wetland area and is the proposed access to the Property (13705 Summergate Drive). The previously disturbed access is heavily infested with weeds (Photo 4, Appendix A), which will readily spread to any cleared areas.

3.3.4 Rare Ecological Communities and Plants

The rare ecological communities with observed on site are typical of the Okanagan interior, being somewhat locally abundant and provincially rare (Table 3-2).

Table 3-2
Rare Ecological Communities with Potential and Observed

Ecosystem Type	Associated Rare Ecological Community	Provincially Listed Status
Grassland	Ponderosa Pine - Bluebunch Wheatgrass – Idaho Fescue ¹	Blue
	Bluebunch wheatgrass – Arrowleaf Balsamroot (1,2)	Blue
	Fescue – Bluebunch wheatgrass 1,2	Red
	Common snowberry – rose – Kentucky bluegrass (<i>Poa pratensis</i>) ²	Blue
Coniferous Forest – Mature	Bluebunch wheatgrass – Arrowleaf Balsamroot (<i>Pseudoregneria spicata</i> – <i>Balsamorhiza sagittata</i>) ^{1,2}	Blue
	Trembling aspen (<i>Populus tremuloides</i>) – snowberry – Kentucky bluegrass ²	Red
	Ponderosa pine – Bluebunch wheatgrass – Idaho fescue 1,2	Blue
	Ponderosa pine - Red three-awn ²	Blue
Coniferous Forest – Young	Douglas fir – Ponderosa pine / common snowberry – Pinegrass ²	Red
Riparian and Wetland Habitat	Giant Wildrye (<i>Leymus cinereus</i>) ^{1,2} – Herbaceous vegetation	Red
	Bebb's willow – Bluejoint reedgrass ¹	Blue

¹Observed during field visit by Associated on October 27, 2021.

²Observed by Makonis in solar development area, April and May, 2019.

A rare plant survey was not completed, as the site visit was conducted late in the growing season which was not conducive to appropriately identify flowering plants. The highest potential for rare plants is in undisturbed areas, the ESA 1 polygons for grassland, riparian and wetland habitat and mature forest. Table 3-3 presents a list of rare plant

species with potential to occur regionally; the list has been pared down based on each species known habitat requirements and the habitat suitability occurring on the Property.

