



## **Additional Environmentally Significant Areas Mapping Project Phase 2**

*Prepared for:*  
**The Corporation of the District of Saanich**

RFP 33/11 Phase 2



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## EXECUTIVE SUMMARY

This report presents the results of Phase 2 of the District of Saanich Additional Environmentally Significant Areas (ESA's) Mapping project. The information in this report will be used to inform the District of Saanich of potential new sites for the Environmentally Significant Areas Atlas and other inventories managed by the District. It is important to note that ESA's are not necessarily suitable for Council's future consideration as proposed additions to the Environmental Development Permit Area Atlas.

The overall objective of the project was identifying and mapping remaining environmentally significant areas, including smaller sensitive, rare and endangered ecosystems, as well as buffers and linkages to important biodiversity natural areas in the District. Under the advice of the Specialists Working Group a set of priority and conservation criteria was established for the sites. The objective for Phase 2 was to ground-truth 40 potential ESA sites and recommend those that showed merit for inclusion in the ESA Atlas.

Through aerial photo interpretation 180 potential ESA's were identified. To reduce the number of sites within the scope of Phase 2 the selection criteria was applied. Sites showing higher priority rankings by ecosystem type and site protection status, and buffer and linkage functions were selected, reducing the number of sites to 37 privately owned sites and 29 undeveloped right-of-ways. A total of 367 letters were sent to property owners of the selected privately owned sites requesting permission to visit the properties, including each individual property owner of a strata property. Considering strata properties as one property, there was a higher percentage of positive responses (61% vs 40%). However, more than half of those contacted did not respond. It is important to note, that there was a large variation in the number of properties per potential ESA site, from one to more than twenty, therefore the possibility to obtaining access was higher on sites composed of a large number of properties.

A total of 37 sites and 11 undeveloped right-of-ways were visited. Ground-truthing was completed on 34 sites and three undeveloped right-of-ways. Visual inspections were completed on three sites and eight undeveloped right-of-ways. Largely landscaped sites and most right-of-ways were visually inspected, since a sufficient level of information for the assessment was collected.

Each site visited was assessed<sup>1</sup> for ecological viability, function as a linkage or buffer and biodiversity values (large snags, wildlife trees, large veteran trees, ecological community threatened status) and for its restoration potential. A ranking from very high to low was applied under each category. A site with a high ranking in the assessment was considered a very high priority site for conservation. Nineteen sites scored very high, eleven sites scored high, ten sites scored medium and three sites scored low. The 40 sites with scores from very high to medium are recommended as ESA's. Of the three sites that scored low, one of them may have scored higher if access had been granted to more properties for further ground-truthing.

1. Five undeveloped right-of-ways largely landscaped bike paths were not assessed.



### ACKNOWLEDGEMENTS

We would like to acknowledge the support received from the Specialists Working Group members who provided valuable information about available data and contributed with comments and suggestions to the final methodology used in this project. We would also like to thank the numerous property owners who allowed access to their property and provided useful information. In particular, we would like to thank Lynne Husted for data about the age of the trees; Liane Gustafson for her records of bird counts; and Michael Romaine, William Karas, Dan Cunningham, Don Patterson, Terry and Sandy Hamel, Jack Attchison, John McLellan, Betty Meyers, Ian Browning, and Robert McLeod for kindly spending time to show us their properties.

We would also like to thank Saanich Environmental Manager, Adriane Pollard, and other Saanich staff for their support at all times in the development of this project.



July 2013

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## 1. INTRODUCTION

### 1.1. Background

This project was initiated by the District of Saanich in 2012, following initiatives C4b and C4f of the 2011-2015 Strategic Plan:

**C4b.** “Establish an Environmentally Significant Areas Development Permit Area to protect and enhance sensitive ecosystems, species at risk and the marine shoreline. Increasing development pressure adds to the need to protect natural ecosystems and the habitat of rare plants and animals at a level similar to the existing protection for riparian areas.”

**C4f.** “Expand the inventory and mapping of sensitive ecosystems in Saanich to include smaller environmentally significant areas (ESA’s), remnant rare and endangered ecosystems, and linkages between these areas. The current inventory is incomplete and many important and smaller ESA’s are unmapped. Better mapping will assist in identifying potential greenways based on biodiversity.”

A new Environmental Development Permit Area (EDPA) was adopted by Saanich Council on March 12, 2012. However, the inventories of the ESA Atlas used to determine the areas subject to the EDPA were not complete, partly because small sites less than 5000 m<sup>2</sup> were not mapped during the Sensitive Ecosystems Inventory (SEI) of East Vancouver Island and the Gulf Islands due to the large scale of the project (1:20,000). Also many areas with high ecological value such as habitat connecting corridors, buffers for sensitive areas, and urban forests were not considered during previous inventories.

The ESA Mapping project was developed by Saanich Environmental Services aided by a Specialists’ Working Group with the overall objective of identifying and mapping remaining environmentally significant areas, including smaller sensitive, rare and endangered ecosystems, species at risk (SAR) sites, as well as buffers and linkages between these areas. The project was to be carried out in two phases:

- In Phase 1, new environmentally significant areas were to be identified and mapped through the evaluation of sites suggested by the general public or Saanich staff.
- In Phase 2, a complete aerial photo analysis of the District of Saanich was to be carried out to investigate new potential ESA sites. The analysis was to include potential SEI sites, buffers, ecosystem linkages and wildlife corridors. The consultant biologist would prioritize, assess and ground-truth the potential sites, and recommend the inclusion of new sites in the ESA Atlas.

This report recounts the completion of Phase 2. The information contained in this report will be used to inform the District of Saanich of potential new sites for the Environmentally Significant Areas Atlas and other inventories managed by the District. It is important to note that ESA’s are not necessarily suitable for Council’s future consideration as proposed additions to the Environmental Development Permit Area atlas.

The final report for Phase 1 is also available through the District of Saanich Environmental Services.



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### 1.2. Phase 2 Project Objectives

The overall objective of Phase 2 was to investigate unmapped ESA's within the District of Saanich through a complete aerial photo analysis of the District followed by ground-truthing and ecological assessment. The analysis would take into account potential environmentally significant sites such as missed SEI sites and other natural sites (Urban Forest, altered SE sites) that due to their location would be of value to Parks and/or sensitive areas as linkage corridors or buffers. The goal was to map 40 new sites. Those found with relevant or strategic value for conservation were to be recommended for inclusion in the ESA Atlas.

### 1.3. Phase 2 vs Phase 1

Since Phase 2 was more comprehensive in its outlook and site selection compared with Phase 1, the criteria and methodology used in Phase 1 were revised. Some changes were deemed advisable to the assessment and evaluation methodologies used in Phase 1 of the project:

- a) Following the recommendation of the advisory group, the criteria for determination of a site's *condition* was expanded under the four categories to evaluate the presence /absence of representative native species (Section 2.7).
- b) Also under the recommendation of the Advisory Committee, the surface area for assessing Landscape Context was changed from 2,500 ha as applied in Phase 1 to all sites, to 500ha for ecosystems naturally occurring in a matrix (mixed and coniferous forests), and 100ha for those ecosystems occurring in patch form. For linear ecosystems, the watershed or 100 ha was used.
- c) The Ecological Assessment ranking of sites in this report has followed the numerical values used in the Resources Information Standards Committee methodology (B.C. Ministry of Environment 2006).
- d) The final criteria for recommendation of a site as an ESA were broadened to account for the following specific site values: connectivity link or buffer function to ecologically significant areas, presence of wildlife trees or veteran trees, and threatened status of the ecological community. In the case of an ecological community classified *at risk* but with an altered understory because of landscaping or human use, high restoration potential was considered as a positive factor (Section 2.8).

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### 2. METHODS

#### 2.1. ESA Mapping Technical Advisory Group

In November 2011, a group was formed to guide the ESA mapping project. Members included representatives of the District of Saanich (Environmental Services, Planning, Parks, Engineering, and GIS), the Canadian Wildlife Service, the Conservation Data Centre, the Ministry of Forests, Lands and Natural Resource Operations, and the Garry Oak Ecosystem Recovery Team. The Terms of Reference were to: determine priorities for ESA types, create priority criteria for ESA locations, and establish standards for data collection and presentation. Table 1 shows the priorities and criteria established by the advisory group for Phase 2 of the project.

#### 2.2. Air Photo Analysis

The air photo analysis used the District of Saanich's GIS Map Service 2011 air photos and layers, as well as the Terrestrial Ecosystem Mapping (TEM) layers created by Madrone Environmental Services (Madrone 2008), and mapping of Garry Oak woodlands by the Garry Oak Ecosystem Recovery Team (GOERT). The Endangered Species and Ecosystems – Non-Sensitive Occurrences mapping by the Conservation Data Centre (CDC) was also examined.

