



**REPORT TO CORE AREA LIQUID WASTE MANAGEMENT COMMITTEE  
MEETING OF WEDNESDAY 07 OCTOBER 2009**

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**SUBJECT**      **SITE SELECTION FOR WASTEWATER TREATMENT FACILITIES IN SAANICH  
EAST-NORTH OAK BAY – CORE AREA WASTEWATER TREATMENT PROGRAM**

**PURPOSE**

To provide the Core Area Liquid Waste Management Committee (CALWMC) with information to support selection of a preferred location for a wastewater treatment facility in Saanich East-North Oak Bay (SENOB).

**BACKGROUND**

All system designs considered for core area wastewater treatment have identified a treatment facility in SENOB. A facility at this location would reduce wastewater flows in downstream conveyance infrastructure and would create opportunities for the use of reclaimed energy and water in the surrounding area. The CALWMC has authorized several studies of treatment facilities in the SENOB area:

- preliminary facility description and cost estimation
- site condition analysis and candidate site selection (2007–2008)
- comparative Environmental and Social Review (ESR) of candidate SENOB wastewater treatment facility sites (July 2009)
- Triple Bottom Line (TBL) analysis of SENOB candidate sites

In addition to this technical work, Capital Regional District (CRD) staff completed an assessment to compare the capital costs and infrastructure requirements with and without a treatment plant in the SENOB area. Staff also conducted an extensive public involvement program, including open houses, community meetings, workshops and newsletters.

Using criteria developed with the involvement of the CALWMC, the Technical and Community Advisory Committee (TCAC) and the public, combined with discussions with owners of highly-rated properties, the following three candidate sites were identified in SENOB: Finnerty-Arbutus, University of Victoria (UVic) Fields, and Cedar Hill corner.

The ESR for these sites examined the potential effects of construction and operation of a treatment facility and ancillary sewer mains, pump stations, and an outfall. (The outfall received cursory examination; it will be subject to further review after the marine investigations presently being conducted by the CRD are completed in late 2009.) The results of the ESR identified different levels of impact on natural areas, local communities, archaeological resources, traffic and operation and maintenance costs.

**Public Comments**

The extensive public engagement program associated with site selection in the SENOB study area produced substantial and varied input. Public comments were received on a variety of topics:

- debating the need for wastewater treatment in the CRD and a plant at this location
- the desire to protect the forested portions of Haro Woods and Upper Hobbs Creek

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- questions about health, safety and neighbourhood disruption
- property value effects of having a treatment facility in the neighbourhood
- concerns about the energy and financial cost and effects on adjacent housing
- suggestions for alternative sites

No consensus on a preferred facility site emerged from the public involvement program.

The public suggested sixteen alternative sites for review which were discussed in a previously submitted memo, attached as Appendix A. Most of these sites were examined during the 2007–2008 site assessment. The following three areas have some technical merit and received substantial public attention.

Saanich-Owned Arbutus Road Property. Immediately adjacent to the CRD-owned Finnerty–Arbutus site, this Saanich-owned property has been disturbed by construction of sewer lines, a meter station and a former sewage processing facility associated with previous discharges of raw sewage into Finnerty Cove.

Several members of the public recommended the use of the Saanich-owned site rather than the Finnerty–Arbutus site because of fewer effects on the forest. This land is split-zoned (RS10 and RS12) and there is a covenant on land requiring the District of Saanich not to enter into an agreement to sell, lease or otherwise dispose of the property or grant a option to purchase unless the District of Saanich council has passed a resolution at an open council meeting authorizing the sale of the property. The covenant also indicates that the District of Saanich agrees that the public shall have opportunity to provide input to the open council meeting.

Haro Road “Compost Facility”. The District of Oak Bay operated a compost facility on the Haro Road right-of-way north of Cedar Hill Cross Road until it was removed more than a decade ago. A sewage pump station is located adjacent to this right-of-way. The right-of-way is desired for future road access between Cedar Hill Cross Road and UVic. Although it may be possible to fit a wastewater treatment plant on this site, excavation could increase risks to slope stability in Upper Hobbs Creek. Because the road right-of-way is too narrow to accommodate all of the treatment facility, UVic land would need to be obtained. Adjacent forested areas would be subject to impact. This site would also require the pumping of sewage from the east coast interceptor. After review, staff concluded that the Cedar Hill corner site has substantial advantages over the Haro Road location in terms of ease of construction, facility operation, and environmental protection.