Table 3-3
Rare Plants from BC CDC Area Search

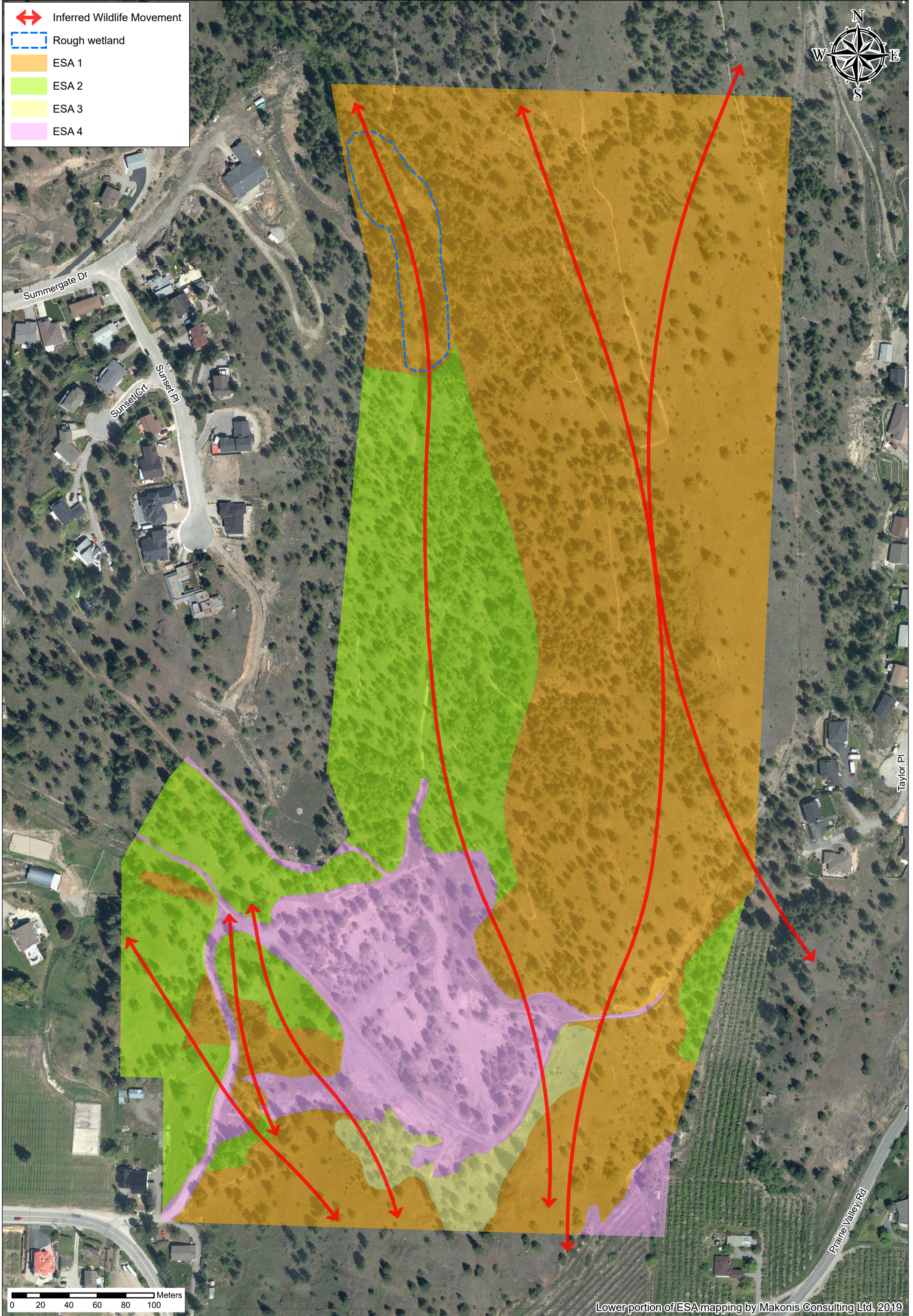
Common Name	Scientific Name
Thurber's needlegrass	<i>Achnatherum thurberianum</i>
Tiny sunress	<i>Boechera paupercula</i>
Low hawksbeard	<i>Crepis modocensis</i> ssp. <i>modocensis</i>
Sulphur lupine	<i>Lupinus sulphureus</i>
Scarlet gaura	<i>Oenothera suffrutescens</i>
Grand Coulee owl-clover	<i>Orthocarpus barbatus</i>
Showy phlox	<i>Phlox speciosa</i> ssp. <i>occidentalis</i>
Ute lady's tresses	<i>Spiranthes diluvialis</i>

3.4 Environmentally Sensitive Areas

The Property was classified into ESA-1 and ESA-2 polygons during early stratification and mapping of environmentally sensitive areas. ESA-1 is limited to the riparian and wetland area at the north end of the property (Columbia 2021). The southern extent of the Property, where solar development is proposed, is ranked from ESA-1 to ESA-4, based on wildlife features, habitat sensitivity, and existing disturbance (Makonis 2019). The findings of Associated's site visit align with those from Makonis (2019), except for an area to the east considered ESA-1 area that includes the Cartwright Mountain (Figure 3-1). ESA-1 consists of the riparian and ponded area, and the bunchgrass habitat and mature open forest on the ridge and steep upper slopes of Cartwright Mountain. The riparian and wetland is unique habitat and contains the sensitive, red-listed giant wildrye community.

The mature forest and bunchgrass communities support important wildlife habitat, contains blue-listed communities, contribute significantly to the overall connectivity of the habitat and ecosystems, and is relatively pristine with minimal weed infestation. The ESA-2 includes the lower toe and level areas that are young forest. While the ESA-2 young forest contributes to the overall diversity and contiguous nature of the surrounding natural features, it provides fewer wildlife trees and has been subject to disturbance that has reduced habitat quality.

Refer to the Makonis report for detailed ESA and wildlife mapping results for the solar array development area (Makonis 2019, Figures 4 through 8).



