

**TO:** CHIEF ADMINISTRATIVE OFFICER**DATE:** 2023 January 26**FROM:** GENERAL MANAGER  
LANDS AND FACILITIES**FILE:** 36600-03  
*Reference: Green Recycling Organic  
Waste (GROW)***SUBJECT: GREEN RECYCLING ORGANIC WASTE (GROW) PROJECT UPDATE -  
PORTION OF 4800 RIVERBEND DRIVE****PURPOSE:** To provide Council an update and information on planned next steps for the Green Recycling Organic Waste (GROW) project.

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**RECOMMENDATION:**

1. **THAT** Council authorize staff to continue with the next steps for the Green Recycling Organic Waste (GROW) project proposed to be located on a portion of 4800 Riverbend Drive, as described in this report.

**REPORT****1.0 INTRODUCTION**

In 2015, Metro Vancouver implemented a green waste disposal ban for residents and businesses, prohibiting its disposal in the waste stream. Since 2020, staff have been evaluating the feasibility of a City-owned green waste processing facility that could recycle green waste (i.e. food scraps and yard waste) collected from citizens and businesses, and replace the current requirement for processing in a private facility outside of Burnaby. The proposed Green Recycling Organic Waste or “GROW” facility in Burnaby could process up to 150,000 tonnes of green waste annually from Burnaby and beyond, providing additional organic waste processing capacity within the region while creating high-quality compost and renewable natural gas (RNG). The facility would strengthen the City’s commitment to long-term sustainability, reduce greenhouse gas (GHG) emissions, support the Metro Vancouver region and partners, and contribute to achieving the region’s waste diversion goals.

The purpose of this report is to provide Council with a project update and information on planned next steps.

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## **2.0 POLICY CONTEXT**

The proposed GROW facility aligns with policy objectives contained in Burnaby's Corporate Strategic Plan (2022), Climate Action Framework (2020), Environmental Sustainability Strategy (2016), Community Energy and Emissions Plan (2016), and Economic Development Strategy (2007).

## **3.0 BACKGROUND**

### **3.1 Directions from Council**

At its 2020 March 30 Open meeting, Council approved the completion of a preliminary feasibility study for a City-owned green waste processing facility. The purpose of the feasibility study was to provide recommendations on processing technology options, analysis of end markets for compost materials, ownership and operating models, energy recovery options, and overall economic feasibility.

The City has since received the preliminary study, which found that a green waste processing facility is feasible and that the financial viability of the facility improved substantially with an increase in operating capacity and the addition of biogas production, but that siting opportunities within the Burnaby area are limited due to large site size requirements and zoning considerations. The preliminary study recommended a facility with up to 150,000 tonnes per year operating capacity including anaerobic digestion for biogas production. A portion of the City-owned property at 4800 Riverbend Drive has been identified as a suitable location for a facility of this size.

At its 2021 August 30 Open meeting, Council received an Initial Report from the Planning and Development Department proposing a zoning change to support development of a GROW facility on a portion of 4800 Riverbend Drive (Rezoning Reference #21-25), which forms part of Burnaby Fraser Foreshore Park. At that time, the portion of the property proposed to be used for the GROW facility was not identified as dedicated park land. It has since been determined that the whole of 4800 Riverbend Drive is dedicated park land, necessitating removal of park dedication from the portion of the property proposed to be used for the GROW facility in order to support the project. The Initial Report also notes that the site is contemplated to be used to support infrastructure for a proposed District Energy Utility.

Further direction from Council is required to advance the GROW project and its objectives.

### **3.2 Project Objectives**

The objectives of the GROW facility are to:

- demonstrate leadership in climate action and environmental sustainability, through implementation of Council-adopted policy;
- process up to 150,000 tonnes of organic waste annually, including approximately 30,000 tonnes from Burnaby, with the remaining tonnage to be sourced from neighbouring communities and businesses;
- obtain price certainty for Burnaby's green waste, in the form of a fixed tip fee which is sufficiently less than the market rate, adjusted annually for inflation;
- provide anaerobic digestion which produces both biogas and a digestate which is then composted, with the biogas upgraded to produce renewable natural gas; and
- place the facility in service by December 2026.