The analysis focused on areas connecting major conservation sites within the District, both in urban and rural Saanich, such as Mount Douglas Park, Rithet's Bog, Swan Lake Christmas Hill Nature Sanctuary, Colquitz River, Elk and Beaver Lakes Parks, Francis King Park, and Gowland Tod – Mount Work Parks, among others (Table 2). In this process, already identified sites (GOERT) were taken into account and undeveloped right-of-ways identified by Victoria Natural History Society (VNHS) which could function as linkage corridors or buffers were explored.

CRD and Federal Parks as well as Saanich P4 Parks and already identified SEI sites, were excluded from the analysis. However, areas adjacent to Parks or SEI were scrutinized as potential buffers or additions.

#### 2.3. Site Selection

Each identified site was assessed by its conservation and priority value, according to the two sets of criteria established by the advisory group: ecosystem type and site protection status (Table 1).

The high priority ecosystem types were assigned a score of 3 whereas low priority types were assigned a score of 1. The site's protection status was also ranked using a 3 to 1 score (highest for those sites not having protection and lowest for sites in parks).

Given the high number of sites reaching a maximum score, sites were further screened by three selection criteria: 1) uncommon ecosystems within Saanich (e.g. Grand-fir – dull Oregon grape), 2) older structural stages in forested ecosystems, and 3) ownership private, undeveloped right-of-ways, or Non-P4N Park.

Another criterion was to select a 60/40 proportion of sites within the urban and rural areas of the District.





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**TABLE 1. Priority Criteria for Selection of Sites to be Ground-truthed**

Priority in Terms of Ecosystems	
<b>High – Score 3</b>	Garry oak ecosystems, especially vernal pools, HT (Herbaceous terrestrial), CB (coastal cliffs), missed SEI polygons, especially Old Forest and Woodland sites.
	Wetlands
	Red-listed ecosystems
	SAR sites not in CDC database
<b>Medium – Score 2</b>	Areas with wildlife tree concentrations
	Garry oak tree groves without the remainder of the ecosystem
	Urban forests, i.e. entire collection of trees or treed areas growing in the municipality, in particular distinct treed ecosystems such as Garry oak woodlands and Douglas-fir forests
	Areas with high restoration potential (natural soil still there)
<b>Low – Score 1</b>	Singular or significant individual native trees
	Areas with other values (local significance, hedgerows, old fields) and mapped FS (flooded fields)
	CDC sites with large margin of error
Priority in Terms of Site Location	
<b>High - Score 3</b>	Natural buffers to parks and other protected areas
	Undeveloped right-of-ways
	Lands not already protected
	Urban / rural balance
	Linkages or green corridors
<b>Medium - Score 2</b>	Within Saanich P4 Parks (not P4-N)
	Areas that could be restored to an ESA
	Larger areas
	Agricultural Land Reserve (if not a Saanich P4-N Park)
<b>Low - Score 1</b>	Within Saanich P4-N Parks
	Protected areas already mapped
	CRD and Federal Parks
	Perch trees

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**TABLE 2. Major Areas of Conservation and Biodiversity Value**

Urban area	Rural area
Mount Douglas Park	Elk and Beaver Lakes Park
Mount Tolmie Park	Observatory Hill
Konukson Park - Harowoods	Bear Hill Park
University of Victoria forests	Gowland Tod – Mount Work Parks
Swan Lake and Christmas Hill Nature Sanctuary	Maltby Lake, Calvert and Logan Parks
Rithet's Bog Conservation Area	Glendale Lands, Quick Bottom's Park, Viaduct flats
Colquitz River Park	Francis King Park
Panama Hill Park and Panama flats (seasonal area)	Prospect Lake surroundings

### 2.4. Permission to Access Private Properties

The District of Saanich contacted the owners of the private sites selected by mail, asking their permission for the consultant biologist to visit their property. Owners were given the choice to answer the District's request by regular mail, email or phone. Anticipating that permission may not be granted to visit all of the sites, the mailing included more sites that originally planned for ground-truthing in Phase 2. From April 11-30th, a total of 367 letters were sent to property owners, explaining the project and asking for permission to visit their properties. This number included letters sent to each individual property owner of a strata property.

### 2.5. Field Surveys

Each selected site was to be inspected in the field. A pre-typed orthophoto print of each site was used to aid in the final delineation of the ecological community. The objectives of the field surveys were to:

- ✦ identify the ecological community,
- ✦ identify the SEI class and subclass, if applicable,
- ✦ describe the characteristics of the site and species vegetation cover,
- ✦ take note of the anthropogenic and natural disturbances affecting the site, and,
- ✦ determine the UTM coordinates of the survey plot and other important features (i.e., wildlife trees).

Through the field surveys, sufficient data regarding the type, condition (including disturbances) and location of the ecosystems were to be collected to enable assessment and mapping of the site as a potential ESA. Two site forms were used: Site Visit Form FS 1333 and the CDC Conservation Evaluation Form (see Appendix IV).

Data recorded on the FS 1333 were: plot code and location (UTM coordinates), biogeoclimatic zone and site series, stand age and canopy composition (forested sites), signs of disturbance, and percent cover of each of trees, shrubs, herbs and mosses.

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Each site was examined before determining a representative location for the plot. Notes were taken about disturbance, invasive species and wildlife observations. Tree, shrub, herbaceous and moss cover were estimated in 20 m diameter plots. A variation in plot size or shape, for example, to adapt to narrow sites, was recorded. In some cases, the visit took place with the owner of the property who provided additional information.

The Conservation Evaluation Form complemented the FS 1333 regarding the description and condition of the site by including SEI classification, succession status, ownership or jurisdiction, presence of invasive species observed outside the plot, known threats, and amount of fragmentation.

The assignment of Sensitive Ecosystem classes and subclasses followed the SEI classification used in the Southern Vancouver Island and Gulf Islands Inventory. By using the same criteria, all sites identified by a certain code would be equivalent to the sites already mapped, particularly Older Forests, which were identified as "conifer dominated forests with an average tree age of 100 years or greater" in the original inventory. On the other hand, the minimum area requirement of 0.5 ha for any of the classes (due to mapping constraints of the SEI 1998), and of 25 ha for Older Second Growth Forests have not been used in this project.

The principles that establish the 25 ha minimum size for Older Second Growth Forests in the 2000 SEI, (recognizing the importance of a larger area for biodiversity and to support species with large home ranges in a territory of 4,000 sq km), apply but at a lesser scale in rural and urban areas, i.e., one or two hectares of Older Second Growth Forests in Saanich may be as valuable for biodiversity and wildlife as 25 ha in wilderness areas. Small patches of older second growth are important in maintaining connectivity with larger parcels of forests across the rural-urban landscape. Therefore, no minimum size was established for any of the SEI classes in this project.

The characteristics of the "sensitive ecosystems and other important ecosystems" identified in this project are described in Sensitive Ecosystems Inventory: East Vancouver Island and Gulf Islands 1993 - 1997 (Canadian Wildlife Service 2000). The new Sensitive Ecosystem Codes classes and subclasses are described in the Standard for Mapping Ecosystems at Risk in British Columbia (B.C. Ministry of the Environment 2006).

### 2.6. GIS Mapping

The ecosystems of interest were identified and delineated in the air photos. In ArcGIS, a geodatabase was created following the standards provided by the District of Saanich. The geodatabase was populated by creating a number of layers containing the information deemed necessary for the completion of the project. A polygon feature class was created containing the digitized site location as well as elevation, slope and aspect information for each site (this was calculated using Zonal Statistics tools). A point layer was created containing information about wet areas, as well as significant and wildlife trees noted during the field visits. Finally, a point feature class was created for each plot containing attribute information collected during the field survey. Additional tables were included in the geodatabase with detailed vegetation information for each plot. All plots and corresponding sites were linked by the unique plot identifier. All feature classes had detailed metadata information following standards provided by the District of Saanich.

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### 2.7. Evaluation of Ecological Integrity

The ecological value of the sites was assessed through a modification of the procedure described in the manual "Standard for Mapping Ecosystems at Risk in British Columbia" (Sec. 4.4 and 4.5) (Ministry of Environment and RISC 2006). The methodology described in the above manual is based on three criteria: landscape context, condition and size of the ecological community. Since the methodology was designed primarily to assess the ecological integrity of ecosystems anywhere in BC, i.e., often in less populated areas than Saanich, the methodology and definitions were modified for this work.