McKinnon Gymnasium parking lot. This site, to the north of McKinnon Gym, was originally included in a candidate area for a treatment plant. Discussions with UVic representatives revealed that this area was slated for construction of a major new athletics building and would not be available for consideration as a treatment facility site. The program requirements for the athletics facility have been approved by the UVic Board and Executive and detailed design is underway. All UVic lands south of McKenzie Avenue were subsequently removed from the candidate area, leaving only the UVic Fields site. The McKinnon Gym parcel would provide excellent access to energy and water use opportunities but would require pumping of sewage to this site. Parking needed for UVic operations would be displaced. The CRD direction of seeking a “willing seller” for a treatment facility site precluded further consideration of the McKinnon Gym parking lot.

The other sites recommended by the public are considered to be inferior to the three candidate sites.

### **Site Ratings**

A TBL report comparing the three candidate sites was submitted to the CALWMC in July 2009. CALWMC members and the public suggested revision of some of the criteria, ratings and weights. In response, the TBL table and graphs were amended. This section describes those revisions.

Original analysis. In the original analysis, Finnerty-Arbutus is clearly scored higher than the other two candidate sites, as shown in Appendix B, Figure 1. Although the Finnerty-Arbutus site had the lowest environmental score, it is the most economical of the three sites and had good social scores. The next highest score was UVic Fields, followed closely by the Cedar Hill corner site. Both of these sites were previously cleared of vegetation and performed well environmentally but they would require additional pipes and a pump station, making them more costly.

Revised analysis. After considering comments from the public and the CALWMC, the TBL analysis of the SENOB sites was revised in the following ways:

- The original single capital cost criterion was split into two criteria, one for the treatment facility, which is the same for all three sites, and one for the ancillary facilities (the pipes and pumps), which varies substantially.
- In the original analysis, land values were unknown, so all sites were assigned a "2" for land cost. Values for the land cost criteria were subsequently calculated (including costs of right-of-way purchase and workspace rental) and values were assigned for each site. The cost differential was small, so scores of "2" were retained for all sites.
- The weights for the five "economic" criteria were amended to reflect the relative magnitude of costs, to reflect "intuitive" breaks between scores and the CRD and public support for resource recovery.

The details of criteria, weights and scores revisions are shown in Appendix C.

The revised scores for the three sites, as shown in Appendix B, Figure 2, are much closer than in the original analysis. Finnerty-Arbutus still has the highest score, but by a narrower margin. The economic score decreased by 50 points for Finnerty-Arbutus and increased for the other two sites. The UVic Fields site is still in second place, followed closely by the Cedar Hill corner site.

Enhanced mitigation. The original TBL analysis included an "enhanced mitigation" option that would reflect the following changes to each site.

- Finnerty-Arbutus site: The facility site would be shifted eastward, partially on the disturbed portion of the Saanich-owned property (to reduce environmental impacts).
- Cedar Hill Corner: Instead of crossing Upper Hobbs Creek drainage to access the site, pipes would be routed along Haro Road to Cedar Hill Road.
- UVic Fields: The facility would be reoriented along McKenzie Avenue to increase setbacks from homes.

A revised TBL rating that considers these "enhanced mitigation" conditions was conducted. As expected, the scores of all three sites improve, as shown in Appendix B, Figure 3. In the revised analysis, there is very little difference in the overall score among the three sites. Differences still exist, however, in the performance of each site environmentally, socially, and economically.

## **TBL Results**

Under all revisions of the TBL approach, Finnerty-Arbutus slightly outperforms the other two sites. The closeness of the results shows that any of the candidate sites could perform reasonably well from a sustainability perspective. In selecting a preferred location for a facility in SENOB, other considerations besides those included in the TBL analysis may tip the balance in favour of one site or another.

## **Preferred Site**

A facility near to the east coast interceptor has substantial advantages in avoiding the use of energy to pump sewage to higher elevations, with attendant environmental effects and financial costs. The Finnerty-Arbutus property was purchased by the CRD because it is near to the east coast interceptor and there was a willing seller, the Queen Alexandra Foundation. Other properties having approximately the same elevation also could be used. Such sites include the Queen Alexandra fields, on the north side of Arbutus Road, and the Saanich-owned parcel adjacent to the Finnerty-Arbutus property.

