



City of Richmond

**Report to Committee**

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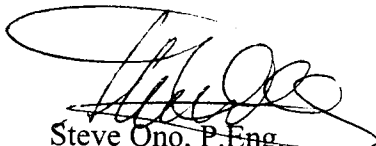
**To:** General Purposes Committee  
**From:** Steve Ono  
Director, Engineering  
**Re:** **Eco-Industrial Program**

**Date:** April 25, 2002  
**File:** 6125-01

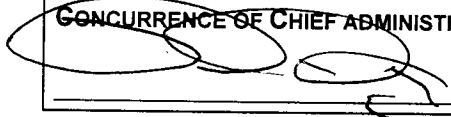
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**Staff Recommendation**

That staff continue to develop the Eco-Industrial Program and report back to Council through General Purposes Committee with the results from further conceptual planning activities.



Steve Ono, P.Eng.  
Director, Engineering

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## Staff Report

### Origin

As outlined in the *Corporate Renewal Program – Learning from the Past/Shaping the Future*, it is the City's vision to make Richmond the most appealing, liveable and well-managed community in Canada. In order to move the City closer to achieving the "liveable" component of the vision, a cross-divisional staff team has been formed to develop an Environmental Sustainability Strategy. The strategy will focus on developing and implementing initiatives that will help maintain and enhance a sustainable environment for the Richmond community. One exciting initiative being explored by the Environmental Sustainability Team is the development of an Eco-Industrial Program.

The purpose of this report is to present the results of work completed to date and to receive Council endorsement for proceeding with the next steps in conducting conceptual planning.

### Analysis

#### *An Eco-Industrial Program in Richmond*

Eco-industrialism occurs when businesses and organizations capture resource and financial efficiencies through smart building design and the sharing of materials, by-products, services and energy.

The opportunity for an eco-industrial program arose when the City's Environmental Sustainability Team became aware that senior government agencies are interested in encouraging the development of a showcase eco-industrial project (i.e., environmentally-friendly) in BC. As an initial step, these agencies funded a Scoping study to identify those communities in BC with the strongest capacity for implementing a showcase project. Believing eco-industrial development is an exciting opportunity to pursue economic and environmental objectives simultaneously, the Environmental Sustainability Team submitted an expression of interest to participate in the scoping study. The City of Richmond was selected to participate in the study and was ranked as being one of the strongest communities in British Columbia to develop a successful eco-industrial pilot project. The Executive Summary of the Scoping Study is included in Appendix A.

The principles of eco-industrial development can be applied to new developments as well as to existing businesses. Examples of eco-industrial characteristics include:

- shared use of services, materials, by-products, and/or energy within and among organizations (e.g., wastes from one industry serve as resource inputs to another) to save money and reduce demands on the environment
- the use of "green buildings" (e.g., re-use of building materials, use of local materials, incorporation of alternative energy, water and stormwater systems through technology and innovative site design, use of innovative building design which enables conversion to different uses in the future, pollution and toxics reduction, etc.)

- community integration (e.g., mixed development which encourages live, work, and play, and provide amenities for employees, etc.)
- incorporation of natural habitat and green space in the industrial development

*Benefits of Pursuing Eco-Industrial Development in Richmond*

- opportunity to advance the 3 R's (i.e., reduce, re-use, recycle) and other aspects of environmental sustainability (e.g., integrated stormwater management, alternative energy, smart growth, etc.)
- opportunity to realize economic and environmental benefits simultaneously for the Richmond community
- by developing a showcase project for the Province, there is the opportunity for Richmond to be leaders in the field of eco-industrial development for BC and to create an environmental sustainability legacy for the Richmond community
- opportunity to heighten awareness of the benefits of environmentally sustainable practices amongst local businesses and to realize economic efficiencies
- opportunity to strengthen relationships between the City and local businesses, offering a foundation for initiating environmentally sustainable improvements at the site level
- by ranking high in the Scoping Study, Richmond has an increased opportunity to secure external funding

*Potential Pilot Projects*

In the submission to the Scoping Study, the City's Environmental Sustainability Team led a cross-divisional effort in identifying two potential pilot projects:

**1. Creation of Eco-Industrial Network Across Richmond**

This initiative would establish an eco-industrial network among existing Richmond businesses to explore and realize opportunities for resource and waste sharing among existing Richmond businesses. It is envisioned that the City would adopt a leadership role in initiating the process and identifying early opportunities but that eventually this network would be managed and maintained by Richmond businesses.