3.5 Wildlife and Wildlife Habitat

Wildlife characteristics on the Property are based on available information and observation of habitat and habitat conditions. The Property is within mapped Critical Habitat polygons for four Species at Risk including western rattlesnake, Great Basin gopher snake, desert nightsnake, and blotched tiger salamander. The known range of desert nightsnake does not extent further north of Princeton and is therefore not considered further in this EIA. While species specific surveys have not been completed, the observed habitat characteristics on the Property support the potential for these species to use the area, which is expanded on below. Mapped Critical Habitat for Lewis's woodpecker is directly west and adjacent to the Property; habitat features that meet Critical Habitat requirements for Lewis's woodpecker do not occur within the proposed footprint but do exist outside of the proposed development footprint, on the slopes to the east in the ESA-1 (Figure 3-1; Section 3.5). The project is not expected to affect Lewis's woodpecker and will result in protection of habitat features into the future through the park designation.

3.5.1 General Wildlife Habitat

The Property's potential to support vertebrate and invertebrates are presented here, separated into relevant classes.

Amphibians and Reptiles

Three federally-listed amphibian species with potential to occur include the blotched tiger salamander (*Ambystoma tigrinum*) (SARA Schedule 1, Endangered), the western toad (*Anaxyrus boreas*) (SARA Schedule 1, Special Concern) and Great Basin spadefoot (*Spea intermontane*) (SARA Schedule 1, Threatened). Other amphibian species with the potential to occur include the northern pacific treefrog (*Pseudacris regilla*) and the long-toed salamander (*Ambystoma macrodactylum*). Amphibians may breed in the riparian and ponded areas within the Property. Records of observation of blotched tiger salamanders on Cartwright Avenue approximately 450 m east of the Property are from 2010 and 2018. The friable soils provide important habitat attributes for burrowing, shelter, movement and foraging amphibians and reptiles. The Makonis report identifies important tiger salamander habitat potential throughout the ESA-1 areas around the planned solar facility location (Makonis 2019; Figure 3-1).

Five federally-listed reptile species with the potential to occur within the Property include the Great Basin gopher snake (SARA Schedule 1, Threatened), western yellow-bellied racer (SARA Schedule 1, Threatened), western rattlesnake (SARA Schedule 1, Threatened), northern rubber boa (SARA Schedule 1, Special Concern), and western skink (SARA Schedule 1, Special Concern). Other reptiles with the potential to occur include the western terrestrial garter snake (*Thamnophis elegans*), common garter snake (*Thamnophis sirtalis*) and northwestern alligator lizard (*Elgaria coerulea*). The mapped Critical Habitat for the western rattlesnake, Great Basin gopher snake, and desert nightsnake are based on potential winter den sites, dispersal, thermal regulation, and foraging. All three species are known to den communally, and winter denning or hibernacula is typically in areas of broken and fractured bedrock where fissures or crevices descend below the frost line. Dispersal, thermal regulation, and foraging areas include open forests and riparian areas with shrubs, rocky areas and coarse woody debris available for cover. Gopher snakes may use existing small mammal burrows for overwintering. The entire Property provides suitable habitat for reptile foraging, dispersal, and thermal protection. No suitable reptile overwintering habitat was observed within the proposed footprint; however, suitable overwintering habitat may exist outside of the project footprint and inside the Property boundary. Northern rubber boa has been observed on and near the Property while the Great Basin gopher snake and yellow-bellied racer have both been observed within 50 m to 450 m of the Property, to the west and east. No amphibians or reptiles were observed during the site visit.

Birds

Lewis's woodpecker (*Melanerpes lewis*; SARA Schedule 1 Threatened) and barn swallow (*Hirundo rustica*; SARA Schedule 1 Threatened) have the potential to occur within the Property. No provincially or SARA listed birds were observed during the site visit; however, suitable habitat may exist for barn swallow. Suitable habitat for Lewis's woodpecker exists east and outside the project footprint within an area proposed as an environmental reserve. Associated observed red-tailed hawk (*Buteo jamaicensis*), pygmy nuthatch (*Sitta pygmaea*), dark-eyed junco (*Junco hyemalis*), black capped chickadee (*Poecile atricapillus*), mourning dove (*Zenaida macroura*) and northern flicker (*Colaptes auratus*) during the site visit.

Mammals

American badger (SARA Schedule 1 Endangered) and fringed myotis bat (*Myotis thysanodes*; BC Blue-listed) and the Columbia Plateau pocket mouse (*Perognathus parvus*; BC Blue-listed) have the potential to occur within the Property.