The recommended location for a treatment facility is the enhanced mitigation option for the Finnerty-Arbutus site, as described above. The Saanich-owned property presently houses a meter station and other wastewater conveyance infrastructure. This boundary-straddling location, the "Arbutus Meter Station site", would maximize the use of previously disturbed land on the Saanich-owned property and would reduce the amount of slope excavation necessary to construct a treatment facility on the Finnerty-Arbutus property.

The District of Saanich has not been officially approached by the CRD to determine whether their Arbutus Road property could be made available for a treatment facility. Environmental and archaeological investigations also should be conducted on the Saanich-owned property to identify conditions that could affect construction and operation of a facility on that site. The results of these investigations could result in adjustments to facility design and siting.

The use of the Arbutus Meter Station site would have several advantages.

- It uses areas disturbed previously by activities on the site and the installation of wastewater infrastructure.
- It has improved topography for constructing the facility.
- It responds to concerns and suggestions made by the public.
- It requires significantly lower operating and maintenance costs, approximately \$300,000 annually.
- It requires significantly lower capital costs, between \$20 million and \$25 million.

If agreement on siting can be reached with the District of Saanich, the next stage of facility design and environmental assessment should be pursued. To accompany this work, the community should be engaged in discussions about facility design and impact mitigation.

## **ALTERNATIVES**

1. That the Core Area Liquid Waste Management Committee formally contact the District of Saanich to determine if part of the Saanich-owned portion of the Arbutus meter station site is available for construction and operation of a wastewater facility, and, if so, under what terms. The CALWMC would authorize staff and consultants to initiate preparation of an Environmental Impact Study, including archeological conditions, as required by the Ministry of Environment.

2. That the CALWMC formally contact the Board of Directors of the University of Victoria to determine if a site mutually acceptable to the Capital Regional District and the University of Victoria is available, and under what terms. Several previously identified sites could be discussed, including Cedar Hill Corner and UVic Fields.

**FINANCIAL IMPLICATIONS**

Funding for siting of wastewater treatment facilities is included in the Bylaw No. 3615 "Liquid Waste Management Core Area and West Shore Service Loan Authorization Bylaw No. 1 2009". Obtaining land from the District of Saanich or the University of Victoria may require funding from this or other sources.

**RECOMMENDATIONS**

That the Core Area Liquid Waste Management Committee:

- 1) authorize staff and consultants to initiate preparation of an environmental impact study, including archeological conditions, on the Finnerty-Arbutus site as required by the Ministry of Environment; and
- 2) formally contact the District of Saanich to determine if part of the Saanich-owned portion of the Arbutus Meter Station site is available for construction and operation of a wastewater facility and if so, under what terms.



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Dwayne Kalynchuk, PEng  
Project Director, Core Area Wastewater Treatment

Attachments: 4  
DK:tja



# Memorandum

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**TO:** Dwayne Kalynchuk  
**cc:** Tony Brcic  
**FROM:** David Harper  
**DATE:** 15 July 2009  
**REGARDING:** Alternative treatment facility sites

During the recent public involvement events associated with the Saanich East-North Oak Bay wastewater facility siting process, participating members of the public identified alternative sites to be considered. These sites were identified in the survey forms distributed at the open houses held on June 16, 17, and 19 and during neighbourhood workshops on June 22 and July 7 and 9. The attached map shows the location of these alternative site suggestions and the three previously-identified candidate sites.

Most of these sites were identified and reviewed during the initial selection of candidate sites in 2008. Preliminary investigations have been conducted on the other, previously unstudied, sites. Only sites on which construction and operation would be technically feasible, and that offer some potential advantages over the three identified candidate sites are recommended for further investigation

This memo summarizes the results of the preliminary review of the publicly suggested sites, and provides recommendations for each site.