In order to apply the method to an urban environment where fragmentation and presence of invasive species are the norm, the standard criteria for "fragmentation of the landscape" and "pristine condition" (species composition) were lowered, and "restoration potential" was substituted for "ecosystem size". Each site was then rated on each of these three criteria, i.e., landscape context (L), condition (C) and restoration potential (R), and classified into four categories (Table 3):

- Excellent (score 4)
- Good (score 3)
- Fair (score 2)
- Poor (score 1)

The surface area considered under *landscape context* took into account the type of ecosystem:

Forested sites: 500 ha

All other ecosystems: 100 ha

The ranking of each site was then derived from the sum of the scores as determined by two formulae: stair- step weighted values and even values (Ministry of Environment and RISC 2006).

Using the **stair-step method**, the criteria scores were weighted. In coniferous forests, *landscape context* was given a higher weight to account for the matrix spatial pattern of Douglas-fir ecosystems in the area and the importance of the surrounding landscape. In all the other ecosystem types the higher weight was placed on *condition*.

Coniferous forests stair-step evaluation =  $0.45 * L + 0.33 * C + 0.22 * R$

All sites (except coniferous forests) stair-step evaluation =  $0.45 * C + 0.33 * L + 0.22 * R$

The **even values method** consisted of a simple sum of the three criteria divided by three:

Even values evaluation =  $(L + C + R) / 3$

The final ecological integrity score was derived from the averaged results of the two methodologies.



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**TABLE 3. Criteria for Assessment of Ecological Integrity**

Landscape context (L)	
<b>Excellent – Score 4</b>	The surrounding landscape has <25% fragmentation due to roads, urban areas and rural settlements, and no recent industrial activity. Site occurs within a larger landscape with some formal protection status or is protected by conservation covenants.
<b>Good – Score 3</b>	Up to 50% of the surrounding landscape is fragmented. The larger landscape context provides some protection from anthropogenic disturbance, although changes to natural disturbance regimes exist (fire suppression, flooding control).
<b>Fair – Score 2</b>	More than 50% of the surrounding landscape is fragmented and affected by anthropogenic influences. Development may affect the ecosystem’s existence.
<b>Poor – Score 1</b>	Less than 15% of the surrounding landscape consists of natural or semi-natural vegetation, or the ecosystem is completely isolated from natural and protected areas.
Condition (C)	
<b>Excellent – Score 4</b>	Typical species for the ecosystem form the vegetation cover in all layers. Minor cover of exotic species occur in the site (<10%). Forested ecological communities consist of climax vegetation. The community may have minor internal fragmentation (<5%). Wetland and riparian communities have natural hydrology regimes. No artificial structures occur on the site.
<b>Good– Score 3</b>	Typical species for the ecosystem form the majority of the vegetation cover in all layers. Some cover of exotic species (10 - 40%). Forested ecological communities may be late seral vegetation. Wetland and riparian communities have largely natural hydrology regimes. There may be moderate internal fragmentation (<25%).
<b>Fair – Score 2</b>	Typical species for the ecosystem form the canopy layer and are present in the understory, although if in the latter, do not compose the majority cover. Significant cover of exotic species (40 - 75%). Forested ecological communities typically are young seral vegetation regenerated after anthropogenic disturbance. There may be significant alterations of the hydrology regime in wetlands and riparian ecological communities. There is moderate internal fragmentation (<25%).
<b>Poor– Score 1</b>	Typical species for the ecosystem form the canopy layer but have disappeared from the shrub or herbaceous layers. Exotic species dominate a vegetation layer or may total >75%. Significant anthropogenic disturbance, such as removal of soil material or vegetation. There are significant alterations to the hydrology regime in wetlands and riparian ecosystems. High internal fragmentation (>25%), presence of artificial structures or barriers.
Restoration potential (R)	
<b>Excellent – Score 4</b>	The natural species, soils and disturbance regime are mostly intact, only minor control of invasive species is needed.
<b>Good – Score 3</b>	The natural species, soils and disturbance regime are present, but sustained invasive species control is needed to achieve restoration.
<b>Fair – Score 2</b>	Alterations to the natural disturbance regime require major work. The removal of invasive species will leave major portions of exposed soil, requiring planting. Many years of work will be needed to achieve a completely natural appearance.
<b>Poor – Score 1</b>	Soils and vegetation were removed, and site is dominated by alien invasive species. Site may be affected permanently.

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### 2.8. Evaluation of Site Function and Biodiversity Values

For the final assessment, the functionality of a site as a buffer zone or linkage corridor was taken into account, giving weight to these site functions within the overall strategy of connecting major areas of conservation and biodiversity value within the District. Also the presence of large snags, wildlife trees, large veteran trees, the threatened status of an ecological community and a high restoration potential were considered for the final assessment. A site was given points for the following values (Table 4):

**Table 4. Evaluation of Site Function and Biodiversity Values**

	Link / Buffer function	Snags, wildlife trees or large veteran trees	Threatened status	Restoration potential
<b>+0.5</b>	A crucial link in the conservation strategy because of location or large size / important buffer to a conservation area	Presence of two or more large snags (>80cm diameter with signs of use), oversize veterans (>100cm diameter), or wildlife concentration area.	Red listed	Excellent
<b>+0.3</b>	Important link but other areas available / buffer to small portion of the conservation area	One large or more than two smaller diameter wildlife trees with signs of use, or one oversize tree.	Blue listed	Good
<b>+0.1</b>	A small or isolated link in the overall linkage strategy / some buffer not immediately adjacent	One-two small diameter wildlife trees, or with less than 1/2 original length with signs of use	Yellow listed	Medium

The sites were ranked under four classes of conservation values and classified by the final score (sum of *ecological integrity* score and *function and biodiversity value* scores):

- ♣ Very High Priority : >4.5
- ♣ High Priority : >3.5 ≤ 4.5
- ♣ Medium priority : >2.4 ≤ 3.5
- ♣ Low priority : ≤ 2.4



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### 3. RESULTS

#### 3.1. Air Photo Analysis

In a preliminary review, major areas of conservation and biodiversity value were identified in the District of Saanich, either under CRD, municipal Government or private property (Table 2). Based on these main centres, an overall connection strategy was defined to aid the air photo analysis (Figure 1).

Background material in the form of GIS layers and datasets from other projects (permission granted), as well as orthophoto and satellite imagery (2011) were provided by the District of Saanich: Terrestrial Ecosystem Mapping of the Coastal Douglas-fir Biogeoclimatic Zone (Madrone 2008), Garry Oak Ecosystems (GOERT 2012), SEI, environmental and base layers (parks and protected areas, significant trees, CDC species- at-risk records, property boundaries, digital elevation models). Areas were also checked with September 2012 Google Earth satellite imagery. Mapped and written records on undeveloped right-of-ways from VNHS were checked (VNHS 1999).

Orthophotos were examined prioritizing the identification of unmapped Garry oak woodlands, herbaceous terrestrial ecosystems, wetlands, and older forested sites in private land or P4 Parks. A total of 180 sites were identified as potential ESA's: 78 urban and 102 rural. However, some of the sites were already identified as part of existing TEM polygons (Madrone 2008). In addition, 79 undeveloped right-of-ways showed potential merit.

#### 3.2. Selection of Sites

To reduce the number of sites, those with a higher linkage and buffer potential were selected, resulting in 81 sites and 41 undeveloped right-of-ways. Since the higher priority criteria were applied at the identification phase, most of the sites achieved the maximum score. A second selection was applied by focusing on sites with the highest ranking, and more specifically on woodlands, wetlands, old forests, mature forests and uncommon ecosystems within Saanich. This second selection reduced the number of sites to 58: 35 in rural and 23 in urban areas, and 29 undeveloped right-of-ways (Table 5). To further the selection criteria and reduce the number of sites to a manageable amount, it was decided, in consultation with the Saanich Environmental Manager, to not apply the 60 / 40 proportion to the urban vs rural sites as had been previously planned, since urban sites were smaller and likely in worse condition than the rural ones. It was also decided to favour sites not identified under TEM (Madrone 2008). A preliminary list of 37 sites, 13 urban (35%) and 24 rural (65%) was formed (Table 6).