Ungulate use was evident from pellets on trails. Observation from private landowner² noted that 20 to 40 deer pass through his yard daily; however, it is unclear if these are individuals or repeat observations. No mammals were observed during the site visit, but scat from black bear, coyote, deer, and rodent was observed.

Invertebrates

There are no red or blue-listed invertebrates listed on BC CDC with the potential to occur within the Property; however, specific vegetation serves as an attractant for some SARA listed (Endangered) invertebrates.

3.5.2 Coniferous Forest

Saskatoon berries and rose hips serve as food source for black bear, chipmunks, squirrels, grouse and other birds. Wildlife trees or old standing dead trees observed within the mature open forest serve as suitable habitat for many birds, snakes, bats and rodents, as do downed logs as coarse woody debris. Shrubs, grasses, herbs, and forbs serve as a food source for deer.

3.5.3 Grassland

Rocky outcrops provide suitable basking habitat for snakes and may provide overwintering habitat if fissures or crevices in the rock provide access to subterranean habitats below the frost line. Snow buckwheat attracts SARA listed butterflies and moths including the Behr's hairstreak (*Satyrrium behrii*), half-moon hairstreak (*Satyrrium semilunar*), and Mormon metalmark (*Apodemia mormo*) (Endangered). Grasses, herbs and forbs growing in the grassland areas serve as a food source for deer.

3.5.4 Riparian and Wetlands

Berry-producing shrubs within the riparian area serve as a food source for black bear, birds and small animals. Milkweed serves as an attractant for monarch butterflies (*Danaus plexippus*).

² Personal communication with Associated and property owner of 13705 Summergate Drive, Summerland.

4 ENVIRONMENTAL IMPACT ASSESSMENT

4.1 Environmental Values

The environmental values for the Property and surrounding area are based on site conditions, and the potential for the values to interact with the proposed Eco Village development. Environmental values include:

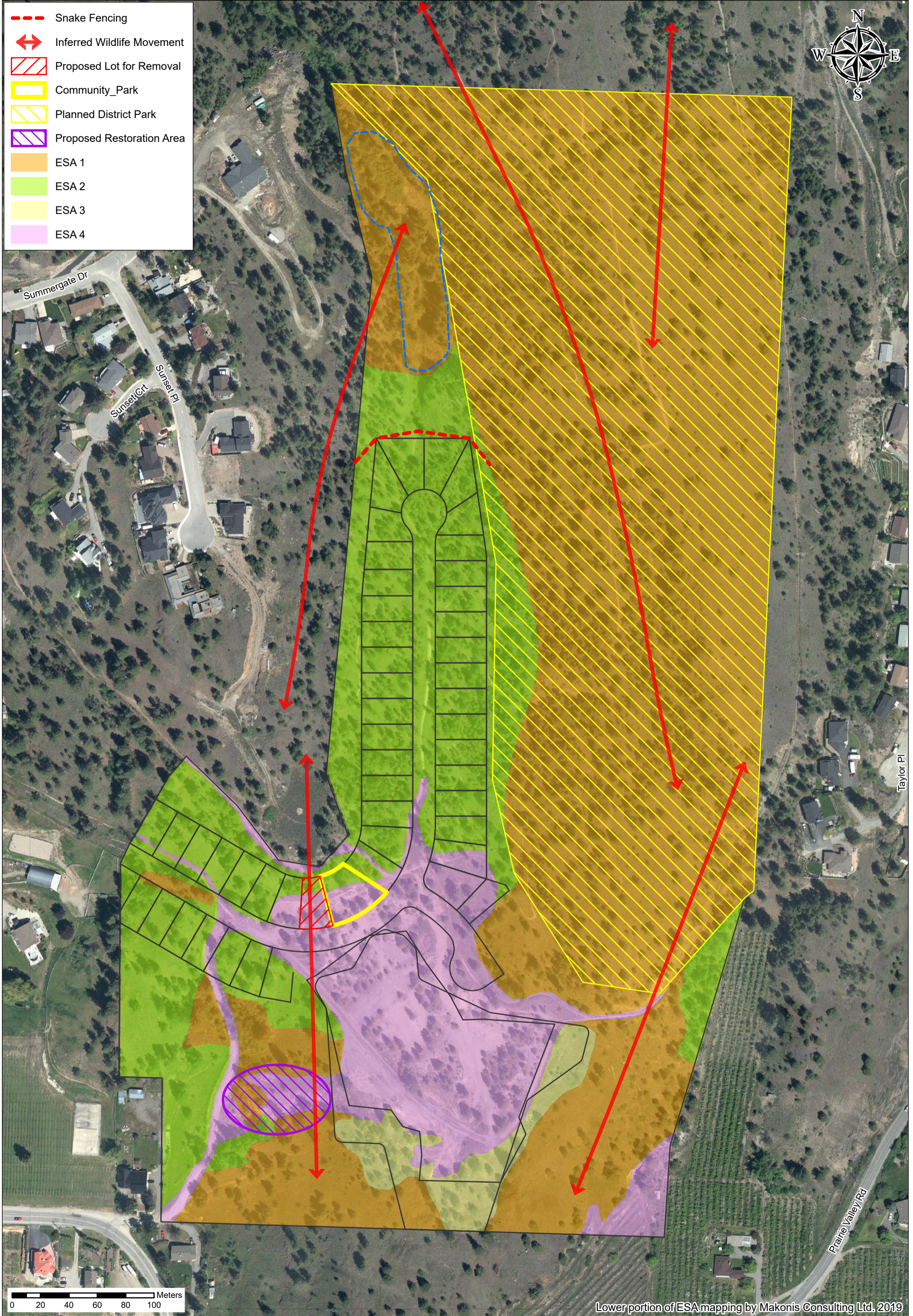
- ESA-1
 - riparian and wetland habitat
 - grasslands
 - mature coniferous forest
- Wildlife and Wildlife Habitat
 - wildlife trees
 - wildlife use and movement
 - identified Critical Habitat
- Cultural and Heritage Resources - TBD