Site description	Comments
1. Offshore island	Though avoiding some conflicts with upland land uses, this option would be exceedingly costly, would require causeways to connect to the shore, and would have potentially significant environment impacts on the marine environment (benthic effects, changes in current patterns and beach geomorphology). No further review is recommended.
2. Shoreline properties	This location has some engineering merit, because it straddles the existing gravity main and outfall. These parcels are so large that they were initially considered "rural" in the analysis of Saanich East-North Oak Bay. The properties were subsequently re-classified as residential to reflect actual use. Residential properties were excluded from consideration for facility siting. If residential properties are now to be

	considered, many other areas in the Gordon Head-Cadboro Bay neighbourhoods may have potential. The community concerns likely to be raised by considering this location are expected to be substantial. This site also lacks opportunities for use of recovered resources. No further review is recommended.
3. Queen Alexandra fields	This site rated highly in the 2008 technical analyses. In discussions with Queen Alexandra Foundation representatives, it was revealed that that this site is slated for future use for health facilities, and that the effect of a treatment facility on this contiguous site would be unacceptable. The Foundation representatives subsequently suggested consideration of the Finnerty-Arbutus property, which the CRD purchased. No further action is recommended.
4. Saanich-owned Arbutus property	This property has several siting advantages, including topography and previous disturbance to the forested character of the site. Some local residents expressed a preference for locating the treatment facility on this site rather than the adjacent CRD-owned parcel. Future plans for this and other large land holdings in the Arbutus Road corridor will be examined in a study recently authorized by Saanich Council. If the Finnerty Arbutus site is identified as a preferred location for the facility, a more detailed site planning exercise should be conducted, accompanied by discussions with the District of Saanich to determine if all or a portion of this site could be obtained.
5. UVic Entrance	This site has fewer residential neighbours than the UVic Fields site. Discussion of this site with UVic staff and a review of the Campus Plan, however, revealed that the site is planned for two university buildings and that it is part of the Bowker Creek headwaters drainage. No further action is recommended.
6. McKenzie frontage at UVic	This site was identified during the original site analysis as a potential candidate. Discussions with UVic revealed that the area is slated for use as a new University Athletics Building, and is, therefore, unavailable for a treatment facility. No further action is recommended.
7. Parking lot 1	This site is heavily disturbed and provides good access to energy reuse opportunities. The University needs to maintain or expand parking on this site, and the provision of a parking structure to replace land used for wastewater treatment facilities would be excessively costly. No further action is recommended.
8. Cadboro Gyro Park	The original siting process sought to avoid designated parks, including Gyro Park. Operating a treatment facility at this site has topographic advantages and energy use benefits, because it is located on the East Coast Interceptor, minimizing pumping requirements. Geotechnical constraints are significant on this site (poor foundation conditions, and high seismic risks) and the park is in an area of high archaeological

	potential and known sites. Most importantly, there are few opportunities for reuse of energy near this site, and water reuse would be limited to seasonal watering of the park lawns. Because of these drawbacks, no further action is recommended.
9. Haro Road right-of-way	This site is too small and irregularly shaped to accommodate a treatment facility. Intrusion into protected UVic forest, and loss of potential road development opportunities also discourage use of this site. No further action is recommended.
10. Henderson golf course	Use of this site for a treatment facility would render this small golf course unusable. Many mature trees would be lost, and opportunities for energy reuse are limited. No further action is recommended.
11. Henderson Recreation Centre	Construction on this site would either result in the displacement of the recreation centre facilities, or necessitate building the entire treatment facility underground, at substantial cost. The size of the site would constrain the ability to design and operate a treatment facility, and there are limited energy reuse opportunities nearby. These land use, resource use, and financial considerations suggest that the site not be considered further.
12. Uplands School	This site is distant from the East Coast Interceptor, necessitating long pipes and high pumping costs. Loss of the playfield could reduce the future usability of the facility as a school. Reclaimed water could be used on the adjacent golf course and playfields, but few energy reuse opportunities are nearby. No further action is recommended.
13. Uplands Golf Course	This site provides opportunities for water use on the golf course, but few prospects for energy reuse. The site suffers from even greater pipe length and pumping drawbacks as Cedar Hill Corner. A treatment facility would result in displacement of golf course holes and loss of mature trees on the site. No further action is recommended.
14. Houlihan Park	Houlihan Park (Ferndale Rd. and Evergreen Pl.) is a grassy field bequeathed to Saanich as parkland. It is too far north to serve the wastewater interception purpose of the Saanich East-North Oak Bay treatment facility. No further action is recommended.
15. Uplands Park	Uplands Park (Beach Drive west of Cattle Point) is a large Garry Oak meadow, a regionally rare landscape. The parcel is a designated municipal park with very high ecological values and heritage features (the cenotaph). A new outfall would be required through heavily-used Cattle Point. Some of the engineering value of the Saanich East-North Oak Bay facility would be foregone if a facility were located this far south. No further action is recommended.
16. Queenswood-Arbutus	This property is part of the Sisters of Saint Ann facility at the northwest corner of Queenswood Dr. and Arbutus Rd. The land is partially cleared, but primarily forested. A Land Use Contract for the