**Table 5. Reduction from Originally Identified Sites**

	Sites	Undeveloped right-of-ways
Number of sites identified	180	79
Number of sites with linkage/buffer function priority	81	41
Number of unusual ecosystems, older forests, woodlands and wetlands	58	29
Number of preferably non- TEM sites	37	29

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**TABLE 6. Sites Selected for Ground-truthing**

U: Saanich urban containment zone R: Saanich rural

U / R	Adm. Ref.	SITE LOCATION	DESCRIPTION
U	2	Bristol Rd	Woodland in private property between Playfair Park and Swan Lake Park
U	3	Falmouth Rd and Lodge Ave	Backyards of several private properties between Falmouth Rd and Lodge Ave, near Swan Lake
U	4	Richmond Rd and Veteran St	Potential WD or SG near Mt Tolmie Park on private properties between Richmond Rd and Veteran St
U	6	Wilkinson Rd and Helen Rd	NE forested facing slope on Wilkinson Rd, between South Valley Park and Knockan Hill Park
U	8	Ascot Dr and Persimmon Dr	Potential woodland on several properties between Ascot Dr and Persimmon Dr, not far from Kings Pond
U	12	Lily Ave	Potential wet forest along creek course between Bruce Hutchison Park, Rogers Park and Bernard Park. Near Christmas Hill WD patches
U	13	Maltwood Lane and Maltwood Terrace	Rocky outcrop between Stoneywood Park and Valewood Park
U	15	Leveret Place, Milner Ave and Ambassador Ave	SEI woodland in private property, undeveloped right-of-way between Milner Ave and Clatworthy Ave
U	16	Mt Douglas Cross Rd, Lynnfield Cres and Glendenning Rd	Woodland patch near Mount Douglas Park on private properties
U	18	Arbutus Rd	Forested properties along Arbutus Road near Arbutus Cove Park
U	19	Stoneywood Lane	Steep forested site next to Stoneywood Park and Maltwood Park
U	20	Gardenwood Crt and surroundings	Forest woodland and rock outcrop. Connection between Mt Douglas and Parkwood Park - Rithets Bog
U	23	Del Monte Ave	Forested private properties adjacent to Doumac Park and along Ravens Creek
R	2	Watkiss Way	Young forest with a wet component between Knockan Hill Park and Francis King Park
R	3	Prospect Lake Rd and Charlton Rd	Mature forest along Porters Cr
R	4	Charlton Rd	Mature forest, connection between Charlton Park and Francis King Park
R	5	Charlton Rd and Granville Ave	Mature forest with a woodland component
R	6	Granville Ave and Charlton Rd	Mature forest, connects to woodland near Courtland Flats
R	8	Glendenning Rd	Properties adjacent to Mount Douglas Park, next to a woodland and a wetland



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U / R	Adm. Ref.	SITE LOCATION	DESCRIPTION
R	10	Prospect Lake Rd	Mature forest next to Francis King Park
R	12	Camosun College Interurban Campus	Forest along Goward Springs A next to Quick's Bottom
R	13	Mann Ave and Wilkinson Rd	Next to Laritz Park
R	14	Lochside Dr and Faithwood Rd	East facing slope within rural Saanich, next to SEI (WD) and potential HT on hilltop, connection to Faithwood Park
R	15	Donwood Dr and Lochside Dr	Forested site next to wetland, connection between Mt Douglas Park and Rithet's Bog
R	17	Blenkinsop Rd	Rocky outcrop
R	18	Stevens Rd and Mountain Rd	Woodland and rock outcrop openings
R	19	Mountain Rd, Stevens Rd and Viaduct Ave W	Mature forest with a wet and broadleaf component, connection between South Prospect Lake Park and Highlands
R	22	Excelsior Rd and Spring Rd	Large woodland and herbaceous terrestrial polygon
R	23	Prospect Lake Rd and Goward Rd	Polygon next to Whitehead Park; includes a HT and a WN
R	25	Hartland Ave	Wet forest along Killarney Creek and north end of Killarney Lake, site adjacent to Mount Work Park
R	26	Old West Saanich Rd	Forested site west of Elk and Beaver Lake Park
R	27	Forest Hill Rd	Adjacent to west side of Elk and Beaver Lake Park
R	29	Wallace Dr	Forested site next to wetland
R	30	Killdeer Rd, West Saanich Rd, and Old West Saanich Rd	Mixed forest and open water
R	32	Undeveloped right-of-way between Bear Hill and Elk and Beaver Parks	Forested site
R	35	Old East Rd	Aspen-slough sedge
R	36	Old East Rd and Dooley Rd	Wet forest wetland complex

Rows in yellow: Highlighted sites were not examined due to lack of permission to access.

It is important to note the large variation in the number of properties per polygon, from one to more than twenty; therefore the possibility of obtaining access was higher in polygons comprised of a large number of properties rather than those formed by a single property.

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Of the 367 owners contacted, 198 (54%) granted permission, 40 (11%) denied access and 129 (35%) did not respond. However, the analysis changes when strata properties are counted as one, since usually the decision to grant permission was made by the strata council. In this case, the number of positive responses was 61 (27%), negative responses was 40 (17%), and no response was 129 (56%).

Of the 37 sites on the original list, landowner permission allowed for ground-truthing of 21 sites. A visual inspection from two viewpoints was carried out in one of the originally selected sites. Another 15 high priority sites were selected for ground-truthing because permission for access was granted.

Undeveloped right-of-ways are usually small sites, but do not require permission, therefore as many undeveloped right-of-ways as could fit within the allotted field time were visited.

### 3.3. Site Ground- truthing

Field visits took place between April 20 and May 10th, 2013. A total of 37 sites and 11 undeveloped right-of-ways were visited. Complete ground-truthing was carried out on 34 sites and three undeveloped right-of-ways. Visual inspections were done on three sites and eight undeveloped right-of-ways. Two sites were visually inspected due to the largely landscaped nature of the property. Most undeveloped right-of-ways were visually inspected since it was deemed a sufficient level of information for the assessment; five were not included in the ecological evaluation as they were landscaped sites with paved paths. Visually assessed undeveloped right-of ways are listed in Section 3.6.

The most frequent sensitive ecosystem identified was older second growth forest (SG) (34.1%), followed by woodland / herbaceous terrestrial combination (WD/HT) (12.2%), and older forest (OF) (9.8%). The detailed breakdown of the sites per sensitive ecosystem type is shown in Table 7. Three sites were too altered to be assigned to an SEI category. Detailed information for each ground-truthed site can be obtained through the database associated with the mapped polygons.

**TABLE 7 - Breakdown of SEI Ecosystem Types**

SEI Class: Subclass (original codes) <sup>2</sup>	% of Sites
SG: co	16.28
SG: mx	16.28
WD/HT	11.62
WD	16.28
OF	9.30
HT	6.98
WN	6.98
RI	6.98
N/A*	9.30
TOTAL	10

N/A\*: No Sensitive Ecosystem was present.

2. For Sensitive Ecosystem Types Codes see Canadian Wildlife Service, 2000.

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### 3.4. Evaluation of the Sites

Each site was assessed for viability, or its ability to maintain ecological integrity over time. The evaluation of the sites by the two formulae (even method and stair-step method) provided similar results, and in some cases an equal score. The even method usually yielded higher values than the stair-step method, although differences were usually less than 0.2. The average result of the two methods was used as the final ecological integrity score. A total of 26 sites scored good to excellent condition, ten more sites scored medium ecological condition and four scored poor condition (Appendix I).

Each site was also evaluated for its functionality, as a linkage or buffer and for its biodiversity and conservation values (Appendix II). The functionality and biodiversity values score was added to the ecological integrity score for each site's final assessment as a potential ESA. Nineteen sites showed a very high score, eleven sites had a high score, ten sites had a medium score and three sites had a low score. Five undeveloped right-of-ways were not included in the assessment (Section 3.6).

Nineteen sites scored as **Very High priority**:

- 13TM001: relatively undisturbed mossy rock outcrop within a Douglas-fir - arbutus forest.
- 13TM002: seasonal natural pond at base of forested slope.
- 13MG005: mature Grand fir – dull Oregon grape forest with veterans.
- 13MG007: mature forest along Porters Cr riparian gully with large veterans (CDFmm06).
- 13MG009: old Douglas-fir – dull Oregon grape forest with large veterans, and wildlife trees.
- 13MG010: old Western redcedar forest at receiving sites in complex with 13MG009.
- 13MG012: mature mixed forest in a complex of mesic and receiving sites, with large veterans.
- 13MG013: older Western redcedar and grand fir forest along slopes of Killarney Creek ravine.
- 13MG014: woodland with rock outcrop openings, abundant cover of mosses and native forbs.
- 13MG016: mature forest with large veterans and wildlife trees, complex of mesic and receiving sites.
- 13MG017: older Douglas-fir – arbutus forest with rich understory.
- 13MG017A: seasonal natural wetland with Western redcedar, red alder, aspen, and hardhack.
- 13MG018: mature Douglas-fir- arbutus forest with a rich understory.
- 13MG020: mature Douglas-fir – Alaska oniongrass with rich understory.
- 13MG026: old coniferous Douglas-fir – arbutus forest adjacent to Mount Douglas Park.
- 13MG030: mature coniferous forest with veterans - a complex of drier and wetter sites.
- 13MG031: herbaceous terrestrial rock outcrop along crest and steep east facing slope.
- 13MG033: mature Western redcedar and Douglas-fir forest adjacent to Elk/Beaver Lake Park.
- 13MG038: undeveloped right-of-way portion of Douglas-fir- arbutus forest from 13MG022.