### **3.3 Project Rationale and Benefits**

The GROW project has the potential to be a world-class green waste processing facility that offers numerous benefits in the areas of climate action, community building, and fiscal responsibility and resilience. These benefits are detailed below:

#### *Climate Action:*

- GROW would reduce GHG emissions associated with green waste collection and transportation. Burnaby's green waste would be managed locally, where it is generated.
- The facility would generate biogas to create renewable natural gas from waste, which displaces fossil fuel natural gas.
- GROW would contribute to the circular economy through the use of renewable natural gas to fuel City vehicles and to power the facility's own processes.
- There is the potential to recover heat from the composting and anaerobic digestion process for use at a proposed District Energy Utility facility that is contemplated to be co-located at the site.
- The project would strengthen the City's commitment to long-term sustainability, support the Metro Vancouver region and partners, and contribute to achieving city, regional, provincial, and federal goals for green waste diversion, recycling, and renewable energy.

#### *Community Building:*

- GROW would produce high-quality compost that can be used for community gardens and urban farming, supporting and enhancing local food security.

- The project would provide educational opportunities through an on-site learning center, where schools and other community groups can witness their green waste being converted into renewable energy and compost.

*Fiscal Responsibility and Resilience:*

- The City’s green waste is currently processed at a private composting facility in Delta, one of very few green waste processing facilities within the Metro Vancouver region. This limited processing capacity has led to high tipping fees and repeated price increases. GROW would ensure cost-certainty for green waste management and provide the opportunity for preferential pricing on tipping fees for the City.

**3.4 Site Information and Selection**

As shown in **Figure 1** on page 5, the recommended project site is on a portion of the City-owned 4800 Riverbend Drive. This 40.3 hectare (99.57 acre) site is dedicated park land and forms part of the 70.8-hectare (175 acre) Burnaby Fraser Foreshore Park. The GROW facility requires a footprint of approximately 8.5 hectares (21 acres) or 12% of the overall park. The facility is proposed to be located in an area that is not currently used for recreational purposes. It is noted that the site has several artificially channelized waterways and was previously disturbed when it was cleared, ditched, and farmed between approximately 1930 and 1965.

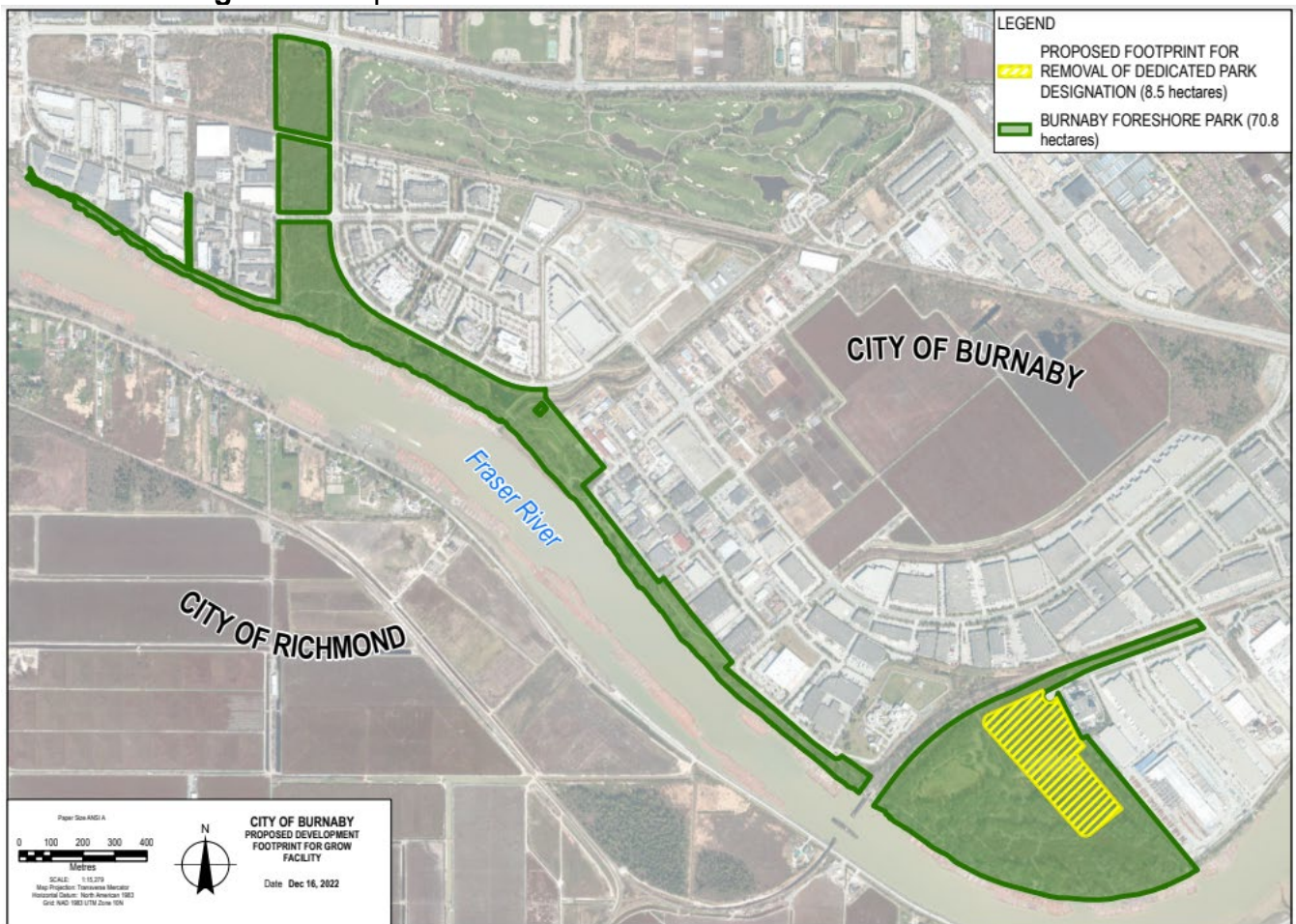
The site’s current use is regulated by or reflected in the following bylaws and land use plans:

- Burnaby Zoning Bylaw (P3 Park and Public Use District zoning);
- Big Bend Development Plan (Park and Public Use designation);
- Official Community Plan (inclusion in the Green Zone Lands map);
- Park Dedication Bylaws 9976 and 11988; and
- Metro Vancouver Regional Growth Strategy, entitled “Metro 2040: Shaping our Future” (southwest portion of site noted as a conservation and recreation area, with the balance noted as a general urban area).

Siting the GROW facility on a portion of park land is proposed following an extensive search of City-owned sites. Two key criteria for consideration included large site size to develop a functional facility and distance from residential areas to minimize operational impacts, such as noise, odour, and traffic. The recommended site at 4800 Riverbend Drive is the only site option to meet the required criteria, with the added benefit of being adjacent to the existing Metro Vancouver Waste-to-Energy Facility (WTEF). The proximity of the GROW facility to the WTEF and potential co-location of the GROW facility with the proposed District Energy Utility facility offers the following synergies:

- traffic to the GROW facility would use an established traffic corridor already used to access the WTEF;
- green waste contaminants such as metal, plastics, and other non-organic wastes from GROW can be disposed at the WTEF with minimal transport cost; and
- the composting process would generate some heat, which could potentially be recovered and tied into the District Energy Utility facility, depending on the technology.

**Figure 1: Proposed Location of GROW at 4800 Riverbend Drive**



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## 4.0 PROJECT UPDATE

The project team has confirmed that GROW is technically feasible and financially viable. Staff have determined the necessary steps to allow the use of the site for development of GROW, which include undertaking an alternative approval process to enable Council adoption of a bylaw to remove the park dedication for that portion of 4800 Riverbend Drive proposed to be used for the GROW facility site, Council adoption of certain Zoning Bylaw, OCP and development plan amendments, and a robust environmental enhancement and compensation program. Further next steps will involve appropriate communications and public engagement and market sounding to identify the most appropriate commercial framework for the project. These items are discussed in the following sections.

### 4.1 Technical Feasibility

Technical evaluation of composting and anaerobic digestion methods concluded that a tunnel composting system<sup>1</sup>, accompanied by a plug-flow anaerobic digestion system<sup>2</sup> is a suitable option to meet operational demands while maintaining economic feasibility. This combination allows for treatment of green waste and optimal biogas generation based on the assumed feedstock composition. The project technology decision will be confirmed at later stages as the project proceeds.