4.2 Potential Effects

Potential effects on environmental values are being considered for the design, construction and occupancy phase. Effects are both indirect and direct, summarized by phase and activity (Table 4-1). Direct impacts will occur within the proposed footprint for the residential development and may result in xxx ha in the ESA-2 areas, xx% of the xx ha Property. This includes road access, infrastructure to accommodate services and utilities, and the footprint of the residential development. Recommendations to mitigate these effects focus on avoidance during design, followed by methods to reduce potential for impacts during construction and occupancy (Section 4.3; Figure 4-1). Compensation for residual effects are presented in Section 4.4 and a cumulative effects assessment is provided in Section 4.5.

Table 4-1
Project Phases, Activities and Potential Effects on Environmental Values

Phase	Activity	Potential Effect
Design	Project planning including: lot siting, stormwater design, lot density, road access	<ul style="list-style-type: none"> • Disturbance to ESA-1 and ESA-2 • Habitat loss • Disruption of wildlife movement
Construction	Infrastructure installation, including: vegetation clearing, tree removal, equipment use, soil stripping, soil placement, revegetation.	<ul style="list-style-type: none"> • Disturbance to ESA-1 and 2 • Vegetation or ecosystem disturbance (direct effect: vegetation clearing) • Habitat loss (direct effect: vegetation clearing) • Soil disturbance (direct effect: grubbing and terrain re-shaping) • Reduced water quality of wetland area (direct effect: spills, erosion and sediment) • Changes in wildlife habitat use and selection (indirect effect: noise and vibration). • Wildlife mortality (direct: mortality during construction). • Introduction and spread of invasive species
Occupancy	Individual lot occupation and development including: clearing for house construction, landscaping, recreational use, park and trail management, domestic pets	<ul style="list-style-type: none"> • Human and domestic animal/wildlife conflict • Introduction and spread of invasive species • Changes in wildlife habitat use and selection



Lower portion of ESA mapping by Makonis Consulting Ltd. 2019



PROJECT NO.: 2021-2345
 DATE: November 2021
 DRAWN BY: BdJ

FIGURE 4-1: PROPOSED DEVELOPMENT AND MITIGATION MEASURES
 District of Summerland
 Summerland (Eco) Village EIA

4.3 Proposed Mitigations

Mitigation for the project followed the mitigation hierarchy, where potential effects were first avoided, then reduced, and finally offset if they could not be completely avoided. The primary approach for the Eco Village was directed through initial concepts marked with an *, provided in the RFP that have been positively received by both District Council and the community. All proposed mitigations are listed here, separated by development phase. In general, mitigations are intended to reduce potential for interaction with environmental values, shown in Figure 4-1. Mitigations succeed in avoiding key environmental values, but still result in loss of wildlife habitat and obstruction to movement; residual effects and proposed offsetting is discussed in Section 4.4.