Eleven sites scored as **High priority**:

- 13MG002: urban mature Douglas-fir forest and link to Stoneywood Park.
- 13MG003: mature Grand fir – Oregon grape forest with old broafoleaf maples on slope to wetland.
- 13MG011: scrub Garry oak rock outcrop meadows scattered within a Douglas-fir – arbutus forest.
- 13MG015: undeveloped right-of-way off Forest Hill Rd connected to Elk and Beaver Lakes Park.



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- 13MG019: mature Douglas-fir – dull Oregon grape forest with veterans and wildlife trees.
- 13MG020A: scrub Garry oak herbaceous meadow openings with a rich cover of mosses and forbs.
- 13MG022: mature Douglas- fir – arbutus forest with scattered large trees and wildlife trees.
- 13MG023: naturalized pond and young Western redcedar/sword fern–skunk cabbage community.
- 13MG027: herbaceous rock outcrop with scrub Garry oaks adjacent to Mt Douglas Park.
- 13MG029: older forest Western redcedar, sword fern - skunk cabbage.
- 13MG032: woodland and rock outcrop meadow openings in excellent condition.

### Ten sites scored as **Medium priority**:

- 13MG004: urban woodland and rock outcrop being restored at Bristol Rd
- 13MG006: young Grand fir – dull Oregon grape forest altered in part by construction of bike jumps.
- 13MG021: Garry oak woodland in undeveloped right-of-way at Dunn Ave east end.
- 13MG024: Garry oak – California brome woodland under varied levels of alteration by landscaping.
- 13MG025: portion of Garry oak woodland on undeveloped right-of-way at Lucas Ave east end.
- 13MG028: scrub Garry oak rock outcrop meadows, link between Beckwith Park area and Rithet’s bog.
- 13MG034: urban Garry oak woodland at various conservation levels across properties.
- 13MG036: altered woodland between Ascot Dr and Persimmon Dr.
- 13MG037: portion of Garry oak woodland on undeveloped right-of-way at Waterloo Rd east end.
- 13MG039: riparian vegetation on undeveloped right-of-way at Queensbury Ave next to King’s pond.

### Three sites scored as **Low priority**:

- 13MG001: mixed urban forest between Richmond Rd and Veteran St.
- 13MG008: mixed urban forest on Arbutus Rd near Ebony Terrace.
- 13MG035: mixed urban forest between Falmouth Rd and Lodge Ave.

## 3.5. Environmentally Significant Areas

In this phase of the project, 32 new sensitive ecosystem type sites were identified. Of these, five were surrounding identified wetlands and creeks. In addition, wildlife trees were identified on ten sites, large veteran trees on six sites and three SEI polygons were redefined (Sites 13MG014, 13MG028 and 13MG029).

The assessment of 43 of the sites investigated, which included revised SEI sites, young and urban forests, undeveloped right-of-ways, and newly identified sensitive ecosystems sites, resulted in **40 sites with very high to medium conservation priority**. This section provides a summary of the newly identified sites that merit special attention due to their high priority or specific values within a conservation strategy.

### 3.5.1 Very High Priority Sites

Descriptions of seven very high priority sites:

**Site 13TM001. (CDFmm00)** This herbaceous terrestrial site (HT) (Wallace selaginella / reindeer lichens) west of Petworth Drive is a relatively undisturbed rocky outcrop opening surrounded by a Douglas-fir – arbutus and Garry oak (*Quercus garryana*) forest. The rocks are covered by a thick mantle of mosses: roadside rock-moss (*Racomitrium canescens*), electrified cat’s tail moss (*Rhytidiadelphus triquetus*), red roof moss

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(*Ceratodon purpurens*), and coastal reindeer lichen (*Cladina portentosa*). Forbs and grasses are widespread in the deeper soil pockets: broad-leaved shootingstar (*Dodecatheon hendersonii*), few-flowered shootingstar (*D. pulchellum*), seablush (*Plectoris congesta*), common camas (*Camassia quamash*), meadow death-camas (*Zigadenus venenosus*), white fawn lily (*Erythronium oreganum*), white blue wildrye (*Elymus glaucus*) and stonecrop (*Sedum spathulifolium*) were found on the rock ledges. The main disturbance results from the management of the adjacent power line which bisects the ecosystem. Scotch broom (*Cytisus scoparius*) presence is minor because the owners have been removing it for a few years, however, there is abundant presence of sweet vernal grass (*Anthoxanthum odoratum*). Black-tail deer (*Odocoileus hemionus*) droppings and trails, and an Anna's hummingbird (*Calypte anna*) were observed at this site (Appendix III p.1).

**Site 13TM002. (CDFmm00).** Natural seasonal isolated pond of approximately 500 sq m at base of a forested north facing slope, adjacent to previous site. The open water at the time of the visit covered an area of approximately 64 sq m. The riparian fringe is composed of red alder (*Alnus rubra*), Western redcedar (*Thuja plicata*), and aspen (*Populus tremuloides*) with some mature Douglas-fir (*Pseudotsuga menziesii*) on the slope above the pond. The understory is formed by a dense shrub layer mainly of hardhack (*Spiraea douglasii douglasii*) and ocean spray (*Holodiscus discolor*), with salal (*Gaultheria shallon*) underneath. There is a patch of Himalayan blackberry (*Rubus discolor*) and scattered Scotch broom between the path to the east and the pond. The herb and moss layers are scarce: bracken (*Pteridium aquilinum*), wild strawberry (*Fragaria virginiana*), and Oregon beaked moss (*Kindbergia oregana*). Even though the floristic composition of the herb layer is low, this receiving site within a dry landscape may be of great importance to birds, amphibians and water egg-laying insects (Appendix III p.1).

**Sites 13MG009 -13MG010. (CDFmm01 / 06).** This is a large older forest polygon encompassing several properties on Excelsior Rd, Mountain Rd, Stevens Rd, Viaduct Ave W, and Cyril Owen Place.

The forest has an upland mesic area of Douglas-fir – dull Oregon grape community (13MG009) and wetter receiving sites of Grand fir – three-leaved foamflower (13MG010). It was not possible to define a polygon for each ecosystem type, but the two codes, one for each ecosystem, have been maintained. On the upland areas, the forest is dominated by Douglas-fir, with large trees (90-100 cm diameter) interspersed throughout, with some broadleaf maples (*Acer macrophyllum*) and Western redcedars. The location of two survivors from last forest fire (150 cm diameter) was mapped (13MG009b and 13MG009c). There is a root rot centre of Douglas-firs, likely affected by *Armillaria* sp or other root-rot fungi, with five wildlife trees which was mapped (13MG009a). The main invasive alien species noted was a patch of English holly (*Ilex aquifolium*), and sparse presence of daphne (*Daphne laureola*) and wall lettuce (*Mycelis muralis*) (Appendix III p.6).

On the wetter sites, the canopy is dominated by Western redcedar and grand fir (*Abies grandis*), with a sparse understory dominated by sword fern (*Polystichum munitum*), with salal, dull Oregon grape (*Mahonia nervosa*), vanilla leaf (*Achlys triphylla*) and western trillium (*Trillium ovatum*). The moss layer is represented mainly by Oregon beaked moss with some patches of large leafy moss (*Rhizomnium glabrescens*). Open standing water without a defined course was observed on some sites. An oversize Western redcedar was mapped at the water's edge near a large wildlife Western redcedar tree (120 cm diameter) (13MG010a). Grand firs were large, with 90-100 cm diameters, and several veteran survivors from last wildfire were noted throughout the site. A wildlife tree concentration of Douglas-firs and Western redcedars was mapped (13MG010b).

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A red-winged blackbird (*Agelaius phoeniceus*), and a grey squirrel (*Sciurus sp.*) were noted. Aside from historic logging, the only human caused disturbances were foot paths and several holes with marked stakes (planned subdivision?). The stakes and flagging extended to the woodlands to the west. This forested site provides a connecting link from Elk and Beaver Lakes Parks south to Prospect Lake and the Highlands (Appendix III p.7).

**Site 13MG012. (CDFmm01 / 06).** A large forested polygon including several properties on West Saanich Rd, Matterhorn Dr, and Sparton Rd. The site is mostly a west facing slope encompassing two main ecological communities: 1) a Douglas-fir – dull Oregon grape community on mesic sites, and 2) a Grand fir – three-leaved foamflower community on wetter receiving sites. Only the northeast corner was available for ground-truthing; other parts of the polygon were observed from the road and the accessible site. The description below is of the second community.