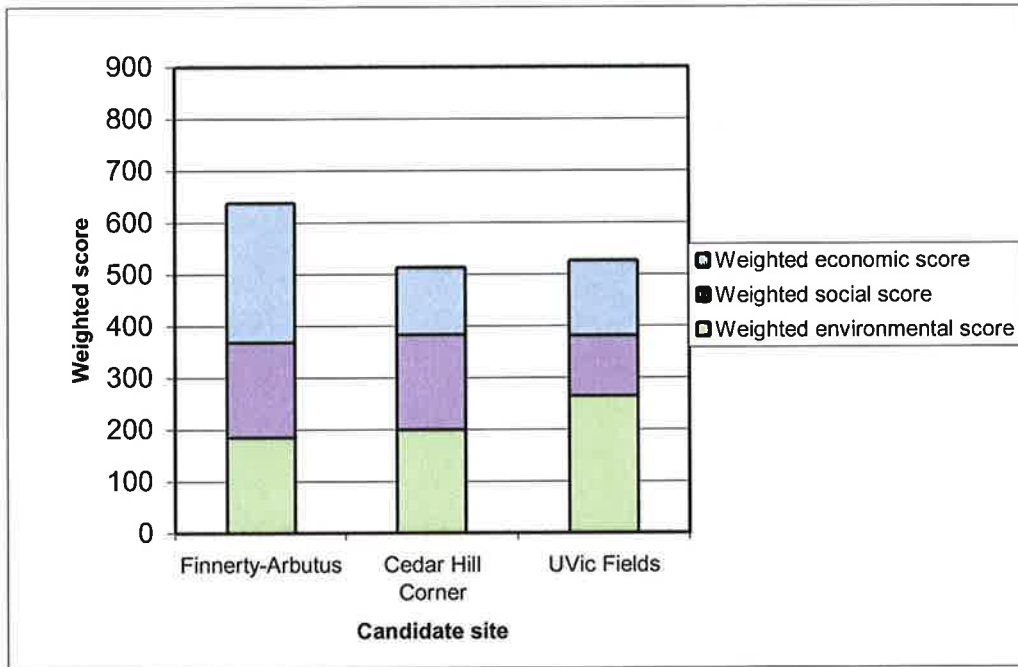
property permits places of worship, residences for nuns, offices, and ancillary facilities. Setbacks of 100 feet (30 m) are required, which would substantially reduce the area of land available for development. Setback requirements could be reduced during the process of rezoning to permit a treatment facility. The resulting 1.5-ha developable area could accommodate a treatment facility. Re-routing of the East Coast Interceptor along Arbutus Road and Queenswood Drive would be needed, and a residence on the parcel (also owned by the Sisters of St. Ann) would need to be removed.

Major drawbacks of this site, compared with the Finnerty-Arbutus site, are very limited resource reuse opportunities (either for water or energy), and the proximity of 13 detached residences immediately across Queenswood Drive and Arbutus Road from the site. Clearing of the Arbutus Road frontage has compromised ecological values on the site, but two-thirds of the site remains forested. The site supports wildlife trees, arbutus, pines, oak trees, and a variety of other native species. The oak-pine complex on the site is regionally rare. The drawbacks of this site are substantial, and no further action is recommended.