Design Phase

- *Formally designate and zone the 32-acre natural park space, adding it to the District's park inventory and maintain and protect access to existing mountain bike trails, which is currently used for the Test of Humanity race.
- *The park will become a natural buffer surrounding the development.
- *Avoid development in any ESA-1.
- For development pursued in ESA-2, integrate the development with the surrounding areas to maintain natural wildlife corridors and buffers between the development and park area.
- Re-align existing trails in the proposed development footprint to be in the park and other natural areas.
- *Include a neighbourhood community park, to be located within the development, in the location of the existing kids BMX pump track.
- Eliminate the single-family lot directly west and adjacent to the proposed community park.
- *Include additional parking for park and trail access located in proximity to the east cul de sac adjacent to the solar development.
- *Design an emergency access and water looping via the private property of 13705 Summergate Drive and connecting into Summergate Drive.

Construction Phase

- Develop an environmental management plan (EMP) specific to the site and based on potential effects and proposed mitigation in this EIA.
- The EMP will direct vegetation clearing and construction to be timed during least risk windows to wildlife using the area. Include in the EMP a wildlife protection strategy that considers potential interactions between construction and mammals, reptiles, amphibians, and birds.
- Reduce the construction footprint by only clearing vegetation that must be removed to accommodate safe construction.
- Prior to any equipment passage or construction, remove and dispose of weed infested topsoil at the proposed access from the private property of 13705 Summergate Drive.
- Retain and maintain wildlife trees, including dead standing trees and large live trees (with a DBH of >25 cm).
- For restoration of temporarily cleared areas, revegetate with native vegetation and manage weeds until the vegetation communities are successfully established.
- Give first right of refusal to the Penticton Indian Band for tendering plant production and installation, and other relevant contracts.
- Restore habitat in ESA-3 and 4 areas to compensate for loss of ESA-1 along the access road for the lower subdivision.

Occupancy Phase

- Limit clearing on lots to house footprint and revegetate temporarily cleared areas with native vegetation.
- Use signage to show trail locations and respectful trail use or “Code of Conduct”.
- Provide education about wildlife to resident, including information about snake habitat and safe interactions.
- Establish a wildlife observation reporting system for residents, which will include education about identification.
- Install snake fencing at the north end of the development along the northern-most lots to reduce the potential for snakes to enter the property.
- Plant and monitor restoration efforts in the ESA-3 and 4 areas. Establish targets that will indicate if the vegetation communities and habitat that can support tiger salamander and snake life cycle stages.
- Use only native trees and shrubs in landscaping.
- Require that no domestic cats or only indoor cats are permitted for occupants.
- Maintain wildlife trees, including dead standing trees and large live trees (with a DBH of >25 cm).
- In park area, avoid the creation of additional trails or realign as necessary.
- * In park area, close unused trails.
- In park area, continue thinning and removal of wildfire risk trees to restore low forest densities and as part of wildfire management (Columbia 2021).

4.4 Residual Effects Assessment

If all mitigations are implemented, limited residual effects are anticipated from the loss of ESA-2, resulting in reduced habitat availability and changes to wildlife movement. To characterize residual effects, the definitions of terms are provided (Table 4-2), which are based on an understanding of the proposed development and environmental values. Potential effects on environmental values that cannot be fully mitigated are presented in Table 4-3.

Table 4-2
Effects Characterization

Effects Characterization	Definition
Magnitude	Low: limited to low sensitivity habitat (ESA-3 and 4) Moderate: occurs in moderate sensitivity habitat (ESA-2) High: occurs in high sensitivity habitat (ESA-1)
Frequency	Once More than once Continuous
Geographic Extent	Site specific: limited to development footprint Local: within the Property boundary Regional: expanding beyond the Property
Reversibility	Irreversible Reversible
Timing	Neutral: outside of breeding and other important wildlife life stages Low-Risk: proximal or potentially within sensitive life-stages High-Risk: during sensitive life-stages
Likelihood of Occurrence	Low: Project effect not likely to occur. Moderate: Project effect may occur if mitigation unsuccessful. High: Effect will occur based on current site plan.