The site is comprised of a mature forest dominated by Douglas-fir and Western redcedar. Broadleaf maple is abundant in some areas. Large trees and veterans scarred by fire are interspersed throughout. The dominant species in the understory are salal, dull Oregon grape and Western redcedar regeneration. The herbaceous layer is sparse but diverse: sword fern, cleaver (*Galium aparine*), small-flowered nemophila (*Nemophila parviflora* var. *parviflora*), broad-leaved starflower (*Trientalis latifolia*), Pacific sanicle (*Sanicula crassicaulis*), twinflower (*Linnaea borealis*), Indian pipe (*Monotropa uniflora*) and broad-leaved shooting star. The forest floor has a good cover of Oregon beaked moss. There is a sparse presence of daphne and wall lettuce. Quails (*Callipepla californica*) and a pair of pileated woodpeckers (*Dryocopus pileatus*) on a snag were observed during the visit. This site constitutes a connecting link between the northern section of Elk and Beaver Lake Park and Mount Work Park.

This site however, is very large and only a small portion was ground-truthed. Through visual sightings, a couple of wildlife trees and large veterans and a rock outcrop meadow with scattered Scotch broom were observed in adjacent properties. It is highly recommended to visit other areas of the two identified sites at Matterhorn Drive and West Saanich Rd: a woodland- rock outcrop and a mature forest in a West facing slope (Appendix III p.9).

**13MG014. (CDFmm02 / 00)** A large woodland SEI polygon with rock outcrop openings throughout situated adjacent to and west of site 13MG009. The SEI polygon has been enlarged and redrawn. The forest is a Douglas-fir – arbutus community with a dense shrub cover dominated by ocean spray with a rich herbaceous understory. Some large veteran Douglas-fir survivors from the last fire provide a flashback in history. In the rock outcrops and meadow openings there is an abundant cover of mosses and native forbs: shooting stars, seablush, white fawn lily, fairyslippers (*Calypso bulbosa*), broad-leaved starflower, and star-flowered false Solomon's seal (*Smilacina stellata*). An occasional presence of daphne and Scotch-broom were the only invasive species noted. Many Scotch broom plants (0.6-1.2 m tall) were desiccated, with black stems and without live shoots. The cause of death of Scotch broom in many parts of Saanich is under debate. It is possible that the reason would be a drier than usual extended summer period last year, or the spread of the gall mite *Aceria genistae* from Oregon. This woodland polygon occupies a north-south ridge and includes several properties along Stevens Rd, Excelsior Rd and Mountain Rd, almost reaching Cyril Owen Place older forest ( Appendix III p.11).

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**13MG017. (CDFmm02).** A mature older Douglas-fir - arbutus forest with large veterans (>120 cm diameter), some with broken leaders, interspersed throughout. One oversized Douglas-fir 150 cm diameter was mapped (13MG017b). The age of the trees was calculated as between 90 and 150 years. The shrub layer was scarce with scattered dull Oregon grape, baldhip rose (*Rosa gymnocarpa*) and orange honeysuckle (*Lonicera ciliosa*). In contrast, the forest floor had a rich and dense herbaceous cover of grasses and forbs at the time of the visit: Pacific sanicle, star-flowered false Solomon's seal, big-leaved sandwort (*Moehringia macrophylla*), yerba buena (*Clinopodium douglasii*), pathfinder (*Adenocaulon bicolor*) and broad-leaved starflower. No invasive species were noted on the property visited because the owners have been consistently removing them. This is likely not the case throughout the entire polygon. There are small openings of HT with scrub Garry oaks and arbutus (*Arbutus menziesii*) throughout the site (Appendix III p.13). This area is a link in the corridor Glendale Lands – Maltby Lake – Kerryview forests.

### 3.5.2. Wildlife Trees

Following is a description of wildlife tree sites:

- ✦ A wildlife tree concentration likely due to *Armillaria* root fungi at the Mountain Rd site (Appendix III p.6). The location of the five large Douglas-firs was mapped with code 13MG009a.
- ✦ Large (120 cm diameter) Western redcedar snag serving as wildlife tree near standing water was mapped at the Mountain Rd site (13MG010a).
- ✦ A concentration of wildlife trees comprised of veteran Douglas-firs and Western redcedars was mapped at the Mountain Rd site (13MG010b).
- ✦ Two large wildlife trees – one Douglas-fir and one Western redcedar- were mapped at Old West Saanich Rd (13MG016a) (Appendix III p.12). An additional Western redcedar wildlife tree near standing water was not mapped.
- ✦ A large Douglas-fir wildlife tree 150 cm diameter was mapped at the Cyril Owen site (13MG017b) (Appendix III p.13).
- ✦ Large Douglas-fir wildlife tree at edge of rock outcrop opening at the Matterhorn site (13MG011) (Appendix III p.8 (notmapped)).
- ✦ Large grand fir wildlife tree with pileated woodpecker at the Matterhorn site (13MG012) (Appendix III p.9) (not mapped).
- ✦ Wildlife tree concentration mapped on plot at Hartland site (13MG013) (Appendix III p.10).
- ✦ Wildlife tree concentration at the Courtland Ave site (13MG019), likely a root disease fungi centre (already in Saanich Atlas) (Appendix III p.15).
- ✦ An active red-tailed hawk nest was located at the Granville site (13MG020a) (Appendix III p.16).
- ✦ Large Western redcedar snag wildlife tree 120 cm diameter on plot at Old East Rd site (13MG029) (Appendix III p.21). Owner states barred owls are present at the site.
- ✦ Douglas-fir wildlife tree on plot at Linnet Lane site (13MG030) (Appendix III p.22).

### 3.5.3. Oversize Trees

Veteran trees were noted at various sites:

- ✦ Two large Douglas-firs, 140 and 150 cm diameter, survivors from the last forest fire were observed at the Mountain Rd site and mapped (13MG009b and 13MG009c) (Appendix III p.6).

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- ⤴ A large Western redcedar 120 cm diameter at the edge of standing water was mapped at Mountain Rd site (13MG010a) (Appendix III p.7).
- ⤴ Two large Douglas-firs 110 cm diameter on plot 13MG016 (Appendix III p.12).
- ⤴ A large veteran Douglas-fir 150 cm diameter at Cyril Owen Place site was mapped (13MG017b) (Appendix III p.13).
- ⤴ Large hemlocks and redcedars (110-120 cm dia.) next to plot at Old East Rd site (13MG029) (Appendix III p.21) .
- ⤴ A large Garry oak 95 cm diameter was mapped at Ascot Drive site (13MG036).

### 3.6. Municipal Lands

Eleven undeveloped right-of-ways were investigated.

An FS1333 form was completed for three sites: east spur off Forest Hill Rd (13MG15), north end of Dunn Ave (13MG21), and east end of Lucas St (13MG25). Eight other undeveloped right-of-ways were visually assessed: Waterloo Rd (13MG037), north spur off Batu Rd (13MG038), Queensbury Ave (13MG039) and five others which are named by their VNHS inventory numbers. Of the eleven undeveloped right-of-ways visited, six are recommended to be declared ESA's:

**13MG015 (VNHS 50-4) – spur off Forest Hill Rd:** This right-of-way connects to Elk and Beaver Lakes Park. The site is traversed by an unpaved trail used by equestrians from nearby residences and farms on Forest Hill Rd. The original forest has been altered by historic logging, as well as by construction of the path and a drainage ditch running along the path, and by the growth of invasive species on the bare and disturbed soils. However, there is still a forest canopy with some large Douglas-firs and Western redcedars, remnants of the original forest, with younger broadleaf maples and red alders. There is an array of native shrubs and forbs. In some areas the shrub layer is dense and made up of native species such as Indian plum (*Oemlaria ceraciformis*), oceanspray, snowberry (*Symphoricarpos albus*), dull Oregon grape and some red huckleberry (*Vaccinium parvifolium*). The herb layer is sparse but native species also remain, such as sword fern, Pacific sanicle, broad-leaved starflower, wild ginger (*Asarum caudatum*), and Piggy-back plant (*Tolmiea menziesii*). The main exotic species are in patches: a large thicket of Himalayan blackberry, and small patches of periwinkle (*Vinca major*), English bluebells (*Hyacinthoides hispanica*), and daphne. English ivy (*Hedera helix*) has a minor presence. There is also Robert's geranium (*Geranium robertianum*) and wall lettuce (Appendix III p.11).

This site acts as a connection as well as small buffer to Elk and Beaver Lakes Park. To enhance its functionality, a restoration plan with removal of invasive species and some plantings would be required.