**2. Creation of a State-of-the-Art Eco-Industrial High Technology Park**

The conceptual planning stage for the development of a state-of-the-art high technology business park provides an excellent opportunity to pursue eco-industrial development. City research has determined that high technology companies are more likely to support and even demand, green development. Since Council has endorsed the development of a state-of-the-art industrial park, it is timely to also consider what measures could be taken to incorporate eco-industrial characteristics in this project.

*Next Steps*

If Council is supportive of the concept of an eco-industrial program for the City of Richmond, potential next steps could include:

1. Conceptual Planning (2002)

- Gain greater understanding of specific eco-industrial strategies
- Conduct further assessment of potential pilot projects, including identifying additional project options, evaluating City capacity, assessing benefits and costs, etc.
- Select preferred pilot project
- Identify and evaluate potential partner interest (e.g., industry and government agencies)
- Explore and secure funding for conducting feasibility study

↳ *Re-assess merits of pursuing an eco-industrial program – prepare Report to Council*

2. Feasibility Study (2003)

If decision is made to proceed:

- Conduct feasibility study, including detailed cost/benefit analysis, financing opportunities, etc.

↳ *Evaluate next steps – prepare Report to Council with detailed cost information*

**Financial Impact**

1. For Conceptual Planning: None

There will not be any additional cost to the City with taking the next recommended step of conducting further conceptual work as this work can be done in-house using existing resources.

2. For Feasibility Study: To be determined and provided to Council prior to proceeding

The successful implementation of a showcase eco-industrial program will ultimately require City resources. The level of financial impact will depend on the role that the City decides to take in leading Eco-Industrial initiatives and on the ability of staff to develop external partnerships and secure external funding. It is anticipated that ranking high in the Scoping Study will provide Richmond with a strong foundation for securing external funding.


During the course of the conceptual planning work, more detailed total cost information will be undertaken and presented to Council prior to any further work being conducted.

**Conclusion**

As part of Richmond's Environmental Sustainability Strategy, the development of an Eco-Industrial Program concept is being explored. This report provides an update on the initial work that has been undertaken to date and seeks Council's endorsement for proceeding with the next step with respect to conceptual planning.



Margot Daykin,  
Environmental Services Coordinator

  
Steve Ono, P. Eng.  
Director, Engineering

APPENDIX A  
Eco-Industrial Scoping Study  
Executive Summary

## EXECUTIVE SUMMARY

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### BACKGROUND

Eco-industrial networking involves the networking of people and organisations (businesses; municipal, provincial, and federal governments; educational institutions; and non-government organisations) to facilitate better use of resources (energy, material, water, capital, people, and infrastructure). The most compelling case for eco-industrial networking is that substantial financial benefits can be achieved at the same time as social and environmental goals. Eco-industrial networking supports the creation of a diverse and stable local economy; increases the competitiveness and eco-efficiency of existing businesses while attracting progressive, often 'greener' new businesses; improves the health of the community and surrounding ecosystem; and leads to high-value local jobs.

In an eco-industrial network:

- Companies save or even earn money by sharing services, materials and/or energy, such as through "waste to feed" linkages;
- Targeted economic development strategies attracting businesses to fill product or service niches;
- Ecological concepts are incorporated into 'green' buildings and site design; and/or
- Infrastructure costs are reduced by using alternative energy strategies; water and stormwater management; and innovative site design.

There are eco-industrial networking projects throughout the U.S., Europe, and Asia (see Appendix A for case studies). Eco-industrial networking in B.C. has had a relatively low profile. The objective of the study was to identify ten communities interested in supporting eco-industrial network projects. From these ten, it was hoped that at least three would be in a position to implement a showcase project. Several government and non-government agencies formed the project steering committee that supported the study financially and technically (see Appendix B for contact information):

- B.C. Ministry of Competition, Science and Enterprise – Trade and Sustainable Development;
- B.C. Ministry of Water, Land, and Air Protection;
- Canadian Environmental Industries Association – B.C. Chapter (delivery agent);
- Centre for Integral Economics (formerly NEW BC);
- Community Futures Development Association
- Economic Development Association of B.C.;
- Environment Canada Pacific & Yukon Region (Major Funding Partner);
- Fraser Basin Council (Funding Partner);
- Industry Canada;
- Science Council of B.C.; and
- Western Economic Diversification (Major Funding Partner).