Effects Characterization	Definition
Duration	Once For 3 to 5 years In perpetuity

Table 4-3
Residual Effects Assessment

Potential Effect	Magnitude	Frequency	Geographic Extent	Reversibility	Timing	Likelihood of Occurrence	Duration
Environmental Value: Wildlife Use							
Habitat loss	Moderate	Once	Site specific	Irreversible	Neutral	High	In perpetuity
Environmental Value: Wildlife Movement							
Disruption of Movement	Moderate	Once	Site specific	Reversible	High-risk	High	In perpetuity

The project design has focused on avoiding and reducing potential effects on wildlife habitat loss and changes in wildlife movement by incorporating the design into the landscape and maintain movement corridors to the extent possible (Figure 4-1). The project will require vegetation removal that provides habitat for wildlife, including birds, ungulates, reptiles, and possibly amphibians. The proposed design considers wildlife movement across the Property and special attention has been paid to reduce disturbance to important wildlife habitat features. Suitable habitat that is equal to or better than habitat proposed for disturbance exists on lands adjacent and beyond the Property, and a large tract of land is being proposed as an ecological protection area (ESA-1 west of the Property). Large ranging wildlife species most-likely to be affected by habitat loss and altered movement, such as deer, are species that are already habituated with human land use and are therefore expected to be less impacted by new development.

Because mitigation efforts through avoidance and reduction are expected to limit disturbance and focus development to a concentrated footprint while maintaining wildlife movement along adjacent habitats, the significance of the residual effects is considered low. If other adjacent properties were developed, or the proposed park area was degraded through unmanaged recreational use, the significance of the loss wildlife habitat and movement may be more notable.

4.5 Cumulative Effects Assessment

The Property is contiguous to the north with undisturbed, tree, grassland and rocky outcrop habitat. As well, there are low-lying areas in the regional landscape that likely provide ephemeral water sources as wetlands. Any development proposed on neighbouring areas will be subject to a similar Natural Area DP and will be required to complete an EIA that considers cumulative effects, and it is assumed that this EIA will be provided for review in that process. Considerations should be linked with those listed here, particularly maintaining wildlife movement (Figure 4-1). Buffers, consideration for habitat connectivity, and risk of weed infestation should all be accounted for in future development potential on adjacent parcels. Reasonably foreseeable developments include the private property owner to the north who plans to develop up to five lots directly east of the wetland area. In the event of approval, a naturally

vegetated movement corridor between the private properties and Eco Village development should be maintained, with specifications based on input from a qualified professional.

5 SUMMARY

The proposed Eco Village residential development will result in the permanent disturbance of vegetation and ecosystems that provide moderately sensitive wildlife habitat and potential changes in wildlife movement. The overall impact is considered low significance because of the conscious effort of the design to avoid and reduce potential impacts on ESA-1, wildlife, their habitat, and their use of habitats locally and throughout the landscape. This is possible through the strategic design location in areas of lesser sensitivity and the formal designation of a District managed park for the larger part of the Property. The designation of a District park will provide permanency for wildlife access and movement north-south through the Property. The commitment to a sustainable development will include education of occupants about the integrity of wildlife and vegetation around the development, and how to respectfully and sustainably live in that setting. This will include direction about revegetation using native species, where and how safe snake encounters can occur, and managing domestic animals in a way that reduced potential for conflict and wildlife mortality.

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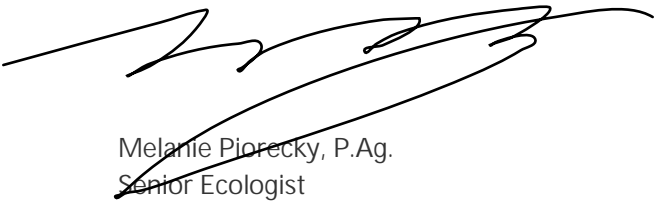
CERTIFICATION PAGE

This report presents findings regarding the District of Summerland Sustainability (Eco) Village Environmental Impact Assessment to outline the environmental conditions of site Eco Village is proposed and surrounding property, and identify potential project impacts and mitigations.

Respectfully submitted,

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