### 4.2 Financial Viability

The financial feasibility of this project was assessed at the preliminary feasibility stage based on estimates of capital expenditures, operating costs, revenue sources, and financial parameters. Estimates were based on industry knowledge of projects of similar size and scope. A financial model was developed to estimate the per-tonne cost of a facility under various planning scenarios including sensitivity analysis. Compared with the City's current green waste management expenditures, the preliminary feasibility study identified that developing a 150,000 tonnes per year facility that can sell excess capacity and enter into a renewable natural gas (RNG) off-take agreement with Fortis BC would be most economically feasible.

It is estimated that the GROW facility can generate approximately \$165 per tonne of net revenue (based on a 20-year planning horizon). The project net revenue estimate is based on tipping fees on the excess capacity (approximately 100,000 tonnes per year), heat recovery, and the sale of compost and RNG. The estimated capital cost of the project

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<sup>1</sup> Composting is the process of breaking down organic waste by microorganisms in the presence of oxygen to produce a stable product that can be used as soil amendment. Composting in concrete tunnels allows the process to be fully enclosed for temperature, moisture, and airflow control.

<sup>2</sup> Anaerobic digestion is the process of breaking down organic materials by bacteria in the absence of oxygen to produce biogas. Plug-flow digester vessels are a type of continuous-feed digester where the high-solids-slurry moves through the reactor like a plug and biogas is recovered. The proposed technology is based on the feedstock being mixed green waste, which typically has a higher solids content compared to food waste only streams.

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is \$182 million including a 25% contingency. This financial model shows a potential positive revenue of \$18.21 per tonne from a GROW facility with 150,000 tonnes per year capacity.

The table below summarizes the results of the business case in the preliminary feasibility study.

**Table 1: Summary of Preliminary Feasibility Financial Model**

	Current	GROW
Processing Capacity (tonnes/year)	n/a	150,000
Construction (incl. 25% contingency) Cost	n/a	\$182,000,000
Operational (per tonne) Costs	n/a	\$85.31
Revenue (per tonne)	n/a	\$165.81
Total Cost (per tonne)	\$122.45	(\$18.21)

While the City initially contemplated a 50,000-tonne facility, the preliminary feasibility study determined a 150,000 tonnes per year facility would have more commercial appeal and provide revenue generating potential for the City.

The project financial model will be updated during detailed feasibility to reflect:

- additional input from industry leaders and technology providers;
- current global financial conditions;
- land value; and
- the cost of required on and off-site habitat compensation.

It should be noted that the above section reflects a preliminary financial analysis, and the model outputs will change as the project evolves and the model structure and assumptions are firmed up reflecting a market-ready opportunity.

### 4.3 Alternative Approval Process and Bylaw to Remove Park Dedication

Developing the GROW facility on a portion of 4800 Riverbend Drive will require removing the park dedication over that portion of the property required for the facility, which can only be done by a bylaw adopted with the approval of the electors. Under the *Community Charter*, there are two ways the approval of the electors can be obtained: (1) by way of a vote using the assent voting process (i.e. referendum); or (2) through the alternative

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approval process (i.e. former counter petition process). Staff intend to pursue the Alternative Approval Process (AAP) to remove the park dedication for that portion of 4800 Riverbend Drive required to develop the GROW facility.

The AAP can be used to help local governments understand whether the community views a particular matter as "significant", and if necessary, whether the matter then warrants being taken to an assent vote for broader citizen engagement.

Undertaking an AAP involves:

- determining the number of electors the process applies to (whether to the whole or only part of the City);
- establishing the elector response form, which involves formulating the question to be posed to the electors and determining whether to allow for single or multiple elector responses on each form;
- establishing a deadline for electors to respond;
- publishing notice of the AAP;
- collecting elector responses up until the established deadline; and
- determining and certifying the results after the deadline.

If following the above process, less than 10% of eligible electors object, then approval of the electors has been obtained and Council may proceed with adopting the park dedication removal bylaw. If more than 10% of eligible electors object, then the assent of the electors must be obtained through the assent voting process (i.e. referendum) should Council wish to continue to pursue adoption of the park dedication removal bylaw.

More details on the AAP process and timeline and the park dedication removal bylaw will be presented for Council's consideration at a later Council meeting.

