

**SCHEDULE "AA": TERMS OF REFERENCE – GARRY OAKS MEADOWS MANAGEMENT PLAN**

PGL File #: 0130-12.04

DATE: July 17, 2013

**Re: Terms of Reference – Garry Oak Meadows Management Plan**

April 8, 2014: To reflect amendments to the proposed zoning bylaw for the Lakes District, the following amendments have been made to Figure 1: *The Notch Option to Purchase Lands* has been renamed the *Notch Park Lands Subject to Option to Purchase*, and the colouring of such lands has been changed to a green base (indicating park) with white hatch (indicating subject to option to purchase).

The following document outlines the steps and anticipated methodology to develop the Lakes District Regional Park Garry Oak Meadows Management Plan (GOMMP). The GOMMP is intended to address all seven Garry Oak Meadows phases identified in Figure 1.

## **BACKGROUND**

During the planning stages, sensitive ecosystems were identified and defined onsite using existing terrestrial ecosystem mapping (TEM) and updated field observations. A site-specific hierarchy of sensitivities was developed to provide the design team with constraints and opportunities, and help guide the Lakes District Neighbourhood Plan.

Through the environmental planning process, an approach was taken to balance the protection of ecosystem values onsite. This process designated a significant percentage of sensitive ecosystems as a proposed public park, including:

- 100% of the Garry oak meadows;
- 73% of the Garry oak/arbutus ecosystems;
- 90% of the riparian ecosystems; and
- 33% of the Douglas-fir and western red cedar ecosystems.

The GOMMP will be entirely focused on the areas designated as "Garry Oak Meadows", all of which are located within the planned Regional Park.

Section 3.2.2 of the Lakes District Neighbourhood Plan outlines the policies for the proposed Regional Park, including:

- e. In conjunction with the landowner and according to a schedule outlined within the PDA, prepare a Garry Oak Meadows Management Plan including invasive species management practices and monitoring program that are linked to an adaptive management decision framework.

## OBJECTIVES

Although all of the Garry oak meadows that are proposed for protection are located in lands designated as a public park, the development bordering these meadows will create new interfaces between residential and recreational land use and these sensitive ecosystems. The primary objective of the GOMMP will be to monitor and manage potential effects on the meadows from the introduction of invasive plant species and disturbances from trail users and adjacent residents.

The GOMMP will:

1. Establish baseline conditions of all identified Garry oak meadows and describe detailed methodologies for future monitoring;
2. Establish a decision framework and adaptive management plan to inform RDN policy relating to public park access, trail usage, and activities of adjacent homeowners; implementation of the Lakes District Parks & Trails Masterplan; and future Construction Environmental Management Plans for adjacent Environmental Development Permit areas;
3. Implement an ongoing monitoring program to support the decision framework; and
4. Identify options for appropriate invasive species management actions (including removal by community volunteers under the supervision of a Qualified Environmental Professional) should they be required. It is understood that Fairwinds would bear the associated costs.

### 1.0 BASELINE SURVEY PRIOR TO PHASE 1

Fairwinds will engage qualified biologists (R.P.Bio.) to conduct a baseline survey of the seven Garry oak meadows (Figure 1) and establish the methodology for ongoing monitoring for these sites. This task will be completed prior to construction and will be submitted to the RDN as a component of the Phase 1 subdivision application. It is anticipated that the baseline survey will be completed during summer 2013.

#### Methodology

The baseline survey will be conducted by Registered Professional Biologists specializing in vegetation ecology and botany, and will be completed before the start of Phase 1 construction. The inventory will implement an intuitive approach using professional experience and target the locations at highest risk for project-related effects (e.g., trails or interfaces with residential lots and/or new land uses). Two monitoring tools will be used, including:

- Photopoint monitoring; and
- Vegetation sampling.

Photopoint monitoring is a standard procedure for taking replicable photos of sites that require long-term management. The biologists will establish the appropriate locations for photo stations during the baseline survey. Photo stations will be geo-located with a GPS and demarcated in the field. They will also be positioned to enable detection of potential changes to meadow conditions (e.g., establishment and/or spread of invasive plant populations, off-trail disturbance).