**13MG021 (VNHS 10-5) – Dunn Ave:** This right-of-way is an altered Garry oak woodland urban site. It is 53m long by 20m wide but is only traversed by a small foot path as can be seen in the photo (Appendix III p.17). There are Garry oaks in the adjacent properties thus forming a larger Garry oak patch than the 20m wide right-of-way. The canopy is mainly Garry oak with some Douglas-fir and bitter cherry (*Prunus emarginata*). On one side of the path there is a dense snowberry patch with some Indian plum and dull Oregon grape. On the other side Himalayan blackberry is the dominant species, although some native forbs persist on the edges and on rock outcroppings. A local resident commented on the presence of camas under the blackberry thicket. The rocks near the path have a mossy cover: yellow curl-moss





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(*Homalothecium fulgescens*), roadside rock-moss and Oregon beaked moss. There are also several exotic species present: English ivy, daphne, orchard grass (*Dactylis glomerata*), daffodils (*Narcissus pseudo-narcissus*), English bluebells and dead nettle (*Lamium amplexicaule*). The site will require a restoration effort to eradicate the invasive species and allow the natural Garry oak ecosystem understory species to come back. The present owner of an adjacent property expressed her desire to restore the right-of-way as well as her own yard to a natural state (Appendix III p.17). This site is a small link in line with the Bristol site, in a potential corridor between Playfair Park and Swan Lake.

**13MG025 (VNHS 27-14) – Lucas St:** This undeveloped right-of-way is an altered Garry oak woodland site, a portion of a larger site which includes St. Margaret’s School grounds. The right-of-way is 62 m long by 20 m wide at the east end of Lucas Ave. The site includes several large Garry oaks (65-75 cm diameter) and a large Douglas-fir (95 cm diameter). Although there is an abundant cover of introduced species – mainly English ivy, but also orchard grass, daphne, English bluebells, dandelion (*Taraxacum officinale*), and blackberry thicket - many native species remain: Indian plum, snowberry, Pacific sanicle, and white fawn lily. The site requires a restoration effort, but its small size makes this feasible, and most importantly, it could become an example for neighbouring properties to follow. The site is a small link in a potential corridor between Beckwith Park and Blenkinsop Lake Park (Appendix III p. 19).

**13MG037 (VNHS 12-4) – Waterloo Rd.** This undeveloped right-of-way is located at the east end of Waterloo Rd, on the border with Oak Bay. Even though its size is small - it covers an area of approximately 634 sq m (58 m long by 10 - 12 m wide) – it connects to the north with a property under a conservation covenant and to an undeveloped right-of-way on Woodley St, which was recommended for an ESA during Phase 1. Several large Garry oaks are found within the site, as well as in neighbouring properties. In places, English ivy covers the ground and also climbs up the tree trunks. There is only a small walking path that eventually disappears. This site may function as a small link to the Camosun College Lansdowne Garry oak conservation area and, on the Oak Bay side to the Uplands Golf Course. It is recommended that this undeveloped right-of-way be considered an ESA (Appendix III p.27).

**13MG038 – spur off Batu Rd.** This undeveloped right-of-way is a spur from Batu Rd north to Bear Hill Park. The site is indistinct from the mature surrounding Douglas-fir – Arbutus forest and includes some large veteran trees such as the one in photo (Appendix III p.27). The only introduced species noted were a moderate presence of English holly and daphne. However, part of the right-of-way seems to have been cleared for use by a neighbouring property, although a legal survey would be required to confirm this point.

In the future, if more development takes place in the area, this site may become an important connection link between Elk and Beaver Lake Parks and Bear Hill Park. This site is recommended as an ESA.

**13MG039 (VNHS 11-8) – Queensbury Ave.** This undeveloped right-of-way is adjacent to King’s pond and Cedar Hill Park. It consists of a much used walking path with natural vegetation on both sides. It is part of the Cedar Hill Park walking trail along the park borders. At Queensbury Ave, the path crosses between ponds – a private pond at 1360 Queensbury Ave and King’s pond within Cedar Hill Park. Thus the site is primarily riparian with an old Sitka willow (*Salix sitchensis*), a Pacific crab apple (*Malus fusca*) and a red-osier dogwood (*Cornus stolonifera*) by the edge of the trail. Because of its riparian and buffer values it is recommended that this undeveloped right-of-way be considered an ESA (Appendix III p.28).

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Of the five other undeveloped right-of-ways visited, one has already been turned into a Park: Wetherby Park. The other four undeveloped right-of-ways have no ecological value and are briefly described below.

**VHNS 11-13 – Wetherby Rd.** This paved road has already been closed and declared part of Wetherby Park. Removing the old pavement and restoring the site to a more natural state should be considered. The site however is marked as Conservation Data Centre Record 37060, and any works or modifications require consultation with the CDC.

**VNHS 11-11 – Cedar Hill Rd to Doncaster Drive.** An undeveloped 113 m long lane with foot path, connecting Cedar Hill Rd to Doncaster Drive. This lane is only 6 m wide, but properties 3490 and 3494 Cedar Hill Rd are undeveloped, which makes the right-of-way seem wider. Both sides along the foot-bike trail are mowed lawn areas (Appendix III p.28).

**VNHS 11-14 – Knight Ave.** This undeveloped right-of-way consists of a paved trail through a lawn on one side and a large blackberry patch on the other.

**VNHS 28-11 – Parkside St.** This undeveloped right-of-way is merely a paved trail and lawn on a portion of Parkside St.

**VNHS 28-20 – Robinwood St.** This undeveloped right-of-way is merely a paved trail and lawn on a portion of Robinwood St.

### 3.7. GIS Coverage and Associated Data

A polygon feature class was created with ArcGIS v.10.1 containing information on elevation, slope, aspect, area and perimeter for each site. In addition, a point feature class was created with data collected in the plots, including location, succession status, site series, other descriptive characteristics of the site, and tables containing percent vegetation species cover. These features were all included in a personal geodatabase. Metadata was edited for each of the features following District of Saanich standards. Maps were created for each site included in the report.



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### 4. DISCUSSION AND RECOMMENDATIONS

The overall objective of this project was to advance the knowledge of Environmentally Significant Areas that remained unmapped within the District of Saanich. Although ESA's are usually associated with the presence of Sensitive Ecosystems (Canadian Wildlife Service 2000), other natural sites may play an important role in an urban - rural landscape within a natural habitats and wildlife conservation plan (i.e., the connectivity or buffer functions provided by non-sensitive ecosystems such as young forests). Therefore the identification and evaluation of sites included non-sensitive ecosystems and altered ecosystems such as can be found in urban forests, undeveloped right-of-ways, old fields, and urban properties.

Although an interconnection plan was designed at the start of Phase 2 to guide site identification (Table 2), some important conservation and biodiversity areas in the District were not contemplated, such as Cuthbert Holmes -Tillicum Park, Knockan Hill Park and Cedar Hill Park. **When considering identification of new ESA's, the major conservation and biodiversity values areas should be revised, expanding the interconnection and conservation plan of the District. However, an active plan to control alien invasive species should accompany the interconnection plan.** Otherwise, connecting undeveloped or urban sites to relatively pristine areas may have a negative effect by promoting the spread of noxious species.

In this project altered sensitive ecosystem sites, such as Garry oak woodlands in urban residential neighbourhoods and in undeveloped right-of-ways, were identified, visited and mapped. These sites were evaluated under the same methodology as were woodlands in a more pristine state.

**In this phase of the project, elements of biodiversity and conservation value such as an ecosystem's threatened status, presence of wildlife trees and veteran trees, and restoration potential of a site, were ranked with specific scores for the final evaluation of the sites (Table 4). For consistency, this procedure should also be applied to all Phase 1 sites.**

A total of 180 potential ESA sites and 79 undeveloped right-of-ways were originally identified. Some of these had already been identified during the 2008 CDFmm TEM project (Madrone 2008). TEM sites are usually larger sites, and often comprised of a mix of two or three ecological communities. For the purpose of a conservation plan, ground-truthing and refining already mapped TEM sites is an effective way to identify valuable sites. Of the originally identified sites, a total of 48 were visited (37 sites and 11 undeveloped right-of-ways). **The remaining originally identified sites that are potential ESA's that were not selected for ground-truthing because they were already mapped with TEM (Madrone 2008), should be a priority for inspection as potential ESA's in future projects.**

Only three sites scored as low priority conservation value (Richmond Rd, Arbutus Rd and Falmouth Rd). However, the assessment method is based on the ecological condition and presence of biodiversity elements that raise the conservation value of the site. When the ground visit is limited to small portion of a site, elements may be missed. This was the case in a number of sites. In particular, it may have influenced the low score of the Richmond Rd site, where visual assessment was difficult, and the one property visited may not have been representative of the whole site, originally composed of eleven properties. It may be necessary to establish a minimum access area in order to properly evaluate a site.

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The majority of sites examined in Phase 2 were located on privately owned land (37). However, many of the preliminary 37 sites selected had to be replaced because access was denied or owners did not respond to the District's request for access permission. As private land constitutes the majority of the land in the District of Saanich, a comprehensive ecological conservation plan must take private land into consideration.