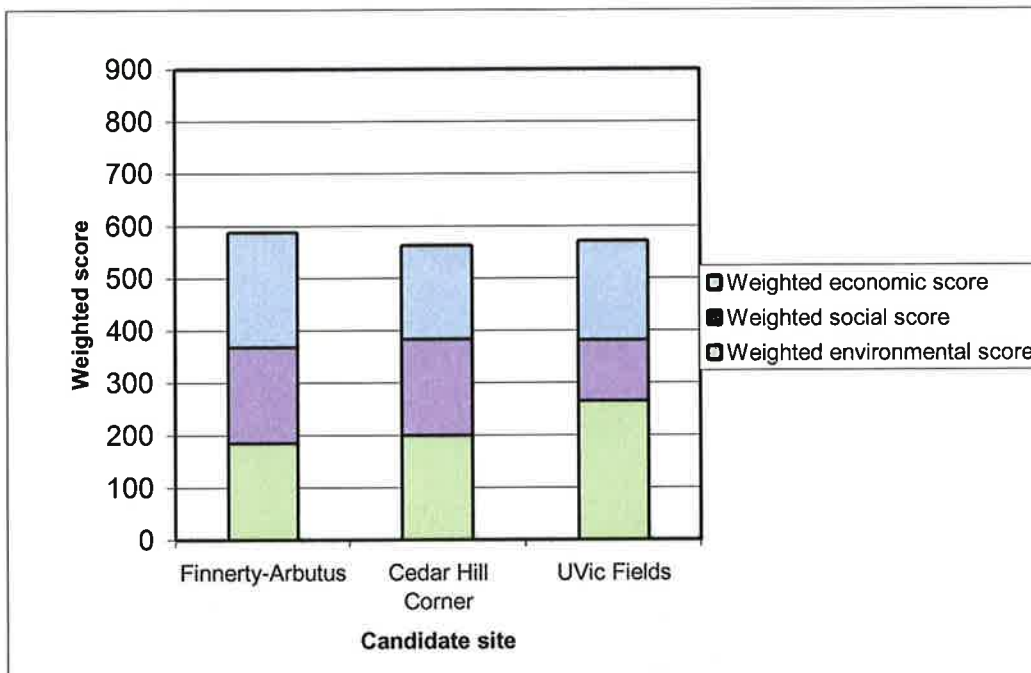
**Alternative WWTF Sites Identified  
at SENOB Public Open Houses  
and Workshop June-July, 2009**



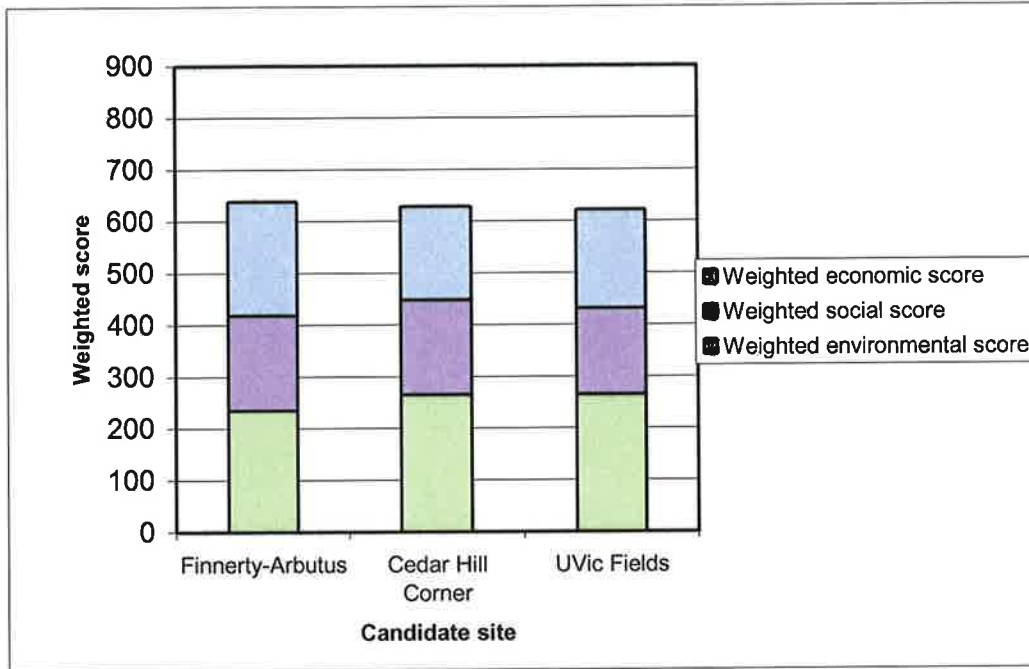
Appendix B - Figure 1: Original Triple Bottom Line Scores



Appendix B - Figure 2: Revised Triple Bottom Line Scores



Appendix B - Figure 3: Revised Triple Bottom Line Scores with Enhanced Mitigation