An intuitive approach to vegetation sampling will also be implemented utilizing both transect and fixed plot methodologies. The baseline survey will target potentially vulnerable areas of the Garry oak meadows near areas of future development and/or disturbance. Existing invasive plant populations will be geo-located with a GPS. Several fixed vegetation plots will also be established in vulnerable areas and include several control plots. The fixed plots will allow for ongoing, long-term assessment of ecosystem health in high-risk areas, and monitoring of natural succession and the presence/absence of invasive plant populations.

The intent of the baseline survey will be to provide an updated general description of the Garry oak meadow conditions and characterize the existing presence of invasive plant populations. Detection of invasive plant populations during the baseline survey may require management efforts (based on a risk assessment) to prevent

the spread of invasive plants into the Garry oak meadows. The baseline results may include advice regarding the benefits of enhancement activities that would aim to reduce the risk of future management efforts.

Upon completion of the baseline survey, a monitoring program guidance document will be prepared that details target survey locations and the methodologies to be used. It is intended that the photo point stations, transects, and fixed vegetation plots established during the baseline surveys will be repeated bi-annually. This continuity will provide an ongoing assessment of the Garry oak meadows, identify notable changes, and assess the effectiveness of any required management/mitigation measures.

## 2.0 DECISION FRAMEWORK AND ADAPTIVE MANAGEMENT

The decision framework will follow guidance provided in *General Decision Process for Managing Invasive Plant Species in Garry Oak and Associated Ecosystems (GOEs)* (Murray, 2007). Data recorded through the monitoring program, as described above, will feed into the framework and adaptive management program. The decision framework and adaptive management plan should continue until it is apparent that the Garry oak meadows can be preserved in a suitable state without this management method (or through some other mechanism). The Monitoring Program will be managed by Fairwinds and, following the baseline survey, will be undertaken annually beginning with the start of construction until three years after completion of immediately-adjacent development sites. After this period, responsibility will be transitioned to RDN Parks with all appropriate documentation and data.

A breakdown of the decision-making process includes:

### Part 1: Things to consider when deciding whether to engage in invasive plant species management in a GOE:

#### A. ECOSYSTEM CHARACTERISTICS

1. Is the ecosystem a “Garry oak or associated ecosystem”?
2. What are the characteristics of the ecosystem?
3. What invasive plant species are present?
4. What is their degree of invasion?

#### B. RISK ASSESSMENT

5. What are the risks of action versus no action?

#### C. DECISION

6. Proceed with management and control?

### Part 2: Things to consider when deciding how to undertake invasive plant species management in the GOE:

7. Which invasive plant species are the highest priorities for management? (Tools exist to help answer this question, such as the Invasive Alien Plant Program Species Scoring Algorithm.)
8. Where to take action within the GOE?
9. What action to take, and when?
10. How to dispose of the dead plant material?
11. How to learn from management and control activities?

Another resource – *Adaptive Management Strategy for the Decision Support Tool to Address Invasive Species In Garry Oak and Associated Ecosystems* (Murray, 2002) – provides strategic direction on using an adaptive management approach to manage for invasive species.

### 3.0 MONITORING PROGRAM

The GOMMP monitoring program will commence one year following the completion of the baseline inventory. It is assumed that environmental monitoring will be employed throughout the construction phase, which will include the ongoing assessment of potential impacts to Garry oak meadows. However, specific monitoring efforts will be required throughout construction and beyond to ensure that potential impacts are identified at an early stage and managed, as needed.

#### Methodology

The monitoring program will follow the guidance document prepared using the baseline survey data. As established in the baseline surveys, the intuitive monitoring approach will continue and include both photopoint monitoring and vegetation sampling. The effectiveness of the monitoring program will be used to assess the success of project mitigation, detect any potential harmful effects, and identify the need for additional management strategies. Additional implementation monitoring efforts may be required for any needed management/mitigation efforts that are completed.