In addition to collecting data on site, another positive aspect of ground visits was increasing the interest of property owners in the ecological values of their land. Many of the owners encountered were interested in the natural values of their land, and may have felt recognized for their stewardship efforts. For example, for controlling invasive alien species, for preserving wildlife trees, wetlands, or downed logs, or for their observations of wildlife, birds, or orchids. Furthermore, it also appeared that many property owners found this to be an opportunity to acquire more information about controlling invasive species, the exotic or native origin of certain species on their property, identification of species, native species suggestions for landscaping, and how to restore their land to a more natural state. As a result of the visit, many property owners may have felt that they have now established a positive direct relationship with the District. As a result, the District has begun a dialogue and relationship with landowners interested in conservation. Having private land owners aware and actively supporting the District's ecological conservation projects may be a very positive and unexpected result of this project, and a potential objective to include in future conservation plans.

**It is recommended that a list of all property owners who participated in the project be compiled.** Many would appreciate being informed about the progress of this project as well as learning about future projects. If needed, additional information about the sites visited could be requested from these owners.

Some selected sites were investigated visually if a road or adjacent property with permission to access was available. However other sites required more than a mere viewpoint to assess them properly due to their size or characteristics (dense vegetation). **Of the sites not visited, six - three urban and three rural- deserve special consideration due to their characteristics and location.** These sites should be prioritized for future investigation:

- ⤴ Gardenwood Court area
- ⤴ Del Monte Ave and surroundings to Doumac Park
- ⤴ Prospect Lake Rd and surroundings
- ⤴ Donwood Park area forest and wetland
- ⤴ Forested area east of Kerryview Drive
- ⤴ West Saanich Rd, Matterhorn Drive and surroundings

A total of 40 sites achieved very high to medium conservation priority scores. Table 8 lists 30 sites recommended to become new ESAs as part of the SEI inventory, and one as a younger forest. In addition, three sites were enlarged and redefined SEI polygons:

Site 13MG014: an existing SEI woodland site enlarged and redrawn at Mountain Rd.

Site 13MG0028: an existing SEI rock outcrop site enlarged and redrawn at Maltwood Terrace.

Site 13MG029: an existing SEI wetland was enlarged to include an old wet forest at Old East Saanich Rd.

Three already mapped SEI sites were ground-truthed (13MG022, 13MG026 and 13MG027).

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The following 31 sites are recommended as new ESA's as part of the SEI inventory, plus one site as a young forest with a wetland component.

**TABLE 8. Recommended New ESA Sites SEI type or other**

Site Code	SEI type or other	Site Location	Area (ha)	Conservation Priority
13TM001	HT	Petworth Drive and Kerryview Drive	0.4539	Very High
13TM002	WN:sp	Petworth Drive	0.0627	Very High
13MG002	SG:mx	Stoneywood Lane	1.2705	High
13MG003	SG:mx	Glendenning Rd	0.9424	High
13MG004	WD	Bristol Rd	0.3978	Medium
13MG005	SG:co	Markham Rd	2.1213	Very High
13MG006	Young forest	Watkiss Way	6.2419	Medium
13MG007	Ri:g	Charlton Rd and Prospect Lake Rd	2.2709	Very High
13MG009-13MG010	OF	Excelsior Rd, Mountain Rd, Stevens Rd, Viaduct Ave W	34.2194	Very High
13MG011	HT	West Saanich Rd and Matterhorn Dr	17.2035	High
13MG012	SG:mx	West Saanich Rd, Matterhorn Dr, Caldecote Rd and Sparton Rd	7.3049	Very High
13MG013	Ri:5	Hartland Ave, Kiowa Place and Kiowa Rd	3.3203	Very High
13MG014	WD / HT	Stevens Rd, Excelsior Rd and Mountain Rd (redefined SEI)	10.8548	Very High
13MG016	SG:co	Old West Saanich Rd and Forest Hill Rd	6.3927	Very High
13MG017	SG:mx	Cyril Owen Place and Sarah Owen Place	3.2301	Very High
13MG017A	WN:sp	Cyril Owen Place	0.1757	Very High
13MG018	SG:mx	Goward Rd, Spring Rd and Excelsior Rd.	17.3639	Very High
13MG019	SG:co	Courtland Ave	0.8837	High
13MG020	SG:co	Charlton Rd and Granville Ave	1.6635	Very High
13MG020A	HT / WD	Charlton Rd and Granville Ave	0.4095	High
13MG023	WN: sp	Old East Rd	2.9960	High
13MG024	WD	Glendenning Rd	0.6196	Medium
13MG028	HT / WD	Maltwood Terrace (redefined SEI)	0.8413	Medium
13MG029	OF	Old East Rd and Dooley Rd (redefined SEI)	7.7029	High
13MG030	SG:co	611 Linnet Lane	17.2589	Very High
13MG031	HT	Kerryview Drive	2.6616	Very High
13MG032	WD / HT	Hartland Ave and Kiowa Rd	0.4537	High
13MG033	SG:co	Forest Hill Rd and Starling Lane	2.7650	Very High
13MG034	WD	Glendenning Rd, Mt Douglas X Rd	1.3805	Medium
13MG036	WD	Ascot Dr and Persimmon Dr	0.3517	Medium

## Additional ESA Mapping Project Report Phase 2

Tables 9 and 10 respectively show 11 new sites for the Wildlife Tree Atlas and two new wetlands for the Isolated Wetlands Atlas. Table 11 lists six undeveloped municipal right-of-ways which merit classification as ESA's.

The following seven sites are recommended as ESA's in the Wildlife Tree inventory.

**Table 9. New Sites Wildlife Tree Inventory**

Description	Location
Two wildlife tree concentrations of large Douglas-firs and Western redcedars and one large Western redcedar	Mountain Rd site
One large Douglas-fir and two Western redcedars	Old West Saanich Rd site
Large Douglas-fir 150 cm diameter	Cyril Owen Place site
Wildlife tree concentration	Hartland site 13MG013 plot
Large Western redcedar 120 cm diameter	Old East Saanich Rd site plot
Douglas-fir snag	Linnet Lane site plot
Active red-tailed hawk nest	Granville site, near 13MG020A plot

The following two wetland sites are recommended as ESA's in the Isolated Wetlands inventory.

**Table 10. New Sites Isolated Wetlands Inventory**

Code	Description
13MG017A	Seasonal natural wetland swamp of approx. 0.2 ha at Cyril Owen Place site
13TM002	Seasonal natural wetland swamp of approx. 0.06 ha at Petworth Drive site

The following six undeveloped right-of-ways are recommended as ESA's because of their ecological and biodiversity values.

**Table 11. Undeveloped Municipal Lands**

Code	Location	Description	Size (ha)	Priority
13MG015	Forest Hill Rd east spur to Elk and Beaver Lake Park	Mixed second growth Douglas-fir – dull Oregon grape forest	0.3850	High
13MG021	Dunn Ave north end	Garry oak woodland	0.0949	Medium
13MG025	Lucas Ave east end	Garry oak woodland	0.1363	Medium
13MG037	VNHS12-4, Waterloo Rd east end	Garry oak woodland	0.0671	Medium
13MG038	north spur to Bear Hill Park from Batu Rd	Mixed second growth Douglas-fir – arbutus forest	0.2033	Very high
13MG039	VNHS11-8, Queensbury Ave	Riparian site next to King's pond and Cedar Hill Park	0.2910	Medium

## Additional ESA Mapping Project Report Phase 2

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### 5. REFERENCES

Madrone Environmental Services, 2008. Terrestrial Ecosystem Mapping of the Coastal Douglas-Fir Biogeoclimatic Zone. Dossier 07.0359.

B.C. Ministry of Environment. 2010. Field Manual for Describing Terrestrial Ecosystems. 2nd Ed. Land Management Handbook 25.

B.C. Ministry of Environment. 2006. Standard for Mapping Ecosystems at Risk in British Columbia. Available at: [http://www.env.gov.bc.ca/fia/documents/standards\\_for\\_mapping\\_ear\\_version1.pdf](http://www.env.gov.bc.ca/fia/documents/standards_for_mapping_ear_version1.pdf)

Canadian Wildlife Service. 2000. Sensitive Ecosystems Inventory: East Vancouver Island and Gulf Islands 1993 - 1997. Volume 2: Conservation Manual. Pacific and Yukon Region. Technical Report Series No. 345.

Available at:

[http://a100.gov.bc.ca/appsdata/acat/documents/r2124/SEI\\_4206\\_rpt2\\_1111099716576\\_7025110f245d45\\_caa101abcdef711671d.pdf](http://a100.gov.bc.ca/appsdata/acat/documents/r2124/SEI_4206_rpt2_1111099716576_7025110f245d45_caa101abcdef711671d.pdf)

VNHS Greenways Inventory, 1999.