REVISED TRIPLE BOTTOM LINE SCORES

Topic	Criteria and goals	Rating categories	Ratings			Criteria Weight	Topic Weight
			Finnerty-Arbutus	Cedar Hill Corner	UVic Fields		
ENVIRONMENT	<b>Geotechnical development constraints</b> Minimize effects of seismic and liquefaction risk, slope instability, and surficial material.	1 Considerable geotechnical development constraints.	2	2	2	15.0	100
		2 Minor geotechnical development constraints.					
		3 No identified geotechnical development constraints.					
	<b>Hydrology and water quality</b> Minimize effect on hydrology and surface water quality.	1 Substantial effect on hydrology or water quality during construction.	3	2	3	15.0	
		2 Moderate effect on hydrology or water quality during construction.					
		3 No effect on hydrology or water quality during construction.					
	<b>Vegetation</b> Minimize the removal of red-listed plant communities.	1 1 ha or more of red-listed plant communities would be removed.	1	2	3	25.0	
		2 Between 0.25 and 1 ha of red-listed plant communities would be removed.					
		3 Less than 0.25 ha of red-listed plant communities would be removed.					
	<b>Wildlife</b> Minimize the removal of forested wildlife habitat.	1 1 ha or more of forested wildlife habitat would be removed.	1	2	3	25.0	
		2 Between 0.25 and 1 ha of forested wildlife habitat would be removed.					
		3 Less than 0.25 ha of forested wildlife habitat would be removed.					
	<b>Total energy use</b> Minimize total energy use during facility operation.	1 High energy consumption (> 1 kWh/m3).	3	2	2	20.0	
		2 Moderate energy consumption (0.65 - 1 kWh/m3).					
		3 Minimal energy consumption (< 0.65 kWh/m3).					
SOCIAL AND COMMUNITY	<b>Odour</b> Minimize the number of people affected by odour.	1 Many people potentially affected by odour (>500).	1	2	1	16.7	
		2 Some people potentially affected by odour (100-500).					
		3 Few people potentially affected by odour (<100).					
	<b>Traffic and roads</b> Minimize the number of road users impacted by construction.	1 Many road users potentially affected by construction disruptions (> 500,000 trips).	2	1	1	16.7	
		2 Some road users potentially affected by construction disruptions (250,000 to 500,000 trips).					
		3 Few road users potentially affected by construction disruptions (< 250,000 trips).					
	<b>Visual aesthetics</b> Minimize visual impacts.	1 Limited potential to mitigate most visual impacts.	1	3	2	16.7	
		2 Potential to mitigate most visual impacts.					
		3 Potential for no visual impacts after mitigation.					
	<b>Community use</b> Minimize disruption to permitted public uses.	1 Considerable disruption to permitted public uses.	2	2	1	16.7	
		2 Some disruption to permitted public uses.					
		3 Minimal disruption to permitted public uses.					
	<b>Nuisance effects</b> Minimize nuisance effects, such as dust, noise, vibration, and lighting, on neighbouring properties.	1 Many people affected by construction and operations nuisances (>100).	2	1	1	16.7	
		2 Some people affected by construction and operations nuisances (>20-100).					
		3 Few people affected by construction and operations nuisances (<20).					
	<b>Property values</b> Minimize effects on value of neighbouring properties.	1 Several properties likely to experience property value effects.	3	2	1	16.7	
		2 Few properties likely to experience property value effects.					
		3 No properties likely to experience property value effects.					
ECONOMIC	<b>Treatment facility capital cost (excluding land)</b> Minimize the capital cost (excluding land) of the project.	1 More than \$120 million	2	2	2	50.0	
		2 \$100 - 120 million					
		3 Less than \$100 million					
	<b>Ancillary facility capital cost (excluding land)</b> Minimize the capital cost (excluding land) of the project.	1 More than \$30 million	3	1	1	20.0	
		2 \$20 - 30 million					
		3 Less than \$20 million					
	<b>Operating cost</b> Minimize the operating cost of the project.	1 More than \$2.5 million	2	2	2	15.0	
		2 \$2 - 2.5 million					
		3 Less than \$2 million					
	<b>Land cost</b> Minimize land costs.	1 More than \$3.5 million	2	2	2	5.0	
		2 \$3 - 3.5 million					
		3 Less than \$3 million					
	<b>Resource recovery potential</b> Maximize potential to use recovered energy or water.	1 Few potential opportunities for resource recovery nearby.	2	2	3	10.0	
		2 Several potential opportunities for resource recovery nearby.					
		3 Many potential opportunities for resource recovery nearby.					

Total weighted score out of a possible 900 points      588      563      572