Communities across B.C. were invited to participate in the study. Twenty communities submitted expressions of interest. The following ten were selected: Abbotsford; Cache Creek; Comox Valley; Logan Lake; Mount Waddington Regional District; Revelstoke; Richmond; Smithers; Tofino; and the West Kootenay Boundary Region. Each community was then 'scoped' or profiled in more detail (refer to Appendix C for profiles). Each community's ability to implement a showcase eco-industrial project was assessed against the following criteria: Impact on Social, Environmental and Economic Issues; Level of Support; 'Green' Factor; Potential for Measurable Results; Financing Potential; and Transferability.

### RANKING OF COMMUNITIES

Due to the subjective nature of the evaluation, it was decided that detailed quantitative scoring was not suitable. Instead, the communities were categorized into three groups.

### **Group 1 - Comox Valley, Richmond, Tofino, and the West Kootenay Boundary Region**

These communities were felt to be in the strongest position to support a showcase eco-industrial project in the near future. Many of these communities have completed significant groundwork that they have begun to integrate into their projects. These communities tended to have either 'greener' projects, or were distinct enough from the other proposals to meet the requirement for showcase potential.

### **Group 2 - Abbotsford, Cache Creek, Revelstoke, and Smithers**

These communities are also well positioned to implement showcase eco-industrial projects. Some of these communities are simply further behind on their project timelines than those in Group 1, while others require some additional groundwork to strengthen their performance with respect to one or more of the evaluation criteria. In some cases, broader stakeholder support is required, existing policies and programs need to be integrated into the project, or a commitment to address one or more additional eco-industrial strategies in their projects is required to ensure a leading edge project.

### **Group 3 - Logan Lake, Mount Waddington Regional District**

The communities in Group 3 could also benefit from taking some of the actions recommended for Group 2. In addition, some internal capacity building or a community visioning exercise would be beneficial.

## **CONCLUSIONS & RECOMMENDATIONS**

1. B.C. is well positioned to implement eco-industrial networking. Government support would be warranted to ensure projects proceed and realise their full potential.

In the short-term, the steering committee should consider supporting the Group 1 communities. In the longer-term, support for eco-industrial projects in general should be made available. Financial support is key, and will provide the greatest returns. In addition to financial support, the steering committee and other agencies can provide marketing, policy, educational, and technical support for eco-industrial networking.

Institutional inertia, inexperience (leading to risk aversion), and inadequate planning represent real barriers to implementation, even when the benefits are obvious. It is estimated that an additional \$60,000 to \$100,000 (CDN) in professional fees would be required to incorporate eco-industrial networking into a conventional, \$12 million (CDN), 10-acre project. This corresponds to an additional 1% for architecture and engineering costs, an amount that is far less than that allocated for most contingency budgets. As B.C. builds capacity in eco-industrial networking, these costs should decrease. Government support and financial incentives could support visioning and strategy workshops, and to encourage communities to undertake more thorough pre-project planning. Eco-industrial networking projects throughout North America have come about largely because of investments in these areas.

2. The continued coordination and cooperation of government agencies and non-government organisations (NGOs) to support eco-industrial networking is recommended. This would:
  - Increase opportunities for each of them to leverage generally shrinking pools of funds;
  - Facilitate educational, marketing, technical, and policy support for eco-industrial networks in B.C.;
  - Increase internal capacity in each agency; and
  - Allow many agencies to meet their mandates simultaneously.
3. Especially outside the Lower Mainland, there is a need for education and training for eco-industrial networking in general, as well as for specific eco-industrial strategies, such as Green Buildings, Environmental Planning, and Pollution Prevention.



## RICHMOND

### Project Summary

#### Project 1: Creation Of A State-Of-The-Art Industrial Development That Incorporates Ecological Design As A Defining Feature Of Innovation.