It should be noted that the City has a long history of securing and protecting park and open space. More than 25% of Burnaby is now park and open space – about 2,465 hectares, or six times the size of Stanley Park in Vancouver. As aforementioned, siting the GROW facility on an 8.5-hectare (21 acre) portion of parkland has been proposed following an extensive search of City-owned sites, and in recognition that, on balance, the project offers numerous environmental benefits. It should be further noted the proposed reduction in park land is off-set by the recent dedication of four park areas totalling 82.97 hectares (204.05 acres), which received elector approval during the October 2022 local election.



#### **4.4 Environmental Approvals and Compensation**

The project team has sought to minimize the environmental impact of the conceptual design for GROW by pushing it as far back from the Fraser River as possible, stacking some elements on the site to reduce the development footprint, and avoiding portions of the site with higher environmental value. Nevertheless, it is acknowledged that the development of GROW will affect 8 hectares of wetland habitat (4.4 hectares swamp, 2.5 hectares forest, and 1.1 hectares marsh) and will require both federal and provincial permits prior to construction. A site-specific Ecological Assessment identified the local, regional, provincial, and federal regulating agencies that require consultation on permitting, including: the City of Burnaby, Metro Vancouver, BC Ministry of Environment and Climate Change Strategy, BC Ministry of Forests, BC Ministry of Water, Land and Resource Stewardship, the Department of Fisheries and Oceans (DFO), Environment Canada, Canadian Wildlife Service, and First Nation governments. The project team commenced the application process for certain long lead permits in January 2023.

A robust environmental compensation program, which has been reviewed by the City's Environmental Review Committee (ERC) and other City staff, is proposed to mitigate environmental impacts and involves a mix of on-site and off-site compensation. The on-site work includes creating high-value habitat that is in short supply in the Fraser River basin, replacing low-quality fish habitat in drainage ditches with a new salmon-supporting tidal marsh and salmon-supporting tidal creeks. On-site work also includes forest enhancement. The off-site habitat compensation includes enhancement and preservation efforts at three (3) City-owned sites to provide a net gain of floodplain forest, marsh and swamp habitats. The wetland and fish habitat impacts, compensation, and net benefits are summarized in Table 2. Notably, the overall compensation strategy offers a 3.2 to 1 habitat gain to loss ratio and would be the largest program package of environmental enhancement the City has ever undertaken. The net habitat gain to loss ratio is further increased to 3.7:1 when taking into account natural swamp area the City intends to preserve.

**Table 2: Wetland Impacts and Offsetting**

Wetland Class	Loss of Wetland Extent in Project Footprint (ha)	Proposed Wetland Restoration/ Enhancement On-Site (ha)	Proposed Wetland Mitigation Off-Site (ha)			Ratio (Gain: Loss)
			Burnaby Fraser Foreshore Park, Glenlyon Parkway Restoration/ Enhancement	Riverside and Marshland Bog Forest Park Restoration/ Enhancement	Lougheed and Phillips Preservation	
Floodplain Forest (Fm50, F150)	2.5	9.1	5.4	-	-	5.8:1 enhancement
Marsh (Wm)	1.1	1	1.2	-	-	2:1 restoration
Swamp (Ws50, Ws51)	4.4	-	0.4	8.5	4.3	2:1 restoration only 3:1 with preservation
<b>Total</b>	<b>-8.0</b>	<b>+10.1</b>	<b>+7.0</b>	<b>+8.5</b>	<b>+4.3</b>	<b>3.2:1 overall with restoration</b> <b>3.7:1 overall including preservation</b>

## 5.0 NEXT STEPS

Having confirmed technical and financial feasibility and the process to make a portion of 4800 Riverbend Drive available for a GROW facility, staff are proposing to undertake the following next steps to advance the project:

Communications and Public Engagement (February 2023 to ongoing). Similar to other major City projects, a communications and public engagement program is proposed to be launched to share information about the GROW project, its benefits, and the proposed AAP. Project-specific materials will be created for the GROW project, including a dedicated webpage and email address, project overview and fact sheets, FAQs, technical backgrounders, a media package, social media products, and consultation and engagement materials.

Commence Environmental Permitting Submissions (January 2023). As numerous environmental permit applications need to be made to DFO, BC Ministry of Forests, BC Ministry of Water, Land and Resource Stewardship and other regulatory bodies with

ample lead time, the project team intends to commence the application processes in January 2023.