#### Frequency and Level of Effort

For the duration of construction and the first three years following construction completion, it is expected that the monitoring should include two monitoring events annually, including:

- One spring monitoring event; and
- One mid- to late-summer monitoring event.

It is anticipated that each monitoring event will require three days for two biologists to complete. The two monitoring events during the active growing season will facilitate early detection of new and/or spreading invasive plant populations. This approach will help promote an effective management program, if required, and minimize management efforts by addressing the issues early.

Upon completion of the third year post-construction monitoring event, the annual monitoring frequency could be decreased to one event (early summer) per year, based on advice from a qualified biologist. Upon completion of the first five years of post-construction monitoring, the RDN may wish to re-assess the need for and frequency of ongoing monitoring.

### 4.0 INVASIVE SPECIES MANAGEMENT ACTIONS

The Garry Oak Ecosystems Recovery Team (GOERT) has prepared a series of guidance documents for management actions related to the most common invasive plant species, including Best Practices for Invasive Species Management in Garry Oak and Associated Ecosystems for:

- Daphne (*Daphne laureola*);
- Orchard-grass (*Dactylis glomerata*);
- English Ivy (*Hedera helix*);
- Evergreen Blackberry (*Rubus laciniatus*) and Himalayan Blackberry (*Rubus armeniacus/dicolor/procerus*); and
- Scotch Broom (*Cytisus scoparius*).

Each of these guidance documents cover:

- Deciding where to take action;
- Deciding what action to take, and when;
- Deciding how to dispose of dead plant material; and
- Recognizing uncertainty.

The level of effort, frequency and timing of management efforts will depend on the invasive species occurrence. Upon completion of the monitoring events, targeted invasive plant management plans (IVMPs) will be prepared for implementation during the next appropriate window. Action windows for IVMP implementation are generally dictated by the ecological characteristics of the target species identified. Based on ecological characteristics, IVMPs may require repeated treatments over the course of several years to fully mitigate potential impacts.

MNH/mtl

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Attachments: Figure 1 – Garry Oak Meadows Polygons & Neighbourhood Phasing










LAKES DISTRICT  
GARRY OAK MEADOWS  
MANAGEMENT PLAN

Figure 1  
GARRY OAK MEADOWS  
POLYGONS &  
NEIGHBOURHOOD PHASING

APRIL 2014

LEGEND

-  OCP Urban Containment Boundary
-  The Lakes District Neighbourhood Plan Area
-  Garry Oak Meadows Polygons
-  Development Areas
-  Regional Park
-  Community Park
-  Notch Park Lands subject to Option to Purchase

GARRY OAK MEADOW POLYGONS

<b>A</b>	PHASE 1	3.87 ha   9.56 ac
<b>B</b>	PHASES 1 + I	1.63 ha   4.03 ac
<b>C</b>	PHASES 1 + I	3.47 ha   8.57 ac
<b>D</b>	PHASE 1	1.63 ha   4.03 ac
<b>E</b>	PHASE 3	0.62 ha   1.53 ac
<b>F</b>	PHASE 3	1.52 ha   3.76 ac
<b>G</b>	PHASE 3	1.35 ha   3.33 ac
		<b>14.09 ha   34.82 ac</b>

Note: The Garry oak Meadows Management Plan applies to the identified Garry oak Meadow polygons. All Garry oak Meadow polygons are located within designated Public Parkland and will be dedicated according to the phased development of the Lakes District Neighbourhood.

Garry oak Meadows ecosystems, together with Woodlands (mixed Arbutus) ecosystems, compose the initial 1:30,000 scale SEI Polygons (2004).

Polygons were ground-truthed in the field by a Registered Professional Biologist, resulting in the expansion of surveyed Garry oak Meadows ecosystem polygons.

Refer to Appendix 1 Section 2: Environmental Review for a detailed inventory within the Lakes District Neighbourhood Plan.

SCALE 1:10000



**EKISTICS**