Richmond recently completed an Industrial Strategy with the specific purpose of ensuring that Richmond remains a destination of choice for B.C.'s leading edge companies. This strategy identified the need for additional business park zoned sites. The strategy also identified the suitability of Richmond for high technology businesses based on its proximity to the airport and to Vancouver.

Richmond is in the conceptual planning stage for the development of a state-of-the-art high technology business park, selected not only because of the economic opportunities, but Richmond's research has determined that high technology companies and their staff are more likely to support, and even demand, green development. Richmond will likely incorporate Green Buildings; Alternative Energy Strategies; Material and Energy Conservation; Pollution and Toxics Reduction; Environmental Planning and Site Design; Green Infrastructure; Shared Services; and Community Integration (training centres, education institutes, mixed development) into the technology park.

Council has endorsed the development of a state-of-the-art industrial park. Presently, the city has identified suitable locations within Richmond and is in the process of developing appropriate zoning that would response to these businesses' needs. The City is also considering what type of leadership role it should take to encourage this project. Considerations include making arrangements to lease, sell, or purchasing appropriate land. It is the City's intention to actively seek partnership opportunities with the Richmond business community and other project stakeholders.

#### Project 2: Eco-Industrial Development System-Wide Across Richmond

Richmond is interested in examining the network of industries that already exist and exploring opportunities for implementing eco-industrial development improvements on a system-wide basis. The project could promote Green Buildings; Material and Energy Conservation; Pollution and Toxics Reduction; and Material and Energy Cycling.

Richmond would begin the project by profiling the existing industries and identifying opportunities for converting wastes to resources and for resource and waste sharing among industries within the Richmond municipality. Richmond would take a leadership role in initiating the process, identifying the network of industries, identifying early opportunities and developing organizational capacity within the network of industries so that advancements can be made on a continual basis.

Richmond believes that this project could showcase eco-industrial development as it:

- Offers economic efficiencies (e.g., cost-savings) to existing businesses;
- Targets existing industries where there tends to be less of focus for implementing innovative strategies (e.g., often the focus is on new developments);
- Builds capacity so that industry can ultimately pursue and manage on its own;
- Builds relationships between the city and existing businesses and offers foundation for initiating improvements at a site level;
- Applies to many other communities and could be expanded locally to include the entire Lower Mainland to result in further efficiencies; and
- Incorporates a systems approach and an area-wide scope offering opportunities for realizing greater efficiencies and environmental improvements than that which could be done at an individual project or site level.

## Discussion

The City of Richmond submitted an extremely detailed and well-organized community survey and project description. The submission was a coordinated effort amongst several City departments, indicating strong institutional capacity. The extent to which the City of Richmond is already aware of and implementing sustainability strategies, such as community energy planning and green buildings, indicates strong environmental capacity as well.

With respect to the proposed projects, extensive groundwork has already been completed, with sustainability and 'green' considerations explicitly considered in the OCP and Industrial Strategy. The proposed projects would incorporate many eco-industrial strategies; the system-wide approach to eco-industrial development would be a first for Canada. Even moderate success would place Richmond well ahead of the few U.S. cities to have undertaken such a strategy.

If there is any point on which to sound a note of caution, it is that Richmond's vision is so farsighted, that implementation may be challenging. Careful strategising should help to meet these challenges. For example, the Industrial Strategy recommended continuing support for food processing, garment manufacturing, value-added wood manufacturing, and light manufacturing aimed at local markets. It might be prudent to begin the system-wide project by focusing on a pilot sector. The success of that project will depend on cooperation of businesses. As the recent EcoDesign program indicates this requires substantial marketing work, even when potential savings are obvious (although case studies from EcoDesign should help). Also, based on other eco-industrial case studies, acquiring an understanding of business inputs and outputs is often not straightforward. In many cases, even well-managed, progressive companies have less understanding of the material and energy flows than they would have anticipated. The payback for completing the necessary work to fill data gaps has been documented, but this work can require upfront investment. At the same time, very detailed analysis would be wasteful, as it is often not required for the purposes of facilitating initial go/ no-go by-product synergy decisions.