Alternative Approval Process (AAP) and Park Dedication Removal Bylaw (February 2023 to Q2 2023). Staff propose to advance a Council report in February 2023 which will (1) seek Council authorization to prepare the park dedication removal bylaw to remove the park dedication for that portion of 4800 Riverbend Drive required for the proposed GROW facility, and include the bylaw on the same Council agenda for first, second and third reading, and (2) detail and seek specific approval to pursue the AAP to obtain elector approval for Council to adopt the park dedication removal bylaw. A further Council report in Q2 2023 will summarize the results and outcome of the AAP.

Zoning Bylaw, OCP and Development Plan Amendments (Q2 to Q3 2023). If the AAP is successful, staff intend to pursue the following bylaw and land use plan amendments to permit the GROW facility on a portion of the subject property:

- **Zoning Bylaw Amendment:** The site is currently zoned P3 Park and Public Use, which does not permit the GROW facility, as it is considered an industrial use. As such, a *Zoning Bylaw* amendment is necessary. Staff will bring forward a future *Zoning Bylaw* amendment report for Council consideration, with final adoption of the bylaw amendment conditional on the approval of the park dedication removal under the AAP and final adoption of the park dedication removal bylaw.
- **Big Bend Development Plan Amendment:** As the Big Bend Development Plan currently designates the site for Park and Public Use, staff intend to pursue a plan amendment to designate that portion of the site supporting the GROW facility for industrial use. This plan amendment would be undertaken concurrently with the above noted *Zoning Bylaw* amendment and would also be conditional on the approval of the park dedication removal under the AAP and final adoption of the park dedication removal bylaw.
- **Official Community Plan Amendment:** The site is currently included in the Green Zone Lands map in the Official Community Plan. An OCP amendment removing this designation (and other similar references throughout the OCP) and adding the proposed industrial use is necessary. Staff will advance the necessary OCP amendment report for Council's consideration, with final adoption of the bylaw amendment being conditional on the approval of the park dedication removal under the AAP and final adoption of the park dedication removal bylaw.
- The site is designated "General Urban" under Metro Vancouver's regional growth strategy, *Metro 2040*. Industrial uses are permitted in the General Urban designation, and therefore an amendment to *Metro 2040* is not required.

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Market Sounding (Q1 2023), RFQ (Q2 to Q3 2023), RFP (Q4 2023 to Q1 2024). Staff intend to validate current commercial assumptions in Q1 2023 by engaging potential project partners in advance of issuing a Request for Qualifications in a “market sounding” exercise. Discussion and feedback from this exercise will inform the commercial terms to be included in the procurement documents, ensuring they are understood and broadly acceptable to the market, thereby increasing the project’s appeal to potential bidders. Upon confirmation of funding and commitment to the project, staff would issue a Request for Qualification followed by a Request for Proposals, with the intent of entering into contractual agreements by the end of Q1 2024.

Construction (2024 to 2026). Site preparation activities are proposed to be targeted to commence in Spring 2024, with construction completion, commissioning, and the start of facility operations by the end of 2026.

## **6.0 SUMMARY AND RECOMMENDATION**

The GROW project offers numerous climate action, environmental, community building, and financial benefits to the City. The proposed project site was selected following an extensive review of City-owned properties, carefully weighing overall project benefits against other considerations. While the project requires removal of park dedication and development on approximately 8 hectares of wetland habitat, the GROW project intends to offset the loss through like-for-like habitat restoration, and enhancement and preservation of other wetland sites in the City, yielding over three times more habitat area overall. Furthermore, the City has recently dedicated over ten times more area as park than this project proposes to remove. On balance, the project provides an excellent opportunity for the City to demonstrate leadership in achieving the sustainability and waste-diversion goals of the region.

It is recommended that Council authorize staff to continue with the next steps for the GROW project proposed to be located on a portion of 4800 Riverbend Drive, as described in this report.



James Lota, P.Eng., MBA, MPA  
GENERAL MANAGER LANDS AND FACILITIES

JL/nh

Copied to: Deputy Chief Admin Officer CFO  
General Manager Engineering  
General Manager Planning and Development  
General Manager Parks, Recreation and Culture  
General Manager Corporate Services  
Senior Manger Legislative Services  
City Solicitor